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CASE RECORDS AND COMMENTARIES

IN

OBSTETRICS AND GYNAECOLOGY

SUBMITTED BY

DR MAINA KIPTUM SEUREY CALEB

AS

PART FULFILMENT FOR THE

DEGREE OF MASTER OF MEDICINE

IN

OBSTETRICS AND GYNAECOLOGY

OF

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TABLE OF CONTENTS

Page

Table of contents ii

Dedication vi

Acknowledgement vii

Declaration viii

Certification of supervision ix

OBSTETRIC SHORT CASES 23

Case No.

1.Severe Malaria 23

2.Abruptio Placentae 36

3.Twin Gestation: 45

4.Preterm PROM 51

5.Cord Prolapse- 57

6.Diabetes in Pregnancy 61

7.Rhesus Iso-immunization 72

8.Advanced Abdominal Pregnancy 81

9.HIV in Pregnancy 87

10.Cervical Incompetence 94

11.Induction of Labor 101

12.Heart Disease in Pregnancy 109

13.Intrapartum Fetal Distress.....118

14.Cancer of the Cervix in Pregnancy.....124

15.Deep Venous Thrombosis 134

OBSTETRIC LONG COMMENTARY 141

Post- Ceserean Section Wound Infections in a Mission Hospital in Rural Kenya:

A Clinical Audit 133

GYNAECOLOGY SHORT CASES 173

Case No.

1 Cervical Intraepithelial Neoplasia III.....159

2.Unsafe Abortion.....181

3.Raptured Ectopic Pregnancy.....188

4.Symptomatic Uterine Fibroids.....195

5.Asherman's Syndrome.....201

6.Batholin's Abscess 209

7.Postpartum Choriocarcinoma.....213

8.Ovarian Cancer stage IV 219

9.Abnormal Uterine Bleeding 226

10.Pelvic Abscess 232

11.Lost IUCD 237

12.Pelvic Relaxation.....241

13.Sexual Assault.....247

14.BTL Reversal.....257

15.Recurrent Early Pregnancy Loss.....264

LONG COMMENTARY IN GYNAECOLOGY.....270

Reproductive Choices of Women Living with HIV/AIDS.

.....270

APPENDEX **305**

APPENDEX A: OBSTETRICS INFORMED CONSENT FORM 305

APPENDEX B: OBSTETRIC QUESTIONNAIRE 306

APPENDEX C: GYNAECOLOGY INFORMED CONSENT FORM 308

APPENDEX D: GYNAECOLOGY QUESTIONNAIRE 309

LETTERS OF APPROVAL **312**

DEDICATION

To the glory of God and for the faithful service to humanity, this book is dedicated to the blessed memory of my father:-

Lodi Arap Maina

For the faith and inspiration that has brought me this far

ACKNOWLEDGEMENT

First and foremost I wish to register my appreciation to the Management and the entire Tenwek Hospital Community for the sponsorship, moral and spiritual support that made it possible for me to pursue and complete this course.

Secondly I want to acknowledge my supervisors; Dr. Wasike CSG and Dr. Kiragu JM, without whose invaluable guidance and recommendations, I would not have been able the quality of work recorded herein.

I would like to thank the members of the Kenyatta National Hospital Ethical Review committee for their critical analysis and recommendations in the development of the proposal. I learnt a lot from them.

I also wish to thank the senior members of staff of the departments of Obstetrics and Gynecology of the University of Nairobi and Kenyatta National Hospital for the privilege of learning from them.

A lot of what I am and what I know in the practice of Obstetrics and Gynecology, I have learnt under the tutelage of Dr. Paul Jarret, Dr. John Mbogo and Dr. Brian Myers of the Obstetrics and Gynecology of Tenwek Mission Hospital. I wish to thank them in a very special way for sharing their lives and skills. The data collection for this study was possible because Dr. Mbogo's personal commitment. I am very grateful for his help.

I wish to acknowledge the contribution of Caroline Chepkwony, Anne Toweet and Nancy Soi for helping me with Data collection.

The writing of the final report has been possible through the help of Alex Mwaniki who was instrumental in data analysis and presentation.

DECLARATION

This is to certify that the case records and commentaries presented in this book were managed by me under guidance and supervision of senior members of staff of the department of Obstetrics and Gynecology of the University of Nairobi and Kenyatta National Hospital.

I further declare that the two long commentaries are my original work and that I have not presented any part or all of for a degree in another University.

Signature _____

Date 5/7/2007

DR MAINA KIPTUM SEUREY CALEB

CERTIFICATION OF SUPERVISION

This is to certify that the long commentaries and the short case reports were done under our guidance and supervision and that this book is submitted with our approval.

Signanture _____

Date 15/5/07

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LECTURER
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Signature _____

Date 15/05/2007

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CERTIFICATION

This is to certify that the obstetric cases numbers 1, 4 and 5 and gynecologic cases number 6, 7 and 8 managed by Dr. Maina Caleb were done under my supervision and guidance at Kenyatta National Hospital

Signature_____

Date_____

PROFFESSOR OJWANG SBO, MD, M.MED (OBS/GYN), GYN ONCOL
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify the obstetric cases numbers 2, 3, 6 and 11 and Gynecologic cases numbers 10, 11, 12 and 15 were managed by Dr. Caleb Maina under my supervision and guidance at Kenyatta National Hospital, Nairobi, Kenya.

Signature_____

Date_____

PROFESSOR OYIEKE JBO, MBCHB, M.MED (OBS/GYN)

ASSOCIATE PROFFESSOR
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify the obstetrics cases numbers 7, 8, 9, 10, 13 and 14 and Gynecology cases numbers 2, 4, 5 and 9 were managed by Dr. Caleb Maina under my supervision and guidance at Kenyatta National Hospital, Nairobi, Kenya.

Signature_____

Date_____

DR. WANJALA SMH, MBCHB, M.MED (OBS/GYN)

SENIOUR LECTURER AND CONSULTANT
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify that the obstetric obstetric cases numbers 6 and gynecologic cases numbers 1, 3, 13, and 14 were managed by Dr. Caleb Maina under my guidance and supervision at Tenwek Mission Hospital, Bomet, Kenya.

Signature _____

Date 28/4/07

DR. JOHN MBOGO, MBCHB, M.MED (OBS/GYN), MPH

HEAD DEPARTMENT
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
TENWEK MISSION HOSPITAL.

INTRODUCTION

Kenyatta National Hospital (KNH) is situated in Nairobi. It is about 3kms from the city center along Ngong Road. It serves as a referral center as well as serving the population within and around the city. It provides curative, preventive and rehabilitative services in all medical disciplines. It is a training center for undergraduate and post-graduate students from the College of Health Sciences of the University of Nairobi. It is also a training center for nurses, clinical officers and other paramedics from the Kenya Medical Training College.

The hospital is housed in a 10 storey building complex with extensions that serve as outpatient clinics, theatres, casualty, intensive care unit and laboratories.

The hospital is currently administered as a state corporation by a Parastatal Board established in 1986 by an Act of Parliament.

OBSTETRICS AND GYNAECOLOGY UNIT

The unit provides both out-patient and in-patient services. The out-patient services are provided at casualty department, antenatal clinics, post-natal clinic, gynaecology clinics and the Family Welfare Clinic (FWC). The in-patient services are provided in labour ward, acute gynaecology ward, cold gynaecology wards and antenatal/postnatal wards.

In terms of personnel, the unit is divided into three firms, each headed by a senior consultant obstetrician/gynaecologist, with a team of senior registrars, registrars, interns, nurses and paramedical staff. The members of the senior medical staff are both from the University of Nairobi and Kenyatta National Hospital.

Laboratory services are provided by the hospital. In addition to the hospital laboratory services, the Department of Obstetrics and Gynaecology of the University of Nairobi offers the following laboratory services for the hospital:

semen analysis, hormonal radio-immunoassay, cytology, chromosome analysis, bilirubin spectro-photometry, surfactant test and glucose tolerance test. Radiological examinations such as ultrasound are provided in the radiology department of KNH and also the Department of Radiology of the University of Nairobi.

CASUALTY DEPARTMENT

This offers services 24 hours a day and all obstetric and gynaecologic emergencies are screened here. Most patients are treated and discharged or referred to the gynecology or obstetric clinics. Patients requiring admission are admitted either to labour ward of acute gynaecological ward.

ANTENATAL CLINIC (ANC)

This clinic serves both high and low risk pregnant women. The booking is done every Monday. The criteria for booking includes primigravidas, grand multiparas, previous operative deliveries, medical conditions complicating pregnancy, bad obstetric history, those who have had delicate or difficulty gynecological operations like urinary fistula or myomectomy among other high risk factors.

For those that are booked, a detailed history of past obstetric and gynaecological, medical, family and social history is taken. The weight, height, blood pressure and urinalysis are done. A complete physical examination is done. Those that are found to need admission are referred to labour ward while others are given appointments for their next visits. Blood samples are taken for full blood count, serology for syphilis and HIV, and grouping for ABO and Rhesus factor.

Antenatal Follow-up

The antenatal clinic follow-up is based on the World Health Organization Focused Antenatal Care model. In this model the first visit is done in the first trimester, preferably before week 12/40 of pregnancy. The second and third visits are scheduled for weeks 26/40 and 32/40 respectively. The fourth visit is scheduled to take place between weeks 36/40 and 38/40. Women with any medical condition or risk factors detected in the classifying form receive the basic component of antenatal care programme. At each visit, health education about pregnancy, breast care, puerperium and baby care is given. The patients are then examined with particular attention to blood pressure, proteinuria, weight gain and edema. Abdominal examination is done to determine fundal height, the fetal lie, presentation, engagement and fetal heart rate. The findings are recorded on the antenatal card, which is kept in the hospital. For first pregnancies or previous pregnancies older than 3 years, two tetanus toxoid doses are given 4 weeks apart otherwise only booster tetanus toxoid is given during the second trimester. Patients for elective delivery are admitted at 38 weeks of gestation.

HOSPITAL ADMISSIONS

These fall into three categories namely:

- Booked patients from our antenatal clinic
- Referrals from other hospitals or health services
- Those without prior antenatal care

The last two categories constitute the majority of admissions.

Booked patients report straight to labour ward when in labour, or whenever they have a problem, when clinics are closed, for example during weekends and at night. Unbooked patients are seen first in casualty before being sent to labour ward admission area. In labour ward all patients are seen and those requiring

immediate delivery are retained in labour ward until after delivery. Patients not due for delivery are sent to the antenatal clinic (ANC). Patients who are very ill are admitted to the acute room in labour ward and managed accordingly.

Patients in labour ward are seen by the house officers and senior house officers. Difficult cases are managed in consultation with the relevant specialist(s) and/or a consultant obstetrician and gynaecologist.

COMMON OBSTETRIC PROCEDURES

The following procedures are performed frequently within the obstetric unit. The description of the procedures given here is the standard or preferred method(s) as performed and taught within the department.

Vaginal Examination

This involves the speculum and digital examination. Vaginal examination is an aseptic procedure for gravid women suspected to be in labour or those with ruptured membranes. The examiner washes his/her hands and wears the appropriate gloves (either sterile or clean). The procedure is explained to the patient. The patient then lies in the lithotomy position. The vulva is inspected and any abnormalities noted. The vulva is then cleaned using three swabs soaked with antiseptic solution as follows: A swab is picked by the right hand and transferred to the left hand. Using the left hand, the left labia majorum is swabbed once antero-posteriorly then the swab is discarded. Another swab is taken and the same procedure is repeated on the right side. The left hand now separates the labia using the index and thumb fingers and the introitus is gently swabbed antero-posteriorly.The right index and middle fingers are gently

introduced into the vagina. The position of the vagina and status of the mucous membrane are noted. Next the position, consistency, effacement and dilatation of the cervix are noted. The status of the membranes, presenting part, presence or absence of the caput and moulding are noted. The colour, smell and quantity of liquor and presence of absence of the umbilical cord are also noted.

Speculum Examination

In obstetric speculum examinations, the bivalve cuscos speculum is frequently used. Indications include: antepartum haemorrhage, premature rupture of membranes, vaginal discharge and removal of McDonald stitch.

The procedure and reasons for it are explained to the patient and verbal consent obtained. The patient is placed in a dorsal or lithotomy position on the examination couch. The surgeon scrubs and wears sterile gloves. The vulva is swabbed as described above. The labia are then separated with the index and thumb of one hand to expose the vaginal introitus. The Cuscos speculum is then gently introduced into the vagina with the width of its blades in the transverse direction. The blades are then opened and the lateral walls are exposed and observed for any abnormality. The cervix is observed for the dilatation, bleeding and draining of liquor or bulging membranes. If the speculum examination is done to confirm premature rupture of the membranes and does not show any liquor, the patient is asked to cough or fundal pressure is applied. The speculum is withdrawn is the same way it was introduced. During the procedure, the patient is kept informed of each step as this makes the examination simpler.

MANAGEMENT OF LABOUR

The main objective of labour management in our unit is to achieve delivery within 12 hours of admission for every mother admitted in active phase of labour. To achieve this objective a partogram is charted for all patients admitted in labour.

First stage of labour

Patients in active or latent phase of labour are admitted in the first stage area. Generally, the first stage of labour is managed actively. Progress of labour is recorded graphically on a partogram where uterine contractions, fetal heart rate, maternal pulse rate and blood pressure are recorded every half an hour. Vaginal examination to assess the cervical dilatation in centimeters, presence and degree of moulding and colour of draining liquor is done and recorded every 4 hours. Patients who do not know their HIV status are counselled and tested for the same. Artificial rupture of membranes is performed for known HIV negative patients in active phase of labour at cervical dilatations of 4cm or more. For HIV positive patients the fetal membranes are allowed to rupture spontaneously so as to prevent mother to child transmission of HIV. Artificial rupture of membranes permits an assessment of the quantity of amniotic fluid and the presence of meconium. A normal volume of clear amniotic fluid indicates that fetal distress is unlikely, assuming that delivery occurs within a reasonable period of time and no sudden labor complications (eg, placental abruption, cord prolapse) occur. In addition to providing information about fetal status, rupture of the membranes also may accelerate labor. It is routine practice at KNH to do artificial rupture of membranes before treatment with oxytocin, which is administered only in the presence of clear amniotic fluid.

An intramascular injection of Buscopan 40mg may be given to hasten cervical dilation. In patients at cervical dilation of 4 to 6 cm, an intramuscular injection of pethidine or tramadol may be given for analgesia.

The partogram has two parallel lines: the "alert line" and the "action line". The action line is 4 hours to the right of the alert line. At admission, for patients in active phase of labour, cervical dilatation is marked on the alert line and the time noted. Cervical dilatation of at least 1 cm per hour is expected. Any deviation of cervical dilatation curve towards the action line is an indication of some abnormality in the progress of labour and corrective measures are instituted accordingly. Corrective measures may involve augmentation of labour if contractions are poor or caesarean section if there is cephalopelvic disproportion (CPD). Augmentation of labour with syntocinon is done in those patients without a previous uterine scar, maternal or fetal distress. Induction of labour routinely starts in the morning invariably done by artificial rupture of membranes followed by the syntocinon drip.

Management of second stage of labour

A patient is deemed to be in second stage when she experiences the urge to bear down and an abdominal and vaginal examination confirms the same. She is then transferred to the delivery room and placed on a delivery couch. Normal deliveries are usually conducted by a midwife, student midwife, or a medical student under instruction. High risk cases like multiple pregnancy, premature deliveries and breech presentations are delivered by the registrar in attendance. Strict asepsis is observed during the deliveries; sterile gowns and towels are used. The vulva and perineum are cleaned with antiseptic solutions (commonly Savlon) and then the patient is encouraged to bear down with each contraction and to take deep breaths in between contractions. Fetal heart is monitored every 15 minutes.

As the head distends the perineum, the left hand of the midwife maintains flexion of the fetal head and if episiotomy is indicated, 5 – 10 ml of lignocaine are infiltrated on one side of the vulva and a medio-lateral episiotomy is performed using a blunt tipped Mayo's scissors. The perineum is supported by the right hand with a sterile pad.

Once the delivery of the head has occurred, the mouth and nose are wiped with gauze to prevent aspiration of blood or amniotic fluid. A finger is swept around the fetal neck for the cord. If the cord is too tight around the neck it is divided between clamps and if it is loose it is slipped over the head. The anterior shoulder is delivered, and then followed by the posterior shoulder and the trunk. If the umbilical cord was not clamped, this is done. The baby is shown to the mother for identification of the sex before being taken for oropharyngeal suctioning if needed. In high risk cases, a paediatrician is usually in attendance.

Management of third stage of labour

Active management of the third stage of labour is practiced. This involves giving 10 units of syntocinon intramuscularly within 1 minute of second stage, massaging the uterus, applying counter traction on the uterine fundus and then performing controlled cord traction to deliver the placenta. After the delivery of the placenta, the perineum, vagina and cervix are inspected for any tears. The blood loss is estimated and the placenta and membranes are examined for completeness. If however, the placenta is not delivered by 30 minutes and there is no active bleeding then infusion of 20 – 30 units of syntocinon in 5% Dextrose is used. If this measure fails, then the patient is prepared for manual removal of the placenta in theatre under general anaesthesia.

Repair of episiotomy

This is carried out in three layers using chromic catgut suture No. 2/0. The apex of the incision is identified and from here repair of the vaginal mucosa is carried out in a continuous suture while the muscle layer is approximated with interrupted sutures. The skin is apposed using interrupted or continuous chromic catgut No. 2/0 burying the knots and starting from lateral edge. After repair, the patient is advised on perineal hygiene and saline sitz baths.

The fourth stage of labour

After delivery and repair of episiotomy, blood pressure, pulse rate, uterine contraction and lochia loss are observed and recorded. The patient is encouraged to empty the bladder. The patient is then observed for one hour and then transferred to the post-natal ward for subsequent observations. Patients with normal delivery are discharged home after 24 hours.

OPERATIVE DELIVERY

VACUUM EXTRACTION

Vacuum extractor is used to accomplish delivery in prolonged second stage due to poor maternal effort or where bearing down is contraindicated as in cardiac disease or where an expeditious delivery is desired such as in fetal distress occurring in the second stage of labour.

The procedure and its indication are explained to the patient and a verbal consent is obtained. The patient is placed in lithotomy position. The vulva and perineum are cleaned with antiseptic solution and draped. Aseptic catheterization of the bladder is done and a repeat vaginal examination performed to rule out any contraindication to vacuum delivery such as cephalo-pelvic disproportion and malpresentation. A mediolateral incision (episiotomy)

is made under local anesthesia. The largest suitable vacuum cap is passed against the fetal scalp taking care not to include maternal soft tissues by running a finger round the cap.

Suction pressure is then built up slowly at a rate of about 0.1 kg/cm2 per minute upto a maximum of 0.8kg/cm2. This allows for formation of an artificial caput within the cap that holds firmly and allows adequate traction. Traction is then applied with each contraction, in a downward direction until the head descends and the upwards to allow delivery by extension. On delivery of the fetal head the pressure is released. The rest of the delivery is completed as described above.

CAESAREAN SECTION

The commonest caesarean section is the lower uterine segment caesarean section. Classical caesarean section is rarely done except for cases like transverse lie with ruptured membranes.

Pre-operative care

Caesarean section operations are either emergency or elective. For elective caesarean section, baseline investigations like full blood count and urea and electrolytes are done, blood is taken for grouping and cross-matching and two units of blood are reserved and an informed consent for general anaesthesia and operation is taken. The patient is starved for at least six hours before the operation. The abdominal wall is shaven clean before theatre. Premedication with atropine 0.6mg is given intramuscularly half an hour before theatre. For emergency caesarean section, blood is taken for grouping and cross-match and an informed consent for general anaesthesia and operation is taken. The abdominal wall preparation is similar to that of elective operation. The patient is premedicated with atropine 0.6 mg intramuscularly before being wheeled to theatre.

Operation

In theatre, the patient is placed in supine position with the legs separated. The vulva and perineum are cleaned with antiseptic solution such as Savlon. Aseptic catheterization is done and the catheter is left in situ after draining all the urine. A repeat vaginal examination is done.

The anterior abdominal wall is cleaned with antiseptic solution and painted with iodine. The patient is then draped with sterile towels. Anaesthesia is induced with intravenous sodium thiopental. Succinylcholine 50 – 80 mg is also given for temporary muscle relaxation to enable endotracheal intubation. Anaesthesia is then maintained with nitrous oxide, oxygen and halothane.

The abdomen is opened in layers either through a lower midline incision or through a Pfannestiel incision depending on the surgeon's and/or patient's preference. After opening the skin, the rectus sheath is opened with curved Mayo's scissors. One side of the divided rectus sheath is elevated with two artery forceps and the rectus muscle separated from their attachment to it, using a surgical blade and then drawn to one side to expose the peritoneum. The latter is held in between two long artery forceps and opened. The incision is extended up and down to the incision limits taking care not to injure the bladder. Wet abdominal packs are placed on either side of the uterus to prevent blood and liquor from running into the general peritoneal cavity. A Doyen's retractor is applied to reflect the bladder away as well as expose the uterovesical fold of peritoneum. The uterovesical peritoneum is lifted up with a pair of dissecting forceps and incised. The incision is extended in an elliptical fashion downwards. The peritoneum is stripped off the lower uterine segment with mounted swab. The Doyen's retractor is shifted to include the lower part of the peritoneal fold in

retraction of the bladder away from the lower uterine segment. A small incision of about 2 cm is made in the lower segment about 2 cm below the uterine attachment of the utero-vesical peritoneal fold. Once the membranes are reached or uterine cavity opened the incision is extended laterally on either side using curved scissors directed by two fingers of the left hand. The incision is enlarged enough to allow delivery of the head and trunk. The Doyen retractor is then removed and the right hand is introduced into the uterine cavity under baby's head, which is delivered out gently through uterine incision. Delivery is aided by gentle trans-abdominal fundal pressure. After delivery of the head, the mouth and nostrils are wiped with soft gauze. The shoulders are then delivered using gentle traction plus some fundal pressure. The trunk usually follows readily. The umbilical cord is divided between clamps and the baby is handed over to a midwife or paediatrician. The placenta is delivered by either controlled cord traction or manually. The inside of the uterus is wiped with a swab on a holder. Bleeding margins of the incision are held by Green Armytage clamps. In transverse lie or breech presentation, the baby is delivered by breech extraction. The uterine incision is then repaired in 2 layers with chronic catgut stitch number 2 on an atraumatic needle. The utero-vesical peritoneum is then closed with a continuous chromic catgut stitch number 1/0. The abdomen is mopped and the abdominal packs are removed. The pelvic viscera are then inspected for any abnormalities. Instruments and swabs are counted and if they tally with the initial count, then the abdomen is closed in 3 layers. Peritoneum is closed with continuous No 1/0 chromic catgut stitch, rectus sheath is similarly closed with number 1 vicryl stitch and the skin with interrupted silk or nylon. The wound is cleaned and then dressed. The catheter is checked for the urine draining and if clear the catheter is removed and the uterus is massaged and clots evacuated from the vagina.

General anaesthesia is reversed with 1.2mg of atropine and 2.5mg of neostigmine intravenously. Extubation is done and oropharyngeal suctioning done.

Postoperative care for caesarean section

The vital signs; blood pressure, pulse rate, respiration and body temperature are observed continuously until the patient is fully awake then 4 hourly thereafter. Intravenous fluids are given until she can take orally. Pethidine 100mg is given every 8 hours for the first 24 hours to relieve the pain. She is also given antibiotics, crystalline penicillin 2 MU 6 hourly and Gentamicin 80 mg 8 hourly intravenously. Flagyl is added to those at risk of sepsis. On the first post operative day the patient is ambulated and oral sips started if bowel sounds are present. When she starts taking orally, parenteral medications are converted to oral medicines. On the third post operative day the haemoglobin is checked. The stitches are removed on the seventh post-operative day if the patient is still in the ward, or she is advised to go for removal in the nearest health centre if she is discharged earlier, which is normally on the 4th post operative day. The patient is discharged home with a case summary and having been explained about the nature and findings of operation and wound care. She is booked to be followed up in the post-natal clinic after six weeks.

CARE OF THE NEWBORN

All the newborn babies who are normal join their mothers after delivery unless the mother is moribund. Babies with problems or where complications are anticipated, together with babies delivered by operative vaginal delivery or caesarean section are all reviewed by a paediatric registrar. Those having problems or who may develop problems are transferred to New Born Unit. The premature babies are managed in New Born Unit until their weights are about 2,000gms following which they are discharged. All babies are immunized with

BCG before discharge. Normal mothers who have babies in New Born Unit are lodged in the mother's hostel.

POST NATAL FOLLOW –UP

The clinic is held on every Friday. Only those patients who had complications or operative delivery are seen. Patients with normal deliveries are followed up in their nearest health facility.

The blood pressure and weights are taken. Urinalysis is performed. History is taken of the puerperium, lactation and immunization of the baby. The patient is then examined and any problems managed. Family planning advice is given and the patient referred to the family planning clinic if she requires a contraceptive method.

THE GYNAECOLOGICAL UNIT

The gynecology unit consists of the outpatient wing at clinic 18 and two gynecological wards 1B and 1D on the first floor of the tower block.

Ward 1D is the acute gynecological ward while ward 1B caters for non-emergency cases. The unit is managed by the 3 firms of the department.

Gynecological outpatient services

There are three outpatient clinics per week. Specific firms run the clinics on different days; Firm I on Tuesdays, Firm II on Thursdays and Firm III on Wednesdays. The clinics are run by consultants, senior registrars and registrars. Teaching of the medical students takes place in the clinics. There is also colposcopy and oncology clinic on Friday mornings.

The majority of the patients attending the gynecology clinic are referred from casualty. Post-operative patients also attend this clinic. Some other patients are referred from other specialized clinics in Kenyatta National Hospital. The rest of the patients are referred from the district and provincial hospitals.

Infertility patients constitute about two thirds of the gynecology consultations followed by uterine fibroids, abnormal uterine bleeding and oncology patients. In the clinic a thorough history and physical examination is conducted and most of the diagnostic investigations are done. The investigations ordered depend on the diagnosis following a history and physical examination. Some of the investigations include: pelvic ultrasound, semen analysis, hysterosalpingogram, Pap smear and pregnancy tests among others. For patients requiring operation, the pre-operative investigations are done from the clinic to eventually reduce the hospital stay.

Family planning clinic

The clinic is situated next to the gynaecology outpatient clinic. Here oral and injectable contraceptives, intrauterine contraceptive devices, norplant and barrier methods are offered. Patients requiring tubal ligation are counseled and referred to Ward 1D for the procedure of minilaparatomy to be done as day cases.

GYNAECOLOGY IN-PATIENT SERVICES

Acute Gynaecological admissions Ward 1D

This is the emergency ward with a bed capacity of 32 but usually has about 60 patients. It caters for all gynaecological emergencies seen and admitted at the Kenyatta National Hospital. An average of 15 patients is admitted daily and more than two thirds of these cases are abortion. Patients are mainly admitted through the casualty department.

All patients for admission are clerked by the houseman and reviewed by the senior house officer (registrar) who undertakes the management in consultation with senior members of the department. Patients in the ward are reviewed daily by the registrar, senior registrar and consultant.

Apart from abortions, pelvic inflammatory disease and ectopic pregnancies are the next most common cases admitted into this ward. Uncomplicated cases of incomplete abortion have uterine evacuation done in the procedure room in 1D using Kurman's canula and syringe. They are discharged immediately after being counseled about contraception. Patients who have undergone emergency laparatomy for pelvic abscesses, ectopic pregnancy or pelvic masses have a minimum stay of four days post-operatively depending on their clinical outcome.

Patients with suspected carcinoma of the cervix are admitted at the first instance to ward 1D where they receive emergency treatment such as blood transfusion, antibiotic treatment, among others. Routine clerking and investigations are done. Examination under anesthesia staging and biopsy is done. After staging and biopsy, the patient is taken either to ward 1B for Wertheim's hysterectomy or referred to the radiotherapy unit for treatment. Patients with confirmed carcinoma of the cervix but have complications such as bleeding or anaemia are also admitted to ward 1D for management of the complications before they continue with radiotherapy.

Cold gynaecology admissions Ward 1B

Ward 1B is the non-emergency gynaecology ward to which patients are admitted from the clinic or transferred from acute gynaecology ward for further management. The ward has a capacity of 33 beds. The beds are shared equally

among the three firms. The patients commonly admitted in this ward are those for elective gynaecology operations or for chemotherapy due to gynaecological malignancies. Uterine fibroids, vesico-veginal fistulae, tubal factor infertility and gynaecological malignancies are among the conditions necessitating patients to be admitted in this ward.

GYNAECOLOGICAL OPERATIONS

A theatre is reserved in main theatre for emergency gynaecological operations daily. Laparatomy for ectopic pregnancies, pelvic abscesses, ovarian cysts and other tubo-ovarian masses are done here. Smaller procedures like diagnostic dilatation and curettage of the uterus, removal of misplaced intra-uterine contraceptive devices, marsupialization of bartholins abscess and suction curettage are also performed here.

Elective operations are done on firm basis; Firm II on Mondays and Firms I and III on Thursdays. The operations are done from 8.00 a.m to 5.00 p.m. The operations are performed under general anaethesia as outlined below:

- Intravenous sodium thiopentone and succinylcholine are used for induction of anaesthesia.
- Nitrous oxide, oxygen and halothane provide maintenance anaesthesia.
- Curare is given intermittently for muscle relaxation.
- Atropine and neostigmine are used for reversal.

Pre-operative preparations

Patients for emergency laparatomy are prepared for theatre on admission. Ruptured ectopic pregnancies are the most common indications of emergency

laparatomy. In this case, blood is urgently cross matched and an intravenous drip of normal saline started. The abdomen is cleaned and shaved. Premedication is provided by atropine 0.6 mg intramuscularly half and hour before theatre. An informed written consent is taken before theatre.

For cold (non-emergency) operations, baseline investigations such as the full blood count, urea and electrolyte levels are done and the date of surgery fixed. The nature and purpose of the operation is explained to the patient and an informed written consent for the operation is obtained. Blood is ordered and reserved for the day of the operation. For most operations gut preparation is done by enema at 6.00 pm on the day before the operation and repeated at 6.00 am on the operation day. The patient is starved from midnight to the morning of the day of operation. The skin over the area of the operation is cleaned and shaved. Premedication is provided by atropine 0.6 mg and pethidine 50 – 100mg intramuscularly, half hour before theatre.

Post-operative management

After the operation general anaesthesia is reversed and the patient wheeled to the recovery room where observations of blood pressure, pulse rate, respiratory rate and temperature are monitored continuously until she is fully awake and stable. She is then transferred to the ward where observations are done 2 hourly for 12 hours then 4 hourly thereafter.

Patients who have had uncomplicated laparatomy for hysterectomy, ectopic pregnancy, ovarian cyst etc are usually kept in the ward for 4 days. For the first 24 hours the patients are maintained on intravenous fluids. Oral fluids are given when bowel sounds are established. Blood transfusion is given when indicated. Pethidine 100mg 8 hourly for 24 to 48 hours is routinely given for analgesia. Prophylactic antibiotics are given routinely. A check haemoglobin level is

determined on the third post-operative day. Before discharge, the patient is informed about the findings during the operation and a discharge summary is issued. Patients are reviewed in the gynecology clinic after six weeks or earlier when there is an indication.

The most common acute gynaecological operation is laparatomy due to ruptured ectopic pregnancy while total abdominal hysterectomy (T.A.H) is one of the common cold gynaecological operations done in this unit. Total abdominal hysterectomy is described below.

TOTAL ABDOMINAL HYSTERECTOMY

Induction and maintenance of general anaesthesia are done as described above. A vulvo-vaginal toilet is done with antiseptic solution such as hibitane or savlon. Aseptic catheterization is done and the catheter is left in situ to maintain continuous bladder drainage during the operation. Pelvic examination under anesthesia is done and the findings noted. The vagina is then painted with methylene dye or iodine. The abdomen is thoroughly cleaned with Hibitane or Savlon and painted with iodine and then draped with sterile towels. The abdomen in opened in layers, either through a pfannenstiel incision or through a lower midline incision. The intestines are packed away using wet gauze packs and a self retaining retractor applied.

The round ligaments are identified and beginning on either side using straight long artery forceps the round ligament is double clamped and divided between the two forceps. The lateral stump is transfixed with no.0 or no. 1 vicryl. This procedure opens the anterior leaf of the broad ligament, which is pushed forwards through this opening with a surgeon's finger and incised with fingers. The same is done for the opposite side.

The next step depends on whether the tube and the ovary are to be saved or removed. If they are to be saved, the tube and the ovarian ligament are double clamped en masse and cut using a scalpel. The distal clamp holds the ovarian vessels as they approach the anastomosis with the uterine vessels. This stump is ligated using a transfixed vicryl no. 1 or no. 0. The same is done for the opposite side. If the tube and the ovary are to be removed with the uterus, the infundibulo-pelvic portion of the broad ligament is double clamped with long curved artery forceps with the tips reaching the open window in the broad ligament. The ligament together with ovarian vessels are divided between clamps and ligated using vicryl number 1 or number 0. The same is done for the opposite side.

The reflection of the bladder peritoneum onto the uterus is then freed by extending the incision in the anterior leaf of the broad ligament towards the midline. The bladder is thus separated from the lower uterine segment, the cervix and the vagina by careful sharp and blunt dissection of the fascial fibres beneath the bladder wall. Usually the bladder can be displaced into the lower pelvis quite easily, but if it is adherent, it is surgically released and not bluntly forced.

Next the posterior leaf of the broad ligament on either side is cut parallel with the side of the uterus to better demonstrate and skeletonise the uterine vessels between the leaves of the broad ligament for clamping. The uterine vessels are double clamped and cut using a scalpel and freed from the uterus by extending the incision around the tip of the distal clamp. This enables adequate ligation. Care should be taken to avoid freeing the tissue beyond the tip of the clamp, as this could permit bleeding from the collateral vessels that are not included in the clamp. Before clamping and cutting the uterine vessels, it is always advisable to palpate the lower portion of the pelvic ureters as they course beneath the uterine

artery lateral to the internal os and pass medially through the base of the broad ligament to the trigone of the bladder. The uterine vessels are ligated with vicryl no. 1. The same is done for the opposite side.

The uterus is retracted forward and upward to demonstrate and stretch the uterosacral ligaments posteriorly. A transverse incision is made through the uterine reflection of the cul-de-sac peritoneum between the attachments of the two uterosacral ligaments. The peritoneum is then incised with the scalpel and reflected, mobilizing it past the cervix to the posterior vaginal fornix. Care is taken not to dissect extensively laterally where the haemorrhoidal vessels are inserted into the rectum. Each uterosacral ligament is double clamped, cut and ligated with a no. 1 vicryl suture. Here, particular care is exercised to avoid the pelvic portion of the ureter as it courses along the base of the broad ligament. Next the cardinal ligaments on either side of the uterus are clamped, cut and ligated.

More commonly, the uterus is removed by the open technique in which the anterior fornix is opened initially with the scalpel and the vagina is circumcised by a sharp knife or scissors.

As the anterior, posterior and lateral margins of the vagina are opened, straight artery forceps are used to secure vaginal margins. These margins are then closed using a series of figure-of-eight sutures. Particular care is taken when tying the lateral angles to ensure the descending vaginal branches of the uterine vessels are securely ligated.

Suspension of the vaginal vault is done by tying the peritonization suture to the lateral and mid sutures of the vault. Peritonization is accomplished by means of

continuous number 1 chromic catgut suture that first pierces the vaginal walls near the midline and passes through the posterior leaf of the broad ligament, the free margin of round ligament, then through the infundibulopelvic ligament, the free margin of round ligament and the anterior bladder peritoneum. The suture is tied at the center. The same is done for the opposite side with the suture being tied at the midline and lateral angles. If the ovaries have been preserved an alternative suspension may be used in which the tip of the broad ligament is stitched separately with a purse string of no. 2/0 chromic catgut. The free margin of the pedicle is left high against the pelvic wall and is not anchored to the vaginal vault. This is advised in order to avoid subsequent dyspareunia and avoid stretching of the ovarian vessels with possible thrombosis, ischaemia and cystic changes of the ovary. After this abdominal viscera are well inspected. If haemostasis has been achieved and instruments and swabs count are normal, the abdomen is closed in anatomical layers. The post operative management is as described above.

OBSTETRIC SHORT CASES

OBSTETRIC CASE 1

SEVERE MALARIA IN PREGNANCY, INTRAUTERINE FETAL DEMISE, SUCCESSFUL CHEMOTHERAPY AND BLOOD TRANSFUSION

NAME: SM. IP.NO. 0573247
AGE: 19 DOA. 7TH FEBRUARY 2004
PARITY: PRIMIGRAVIDA DOD: 13TH FEBRUARY 2004
LMP. 17TH JUNE 2003 EDD. 25TH MARCH 2004; GBD 33+

Presenting complaints
SM, a 19 year old female was brought to labor ward by her mother with history of headache, fever, and weakness for duration of two weeks.
She was reported to have altered mental status six hours prior to admission.

History of presenting illness
She had been well till about 2 weeks prior to admission, when she developed these symptoms. She had recently traveled to Kakamega in Western Kenya to attend a relative's funeral. When she first experienced the symptoms she went to a City Council clinic, where she had been attending antenatal clinic. She was given 3 tablets of Fansidar, which she swallowed at the clinic. She experienced some relief but the symptoms recurred and had worsened over the previous two days prior to presentation at Kenyatta National Hospital.

Past medical and surgical history was not significant.

Obstetric and Gynecologic History
Menarche was at fifteen years. She had regular menses, lasting 4 days with 28 to 30 day cycles with normal flow.
There was no history of dysmenorrheal, and she had not used any form of contraception.

She had attended antenatal clinic at Nairobi city council clinic but the card was not available.

FAMILY AND SOCIAL HISTORY

She was a single unemployed lady living with her parents in Kawangware, Nairobi.
No chronic illness in the family.
She did not use alcohol or tobacco.

PHYSICAL EXAMINATION

She was comatose, febrile, was markedly pale, and was sweaty. There was no jaundice

Vital signs

Temperature was; 39.5 degrees Celsius
Blood Pressure; 99/68 mmHg
Pulse rate; 150 /min
Respiratory Rate; 28 /min

CNS; She was comatose with a Glasgow Coma Scale of 10. Her neck was supple and Kerning's sign was negative.

RS: She had mild tachypnoea but the chest was clear on Auscultation.

CVS: Tachycardia with a systolic murmur

PA. Fundal height was 34cm; Presentation was Cephalic and the lie was Longitudinal. The fetal heart was 150 and regular.
No Uterine contractions were marked.

Laboratory investigations

1. Malaria smear was positive (scanty)
2. Random blood sugar 5.4 mmol/ml
3. Hb. 3.8 g/dl.
4. WBCS 8,9300
5. Plts. 150,000.
6. MCV 81.7 fl.
7. Blood group was 0 positive

MANAGEMENT

She was started on:-

(a) I.V. Quinine 600mg in 500 mls of 5%dextrose to run for 4 hrs 8 hourly with plain 5% dextrose in the intervening 4hrs.

(b). I.V. Zinnacef 750mg 8hrly since she was a very ill patients and coexisting infections morbidity could not be immediately ruled out.

(c) Transfused two units of O- positive blood.

On 8th June 2005

The patient was awake and alert. She was also oriented in time place and person. Maximum temperature was 38

At 2.30 pm. the nurse reported that fetal heart tones were undetectable with a feto-scope.

An Ultrasound scan was ordered and was done the following morning. It revealed a 30- week fetus in cephalic presentation with no cardiac activity demonstrable.

Coagulation screen

PTT. 17 sec. (control 16 sec.)

PTI. 88%

INR 1.15%

KCCT Test 79 sec. (control 38 sec.)

Induction of labor

Her cervix was assessed and found to be unfavorable. A decision to induce labor with Prostaglandin PF 2a was made.

This was successful and she expelled an MSB male, weighing 1350gm.

The patient was doing well and was discharged home on the 4th day to complete seven days of Quinine and Zinnacef.

She did not return to the clinic for follow up and it is most likely because she had fully recovered.

Follow up

The client was seen in the postnatal clinic ten days after discharge. She was in good general condition though clinically pale. There were no neurological deficits. Her breasts were not active.

A full blood count was done.
She had hemoglobin of 7 g/dl and was asymptomatic for anemia. She was counseled on malaria prevention by use of insecticide treated bed nets and malaria prophylaxis when traveling to a malaria zone.
She was also counseled on family planning.

DISCUSSION

Malaria remains today, as it has for centuries, a major burden for tropical communities and a danger to travelers(1).Italian writers believed it was caused by offensive vapors emanating from Tiberian marshes and hence the name malaria which literally means 'bad air'. In Kenya, two-thirds of the Population is regularly affected by the most deadly malaria parasite: *Plasmodium falciparum.* It accounts for 30% of all out-patient attendance and 19% of admissions to health facilities. Cumulatively, Malaria represents a massive barrier to socio-economic development. (2).

The level of endemicity of malaria in Kenya varies from region to region and there is a big diversity in risk of malaria largely driven by the climate and temperature. On this basis, Districts have been broadly categorized into five classes of malaria ecology namely: - Lakeside and Coastal endemic areas; transmission here is perennial and the parasite prevalence in children often exceeds 50%.The highland ecology. The potential for transmission is low, but due to changes in weather, there is potential for epidemics affecting all members of the community. The arid ecology lends itself to seasonal transmission with low rates. Te fifth ecological category is the low risk areas which cover highlands within central Province and Nairobi.

Pregnant women and children under five years constitute a special risk group. The advent of HIV/AIDS further complicates the situation as it has been found that the prevalence and intensity of malaria infection is higher among HIV-positive, and the risk to the mother and the fetus exists regardless of parity.(3).
The patient presented was a primigravida in the third trimester.
She had probably lost her immunity since she had lived in Nairobi continuously for more than one year then traveled to a malaria endemic western Kenya. The loss of acquired immunity, in addition to her pregnant state made her a prime candidate for the severe and complicated malaria.

Human malaria is caused by the four species of the genus plasmodium. These are *Plasmodium vivax, Plasmodium ovale, Plasmodium malariae and plasmodium falciparum.*P .falciparum and p malariae are found in most malaria areas. P. falciparum is the dominant species in Africa, Haiti and Papua New Guinea. .P vivax predominates in Latin America .P ovale is rare outside west Africa.(1).In Kenya the falciparum species is the commonest accounting for 98 %of the cases.(2).It is the one responsible for the most severe forms of malaria and is almost responsible for all the mortality due to malaria. The pregnant state enhances the severity of falciparum malaria especially in non-immune primigravidae (4).

The prevalence of malaria in pregnancy is variable and in endemic areas it ranges from 21% to 42% (5,6,).In hyperendemic areas, up to 47% of placentae of primipras were found to be parasitized.(5)

Malaria infection involves the interaction between the malaria parasite, the human host and the Anophelene mosquito vector and the environment(Physical, biologic, and socio-economic).The level of transmission is determined by the seasonal incidence and prevalence of infection in the human reservoir host; characteristics of the local vector mosquitoes including their feeding and resting habits, susceptibility to infection and its effectiveness as a vector and the susceptibility of the local population to infection as well as the local climatic and environmental features that affect vector breeding and sporogony rates.(1). The Kenyan Ecology provides an ideal environment for the malaria carrying mosquito, especially around Lake Victoria and the Coast.
(2)

Human infection begins with inoculation of sporozoites from infected mosquito salivary glands during a blood meal. On the other hand the mosquito becomes infected when it feeds on human blood containing gametocytes, the asexual forms of the parasite. Following inoculation the sporozoites travel through the blood stream of man to enter individual hepatocytes in the liver. This takes about 30 t0 45 minutes by which time the sporozoites have disappeared from circulation. Within the hepatocytes they undergo asexual multiplication to form tissue schizonts (Exo-erythrocytic schizogony). Schizonts rupture to release 10,000 to 30,000 merozoites per hepatocyte into the blood stream. The released merozoites re-enter the blood stream and invade more red blood cells (RBCs). Within the RBCs they mature successively to ring trophozoites and schizonts. Schizont stage parasites lyses the host erythrocytes releasing the next generation of merozoites which go ahead to invade other RBCs.

Alternatively some intra-erythrocytic parasites differentiate into male and female gametes .These is taken up by mosquito vectors during a blood meal. Within the mosquito mid-gut, the haploid male and female gametes fuse to form a diploid

zygote. The diploid zygote transforms into a Ookinette. This invades the gut of the mosquito develops into a Oocyte ,which undergoes a reduction division to produce haploid sporozoites that migrate to the salivary gland to complete the cycle by infecting humans.
In *P.vivax* and *p.ovale*, some parasites remain in the liver as hypnozoites. These may become active 6 to 11 months later causing relapses.

The pathophysiology of malaria results from the destruction of RBCs, liberation of parasites and erythrocytic material, and the host reaction to these events (5).Infections due to falciparum malaria is more severe and is qualitatively different from that of other plasmodia. *P.falciparum* is the only human malaria that produces microvascular disease. There is a semi-quantitative relationship between the magnitude of parasitemia and risk of death especially in the non-immune individuals. Rupture of parasitised RBCs releases endotoxin-like glycolipids that stimulate endotoxin-sensitive macrophage monocytes series and possible endothelium to release cytokines, including tumour necrosis factor (TNF) and interleukin-1 (IL-1) initially .These in turn induce other pro-inflammatory cytokines ,IL-6, and IL-8 . Cytokines are responsible for most of malaria symptomatology. Synchronized release of merozoites and cytokines, in particular TNF characterizes paroxysms e.g. fever, chills, temperature spikes and sometimes rigors, followed by sweating and vasodilatation.(3).

Severe malaria infection can result in multi-organ failure .This is thought to be due to diffuse microvascular disease resulting from large numbers of adherent parasitized RBCs which produce functional obstruction to flow. Secondary organ dysfunction results from hypoxia and hypoglycemia. The most common complications include cerebral malaria, Anemia, Lactic acidosis, pulmonary edema, renal failure and Hypoglycemia.

In pregnancy malaria parasites have an affinity for decidual vessels and may involve the placenta extensively even when no parasites can be detected peripherally. The incidence of abortions, preterm labor, and low birth-weight is increased in malaria. Fetal demise may result from hypoglycemia or hypoxia. The patient presented had cerebral malaria, severe anemia and intra-uterine fetal demise (IUFD).

The pathophysiology of Cerebral malaria is thought to be mainly metabolic, rather than mechanical (3,5). Pathologic studies of patients dying from cerebral malaria show that, up to 94% of cerebral micro-vessels have adherent parasitized RBCs (Vs. 13% of controls with non-cerebral malaria). However there is only

modest histopathologic evidence of tissue damage and hence the rapid reversibility with treatment.(1,6). 10 to 12 % of persons surviving cerebral malaria have some persistent neurological abnormalities at discharge and may result from prolonged hypoxia and hypoglycemia.

Anemia in pregnancy, for which malaria represents an important cause, is associated with Low Birth weight infants, which is one of the leading causes of perinatal morbidity and mortality in Africa. Rukaria and associates (1999) found that two-thirds of pregnant women with falciparum malaria were anemic and the degree of anemia being directly proportional to the level of parasitemia. In a study done in Kilifi District of Coast Province in 1993, primigravidae with plasmodium Falciparum parasite had more than two times the risk of severe anemia (Hb.< 7g/dl) compared to those who did not have the parasite. The presence of the parasite was associate with an average drop in mean hemoglobin of 2.2 g/dL. (4).

Erythrocyte destruction in malaria is multi-factorial; there is the rupture of parasitised and non-parasitised RBCs at merogony; there is phagocytosis of parasitised and non -parasitised cells, as well as immune-mediated heterolysis. In addition, cytokines such as TNF suppresses hemopoiesis. Thrombocytopenia results from splenic clearance and consumptive coagulopathy. Disseminated Intravascular coagulopathy (DIC) is significant in 15% of severe malaria cases.

Lactic acidosis and hypoglycemia are important metabolic derangements in severe malaria. Lactic acid results from tissue anaerobic glycolysis as a result of microvascular obstruction, the production of lactate by malaria parasites and the failure of renal clearance .There is increased lactic acid levels in arterial, capillary and venous blood. Lactic acid levels are also elevated in cerebro-spinal fluid (CSF). The level of lactic acidosis is directly related to the severity of the disease. Indeed, the venous lactate concentration four hours after initiation of therapy is the best prognostic indicator in severe malaria.(4).
(Hypoglycemia, renal failure, pulmonary edema,)

Immunity in malaria is acquired through constant exposure to malaria parasites. Premonition refers to a state of infection, without illness. This immunity is specific for both the species and the strain of the infecting malaria parasite. This kind of immunity confers protection against heavy parasitemia and severe disease .It may be decreased in pregnancy, and is lost when a person leaves an endemic area for a few months. The severity and complications present in the client being discussed relate to her having been living in a malaria-free zone for

more than one year in which case the immunity acquired earlier had been lost or at least diminished.

Some genetic disorders affecting RBCs confer some protection against malaria parasite due to its ability to interfere with the erythrocytic stage of the life cycle .These are ; sickle cell disease, Thalaseamia, and Glucose-6-phosphate Dehydrogenase deficiency (G-6.PD). Those lacking the Duffy antigen a and b (F^{ya} and F^{yb}) blood group determinants are protected against *P. vivax* infection.
The diagnosis of malaria is based on the History, Clinical examination and a demonstration of the parasites in a peripheral blood film. The clinical picture and epidemiologic circumstances should raise the index of suspicion. In an individual from an endemic area with fever, or a history of recent travel to an endemic area, a presumptive diagnosis of malaria should be made. (2).
A thick and a thin blood smears are useful in searching for and identification of malaria parasites. The thick film is about 20 to 30 times more sensitive than a thin film in demonstrating the parasites. The thin film is more valuable in the identification of the species of the parasite. And accurate parasite counts. A negative smear does not rule out malaria. This is due to the paroxysmal release from erythrocytes in addition to sequestration in peripheral vasculature. Rapid Diagnostic Tests (RDT) is now available in some centers. These are immunochromatographic tests based on specific parasite antigens. These are Plasmodium Lactate Dehydrogenase (pLDH) activity or Histidine- Rich Protein (HRP). Most of the available tests are specific for *Plasmodim falciparum*. They are sensitive and can detect low parasitemia. They are not recommended for use for monitoring and follow up since they remain positive for up to 2 weeks following effective antimalarial treatment and clearance of parasites (1)
Placental parasitemia may exist in the absence detectable parasitemia in the peripheral blood.
Placental parasitization and resulting tissue reaction compromise utero-placental perfusion. Combined with maternal anemia this may lead to intra-uterine growth restriction (IUGR), Low Birth weight (LBW) and even intrauterine fetal demise (IUFD) The patient presented with severe anemia and later the fetus died while the mother was undergoing treatment. Hypoglycemia due to Quinine therapy and the use of glucose by the parasite may have contributed to the demise.

The level of parasitemia has important prognostic significance. A laboratory method for estimating parasitemia is as follows:

a) Percentage of Red blood cells infected. This is done using the thin film and estimates the number of infected cells per 1000 cells. Greater than 5% is considered heavy parasitemia.
b) Estimating the number of parasites per milliliter of blood. Using the thick smear the number of parasites per 100 or 200 WBCs or preferably 500 white blood cells (WBC) is estimated. The number of WBCs per mililiter of blood is used to compute the number of parasites. 250,000 parasites per millilitre of blood is considered heavy parasitemia.
c) Reporting number of parasites per high power microscope field (HPF) using thick smear.

Number of malaria parasites	HPF	Parasitemia	
1-10	+100	+	scanty
11-100	+100	++	few
1-10	+1	+++	moderate
>11	+1	++++	heavy

For purposes of management, malaria is classified as either uncomplicated malaria or severe malaria.
Uncomplicated malaria is defined as the presence of parasites in a peripheral blood film without any of the conditions that constitute severe malaria. This is usually characterized by fever in addition to chills, muscle aches, joint pains, nausea, vomiting and profuse sweating.

Severe malaria is a life-threatening manifestation of malaria, and is defined as the detection of *p. falciparum* in peripheral blood in the presence of any of the following clinical or laboratory features (singly or in combination) listed below:

Features and definitions of severe Malaria

- Prostration(inability or difficulty to sit upright, stand or walk without support)
- Alteration in the level of consciousness (ranging from drowsiness to deep coma).
- Cerebral malaria (Unarousable coma not attributable to any other cause in a patient with falciparum malaria)
- Respiratory distress (acidotic breathing)
- Multiple generalized convulsions (2 or more in over 24hrs.)

- Circulatory collapse(Shock, septicemia)
- Pulmonary edema
- Abnormal bleeding (DIC)
- Jaundice
- Hemoglobinuria (black water fever)
- Acute renal failure (presenting as oliguria or anuria)
- Severe anemia (Hb. < 5g/dl or Hct <15%)
- Hypoglycemia (blood glucose level < 2.2. mmol/L)
- Hyperparasitemia (> 200, 000, ul in high transmission areas and 100,000/ul in low transmission areas.)
- Hyperlactatemia. (2006 guide)

The treatment of malaria consists of two aspects; supportive and definitive drug treatment. Follow up is also important as it permits monitoring of response to therapy. Failure of treatment, non-compliance and complications can also be detected early.

The Ministry of Health in Kenya recommends that parasitological diagnosis should be done in all women presenting with fever or history of fever. However, where such facilities are not readily available, a patient with such a history in the absence of any obvious cause should be presumptively classified and treated as malaria.

The recommended treatment for all uncomplicated malaria in all trimesters of pregnancy is a 7-day therapy of oral Quinine. Arthemether-Lumefantrine can also be used in the second and third trimester. If Quinine is not available, Artemehter-Lumefantrine may be used in the first trimester.

Supportive treatment is aimed at preventing Hypoglycemia, fetal monitoring, treatment of anemia and fever.

Severe Malaria is a medical emergency that puts both the lives of the mother and the fetus at high risk. Aggressive management is essential (1).

Eclampsia and Meningitis ought to be considered as a differential diagnosis. The patient presented had presumptive treatment for meningitis.

The drug of choice for the treatment of severe malaria is Quinine infusion.

This is given as an initial loading dose of 20mg/kg (maximum 1200mg) diluted in 15mls/kg (maximum 500ml) of isotonic solution (5% dextrose or normal saline) to run over four hours.

8 hours after commencement of the initial dose of Quinine, a maintenance dose of 10mg/kg (maximum 600mg) is given in the same way. This is repeated eight hourly until the patient is able to take medication orally.
Once a patient is able to take orally, she should complete 7 days of Quinine treatment or a full dose of Artrmether_Lumefantrine.

Artesunate or Artemather may also be used intramuscularly for the treatment of severe Malaria.

Supportive treatment is geared towards the management of the manifestation of severe malaria.
Hypoglycemia is managed with intravenous dextrose. Blood sugar should be monitored serially until patient is able to tolerate feeds. Severe anemia is treated with blood transfusion. Care must be taken to maintain adequate fluid and electrolyte balance. Strict input and output charted is essential in a comatose patient. Nursing care should focus on prevention of aspiration and development of pressure sores.
The patient presented had altered mental status and severe anemia. She was catheterized for purposes of fluid monitoring.
She was also transfused two units of blood to correct the anemia.

Follow-up is an integral part of the treatment of malaria. This is important in order to ensure adherence to treatment and to detect treatment failure. It is also important to monitor hemoglobin level, especially for pregnant women and to continue hematinic supplementation until six weeks following delivery.

Treatment failure is defined as failure to achieve the desired therapeutic response after initiation of therapy (8). This is not synonymous with drug resistance, but may be due to poor adherence, unusual pharmacokinetic properties in that individual or drug resistance. Failure should be suspected when a patient deteriorates clinically at any time or symptoms persist 3 to 14 days after initiation of the appropriate drug therapy. Development of symptoms after 14 days, where there has been clearance of the symptoms should be considered as re-infection and should be treated with first line drug.

Malaria is a global problem and so efforts to control and control it must have a global perspective. The World Health Organization launched the Roll Back Malaria (RBM) strategy in 1998. Its goal was to half malaria deaths worldwide by year 2010. This was endorsed by African Heads of State on 25th April 2000, in Abuja Nigeria. The Abuja Declaration promised effective management, Control and Surveillance.

Embracing the above principles and Aims, the Kenya government launched its Action Plan: the National Malaria Strategy 2001- 2010 (2). This brings together the Ministry of Health, other stakeholders and Development partners. Its plans and actions are evidence-based, coordinated and totally integrated. It has four strategies and two support structures.
Clinical Management: Providing prompt effective treatment
Management on malaria and anemia in pregnancy
Vector control using Insecticide Treated Bed Nets (ITN) and other methods
Epidemic preparedness and Response

The support structures are:-
Information, Education and Communication
Monitoring, evaluation and research

Through this strategy, all pregnant women presenting at Antenatal Clinics and child welfare clinics receive insecticide treated nets at 50 shillings, receive Intermittent preventive therapy with Sulphadoxine-pyrimethamine, at least twice in pregnancy and receive Iron and folic acid supplementation.
This way the incidence of parasitemia, anemia low birth –weight infants that result from Malaria is expected to decrease (7).

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OBSTETRIC CASE 2

ANTEPARTUM HEMORRHAGE, ABRUPTIO PLACENTAE: EMERGENCY CESAREAN SECTION, FRESH STILLBIRTH

NAME. I E. IP.NO. 1103549
PARA 1+ 0 Age: 30YEARS
LMP. 17.12.2005 DOA. 4.7.2006
EDD. 24.9.2006 DOD. 11.7.2006
GBD. 29 WEEKS

Presenting complaints
She presented with a history of vaginal bleeding of sudden onset for four hours prior to admission.

History of presenting illness
The patient was well until four hours prior to admission when she started experiencing per vaginal bleeding. The bleeding was of sudden onset and consisted of fresh blood. Due to the amount of blood loss, she immediately sought help and was rushed to hospital. She also reported unremitting lower abdominal pain and backache that she noted on her way to hospital. She did not think there was drainage of liquor. On arrival she at the hospital she appeared hemodynamically stable but all her clothing were soaked in blood.
For this pregnancy she had attended antenatal clinic at Bungoma health centre where she had been diagnosed with elevated blood pressure. No other problems had been identified during that period. Six weeks had expired since her last visit to the clinic.

Past Obstetric History
Her first delivery was in 2000. She had twins; one was delivered vaginally and the second was delivered by cesarean section as retained second twin. The antenatal period and puerperium periods were normal.

Gynecologic history
She attained menarche at 15 years. She had regular menses and had been on different forms of contraception at different times. Prior to this pregnancy she had used oral contraceptive pills.

Family and social History

She was a single mother. She engaged in business which involved her transporting goods from Bungoma to Nairobi. She had traveled from Bunguma by bus the night before she developed the above complaints. She did not take alcohol or use tobacco products.

Past Medical history was not significant

Physical Examination

A quick general examination was done. She was alert and oriented but dizzy. She was not pale. Her radial pulse was palpable at 112 beats per minute. Blood pressure was 100/70. Her respiratory rate was 26 /min.

On abdominal examination, the fundal height was 32 cm, which was larger than estimated gestation by dates; the uterus was tender with a slightly increased tone. No contractions or fetal heart were detected.

Diagnosis

A diagnosis of Antepartum hemorrhage most likely due to placental abruption and fetal demise was made.

Management

On speculum examination there was active vaginal bleeding with a large amount of blood clots in the vaginal canal. At this juncture a decision was made to take the patient immediately to theatre. An intravenous access had been obtained and secured. Blood was drawn for typing and cross-matching. Normal saline solutions were running in two intravenous catheters.

In theatre, the patient was put under anesthesia, prepped and draped.

The abdomen was opened using a sub-umbilical incision. The Uterus was opened with a low uterine segment incision.

Intraoparatively a fresh male stillbirth weighing 900gms, was extracted.

The placenta was found to be completely separated. Blood clots estimated at about 1200mls were evacuated.

Bilateral tubal ligation was done as per the mother's request.

The patient was reversed and after observation in the recovery room was transferred to the antenatal ward in stable condition.

On the first postoperative day, the client complained of dizziness and headache. She was also tachycardic at 118 bpm. A sample was taken for packed cell volume (PCV) which came back as 15%. She was transfused two units of fresh blood. After transfusion she improved and did well after that her blood pressures had been normal after the second day of delivery. She was discharged home on the fifth postoperative day.

Investigations

Antenatal profile: Hemoglobin was 11.4g/dl at admission

Follow up.

The patient remained in the hospital for one week after discharge due to financial reasons. She was reviewed before discharge and she was recovering well.

She was instructed to visit her clinic in Bungoma after another two weeks or any time she needed help.

DISCUSSION

The case presented was a 30 year old who presented at 30 weeks gestation with sudden onset of vaginal bleeding.

She had one previous scar and pregnancy induced hypertension both risk factors for placenta abruption.

Abruptio placentae refer to the premature separation of a normally implanted placenta prior to the delivery of the fetus (1). This is a uniquely dangerous condition to both the mother and the fetus because of its potentially serious pathologic sequelae. The condition is most commonly made in the third trimester, but the term may be applied after the 20th week of pregnancy when the clinical and pathologic criteria are met. (2). Abruptio placentae, placenta previa and postpartum hemorrhage are the main causes of maternal hemorrhage which is one of the three leading causes of maternal mortality

Abruptio placenta accounts for 30% of third trimester bleeding (1, 3).This is a uniquely dangerous condition to both mother and the fetus because of its potentially serious pathologic siquelae.

The diagnosis is most commonly made in the third trimester, but the term may be applied after the 20th week of pregnancy when the clinical and the pathologic criteria are met. (2).

The reported incidence of abruption placenta varies widely in published series according to the population studied and the diagnostic criteria applied., from 0.5 % to 1.3% (4), but it is responsible for as much s 15 to 20% of perinatal mortality(3). Abruption severe enough to kill the baby is rare, being found once in about 420 to 750 deliveries (6, 7). The patient presented had fetal demise as a result of severe abruption.

Abruption is initiated by bleeding into the deciduas basalis (2). In most cases, the source of bleeding is a small arterial vessel in the basal layer of the deciduas that are pathologically altered and prone to rupture. The resultant hemorrhage splits the deciduas leading to premature separation of the placenta and further bleeding (8). The hecatomb shears off adjacent denuded vessels, producing further bleeding and enlargement of the area of separation (8,).

The degree of separation may be partial or complete and the occurrence may be acute or chronic (3). Two principal features of premature separation of the placenta are recognized depending on whether the hemorrhage is external or concealed.
The concealed form accounts for approximately 20%. The blood is confined within the uterine cavity. Placental detachment may be complete and the complications are often severe. In the external form (80%), the blood drains through the cervix. Placental separation is more likely to be incomplete and the complications are fewer and less severe. Whether it is revealed or concealed may depend on the site of placental implantation. Low lying implantation is more likely to lead to revealed hemorrhage while a fundal implantation may lead to concealed form. The blood loss through the cervix is a small fraction of that lost from circulation and is not an indicator of the severity of the condition.
Placental abruption has been classified into three grades, based on clinical and laboratory findings.
Grade 1: Abruption is associated with minimal clinical symptoms. Both, mother and fetus, being stable. The amount of bleeding is slight, uterine activity is mild, and there is no evidence of coagulopathy.
Grade 2: The symptoms are more marked, vaginal bleeding is of moderate quantity and uterine activity is present with possible titanic contractions. Maternal vital signs may reflect significant blood loss and there is usually evidence of fetal distress. Laboratory evidence of a mild, early cougulopathy is present.
Grade 3: This is an emergency situation. The degree of hemorrhage is severe and hypovolemic shock is often present. Painful titanic uterine contractions are typical. Fetal demise is uniform and intrauterine fetal demise is common. Coagulopathy is obvious with decreasing clotting factors and thrombocytopenia.

Although the precise cause of placental abruption is unknown, numerous factors have been suggested to play a causal role. Underlying disease of the deciduas and uterine blood vessels seems to explain best the diversity of associated factors that have been described.

For pregnancies culminating in abruption, there is often evidence of a long-standing pathologic feto-maternal relationship in that 81% of infants born at les than 36 weeks gestation are below the mean birth weight for gestational age.(7,8). The fetus extracted from the mother presented was small for gestational age.
Maternal hypertension, both chronic and pregnancy induced, is a major risk factor for placental abruption (9, 10, 11). Nearly 50% of cases, especially those with concealed hemorrhage are associated with maternal hypertension. Healthy

individuals can lose up to 25% (1500cc) of blood volume and still remain hemodynamically stable.(12). More than 20% of patients with abruption will be erroneously diagnosed false labor.

The diagnosis of placental abruption must always be considered in patients with ante partum hemorrhage. In most cases the diagnosis is made on the basis of clinical presentation. The role of ultrasound examination is important in excluding placenta previa. It is much less reliable in identifying placenta abruption, but a spectrum of sonographic findings will support the diagnosis of abruption. (13, 15).

Any patient suspected with abruption should be admitted immediately. If the fetus is alive and is at or near term, delay in instituting an effective plan for delivery may have dire consequences (14). In Knab's series (1987), 22% of all perinatal deaths occurred after hospitalization, but before delivery, 30% within 2 hours of admission.

A rapid evaluation of the mother's condition is done initially. This should separate patients requiring emergency measures and those in whom expectant management is an option.

For patients requiring urgent intervention, large bore intravenous access should be established. Blood products should be made available on demand. Ongoing assessment of maternal hemodynamic status should be done and if fetus is viable, continuous fetal monitoring should be done concurrently.

A Foley's catheter should be inserted since urine output is a very sensitive indicator of tissue perfusion and should be maintained at 30mls/ minute or more. A clot lysis test (bedside clotting time) should be performed as it can provide a rapid assessment of fibrinogen level. If a clot doesn't form within 6 to 10 minutes, or if it forms then lyses within 30 minutes, a coagulation defect is probable and suggests a fibrinogen level of < 150mg% (normal > 350mg%). (3).

In preterm gestation with grade 1 abruption, expectant management can be considered. The feasibility of this depends on a variety of factors including maternal hemodynamc status, coagulation profile, fetal status and gestational age. If uterine irritability or premature contractions are present in this type of patient, tocolysis with Magnesium sulfate is reasonable. This has been shown to increase the gestational age of delivery (6,17).

Expectant management would not be an option for the majority of cases. Delivery is usually indicated because of maternal and or fetal condition. The issue to be decided, in this situation, is whether there is time to allow labor and vaginal delivery without undue risk to mother, fetus or both. In the setting of fetal compromise at a viable gestational age, prompt delivery by cesarean section should be undertaken, allowing for maternal stabilization. (13,16,17).

If the patient is already in advanced labor and maternal and fetal status is stable, labor may be allowed to progress with frequent (2-3 hrs) assessment of the coagulation status. Evidence of coagulopathy should prompt blood/ blood product replacement, not necessarily surgical intervention. After vaginal delivery, hemostasis depends more on uterine contractions so that vaginal delivery is preferred in the face of coagulopathy.

Maternal indications for cesarean section are uncontrollable hemorrhage, with or without a live fetus and uterine apoplexy, as manifested by hemorrhage with secondary relaxation of a previously spastic uterus, or a refractory uterus with urgent delivery necessary.

The most common complication of placental abruption is maternal hemorrhage. Crystalloids can be used for fluid replacement till cross-matched blood is available. Excess transfusion may occur when excess of 1 to 1.5 times the patient's estimated circulating volume is replaced (about 8units). This may lead to dilutional coagulopathy which may be confused with disseminated intravascular coagulopathy (DIC). Electrolyte disorders, especially potassium may also occur with large volumes of blood transfusion.

DIC is an important complication of abruption. Clinically significant coagulopathy is detectable in 10% of cases of abruption and in 30% in the presence of fetal demise. Entry of Thromboplastins into circulation from the site of placental injury is the inciting event. DIC has been thought to be a significant antecedent to amniotic fluid embolus syndrome (13).

Fresh blood, Cryoprecipitate, and platelets can be used to correct DIC. Prophylactic administration of Heparin to block conversion of prothrombin to thrombin has been successfully employed in the management of defibrination associated with a dead fetus. The blockage of conversion of prothrombin to thrombin slows down the consumption of coagulation factors (8).
The most sensitive laboratory test for the diagnosis of abruption –related coagulopathy is the determination of fibrinogen degradation products (FDPs)

(22). Delivery of the fetus and placenta is the ultimate treatment for DIC with abruptio placenta. (7).

Ischemic damage to the kidneys, liver, adrenal gland, pituitary gland (Sheehan's syndrome) can also result from Placental abruption. Since placental abruption results in the disruption of the fetal-maternal exchange surface, perinatal mortality is common, occurring in 50- 80% of cases of abruption. Maternal mortality is reported to range from 0.5 to 5 % in various parts of the world.(8,10,and 12)

Abruption is a uniquely dangerous condition for both the mother and fetus, but a high index of suspicion; early diagnosis and definitive therapy should reduce associated morbidity and mortality significantly.

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OBSTETRIC CASE 3

TWIN GESTATION; ONE IUFD, ONE LIVE—VAGINAL DELIVERY

NAME; I.O.
AGE: 25 YEARS
PRIMIGRAVIDA
LMP 16TH NOVEMBER 2005
EDD: 23RD AUGUST 2006

IP.NO: 1101346
DOA: 22ND JUNE 2006
DOD: 27TH JUNE 2006
GBD: 32 WEEKS

Presenting complaints
She gave a history of low abdominal pain for one day. The abdominal pain was on and off but sporadic. There was no drainage of liquor or vaginal bleeding.

History of current pregnancy
She had attended antenatal care at a City council clinic. The fundal height was large for dates and she had been told she may have twins. The pregnancy had otherwise been uneventful.
Antenatal profile
Blood group O-positive
HIV Negative
VDRL Negative

Past Gynecologic History
Menarche was at 15 years. She had regular menses, lasting 3 days with a 28-30 day cycle. There was no history of dysmenorrhea. She had used oral contraceptive pills which she stopped when she wanted to have a baby.

Family and social history
She was married and worked as a machine operator at EPZ. There was a family history of twinning. Her mother was a twin.
The past medical and surgical history was not significant.

Physical examination
She was a young lady in good general condition. She was not pale and had no edema.

Her respiratory, Cardiovascular and nervous system examination was normal

Abdominal examination

The fundal height was term and felt tense. Fetal parts were not easy to appreciate. A fetal heart was appreciated and was 160 and regular. No uterine contraction was detected.

Pelvic examination

The cervix was closed but partially effaced. The presenting part was elicited.

A working diagnosis of preterm labor with twins versus polyhydramnios was made.

Investigations

1. Obstetric Ultrasound found twin gestation:
   - Twin 1 was viable with a fetal heart of 176, presenting cephalic. The resistive index was 0.784
   - Twin 2 was dead and hydropic
   - The placenta was reported as fundo-posterior and not low-lying.
   - Mild polyhydramnios was suggested.
2. Bedside bleeding time was six minutes. The clot formed was stable.
3. Hemogram: Hb. 9.8g/dl; WBC 7800/mm3; Platelets 245,000/mm3

Management

A decision was made to pursue a conservative approach.

Bed rest: Fetal kick chart, daily bedside bleeding time was requested

Corticosteroids: Dexamethasone 8mg I.M. was commenced in anticipation of delivery within 48 hours

Antibiotics: Oral Augmentin 1gm twice daily was also started.

On 24th she had spontaneous rupture of membranes. Labor was augmented with Oxytocin and had vaginal delivery.

Twin 1: A live female infant who weighed 1100g and had Apgar score of 5/1; 6/5 and 6/10. She died after admission to nursery.

Twin 2: A macerated, edematous, hydrocephalic female stillbirth which weighed 1600g

The twins shared the placenta. The umbilical cords from both twins had filamentous insertions. There was no ridge at the base of the dividing membranes which indicated that the twins were monozygotic, diamniotic and monochorionic.

Postpartum the mother had no problem she was discharged home on Bromocriptine to suppress lactation. She was scheduled for review in the post natal clinic in one month.

DISCUSSION

The case presented in a 25 year old primigravida who presented with multiple gestations at 32 weeks. There was differential growth of the twins with death of one twin. The pregnancy was also complicated by polyhydramnios and preterm premature rupture of membranes and preterm labor and delivery with poor perinatal outcome. These are all recognized complications of multiple pregnancies.

Multiple gestatations are a high risk pregnancy and involve unique considerations due to the presence of multiple fetuses. Although the incidence of multiple gestations is approximately 1% of all births, their contribution to perinatal morbidity and mortality is disproportionately high (1). The major cause of morbidity and mortality is prematurity, birth trauma, growth disorders, congenital anomalies and fetal death.

Monozygotic twins result from a single ovum. They occur in 2.3-4 per 1000 pregnancies in all races. (2). This rate is remarkably constant and is not influenced by race, age of mother, or other factors.

Dizygotic twins (DZ) are produced by separately fertilized ova. Nearly 70% of twins are dizygotic and show hereditary patterns. The incidence of Dizygoic twins varies from 1.3 in 1000 in Japan to 49 in 1000 among the Yoruba tribe in Nigeria.(2). Oyieke (1978) found a rate of 10 in 588 births at Kenyatta National hospital (3). Mutungi (1990) found a rate of 10 in 466 births in the same institution (4).

Dizygotic is probably inherited via the female descendants of mothers with of twins. Women who are dizygotic twins or who have who are siblings of dizygotic twin mothers have a high twinning rate among their offspring than women in the general population. The mother of the case presented was herself a twin.

Parity does not influence the incidence of dizygotic twins but age does (5). The rate of DZ twins peaks between 35 and 40 years of age then declining sharply. Undernutriton appears to be a negative factor. Dizygotic twinning is more common among women who become pregnant soon after cessation of long term

oral contraceptive use. This may be a reflection of high 'rebound' gonadotropin secretion.

The use of ovulation enhancing agents has led to an increase in monozygotic twins but is most easily identified in triplets.(6). Use of Clomephene Citrate is associated with an incidence of multiple gestation of8% or more. The rate is even higher (25-35%) when gonadotropins are used. (1,7). This makes early ultrasound examination of patients receiving such treatment mandatory.

The outcome of the monozygotic twinning process depends on when the division of the ovum occurs. In one third of the cases, division occurs prior to the morula stage (day 3) and results in separate or fused placentae, 2 chorions and 2 amnions (Diamniotic, dichorionic). In two-thirds of the cases, division occurs after differentiation of the trophoblast but before the formation of the amnion (day 4 to 8). Te result is a single placenta, a common chorion and two amnions (monchorionic diamniotic). If division occurs between day 8 and day 13, the result is a single placenta, single amnion and a single chorion (monochorionic monoamniotic). Division occurring later than these, results in conjoined twins. (2).

The accuracy of diagnosis of twins varies from nearly 100% in populations where ultrasound screening is done routinely in early pregnancy to about 50% in large clinics services without ultrasound screening. Most multiple gestations can be diagnosed antenatally by maintaining a high index of suspicion. Exaggerated pregnancy symptoms, fundal heights greater than dates, multiple fetal parts, more than one fetal pole at the fundus, and auscultation of two fetal hearts differing by at least 10 beats or simultaneously by two examiners are all suggestive of multiple gestations. In modern obstetrics, the diagnosis is made by ultrasound. Depending on the gestation ultrasound can also document the presence of a dividing membrane, fetal sizes and sex, amniotic fluid volume and verify fetal anatomy.

Maternal serum Alpha-fetoprotein (MSAFP) testing can give an earlier diagnosis of multiple gestations. Values greater than 2.5 times the mean is an indication for ultrasound examination. Values higher than 4,5 multiples of the mean are suggestive of neural tube defects in the presence of multiple gestation.(7).

Once the diagnosis of multiple pregnancies has been made, subsequent antenatal care should address each of the potential complications associated with it. These

include: nutrition, prevention of anemia, monitoring of fetal growth and well being, and assessment for signs of pregnancy induced hypertension.
The most significant cause of morbidity and perinatal mortality in multiple gestation is preterm labor and delivery, pregnancy induced hypertension or intrauterine fetal demise. These compactions are found in 70% of multiple gestation.(7,8). Other complications are anemia, gestational diabetes, and pyelonephritis.

Hemorrhage before, during and after delivery is also common. (9). The case presented was complicated by fetal death, disproportionate fetal growth, congenital anomalies, preterm labor and delivery as well as perinatal death. Perinatal death is more frequent among second twins (9,10).

Preterm labor in more than 40% of twin gestations and in over 75% of triplet gestations.(9,11). Sonographic assessment of cervical length and cervico-vaginal assays of fetal fibronectin may be useful in predicting preterm labor (12). A cervical length less than 25mm at 24 weeks is associated with preterm delivery before 32 weeks; with an Odds ratio of 7.7. A positive cervico-vaginal fetal fibronectin assay at 28 weeks is also significantly associated with preterm delivery before 32 weeks; with Odds ratio of 9.4. tocolysis may only be useful in delaying delivery to permit transfer to an appropriate medical facility or allow for the effect of Corticosteroids on lung maturity.(9).

The optimum time to deliver multiple gestations is between 37 and 38 weeks. All should ideally be delivered by 40 Weeks. Use of prostaglandins for labor induction and Oxytocin for Augmentation are acceptable. Te route of delivery is predicted on the basis of the presentation of the first twin, estimated fetal weights, experience of the delivery team and the complaints of the patient. Cesarean section is advised in the circumstances of first twin presenting other than vertex and in all cases of monoamniotic twin gestations. Cesarean section may sometimes be required for the delivery of the second twin.(13). In the absence of continuous fetal monitoring, the second twin should be delivered within 30 minutes because the risk of asphyxia becomes significant after this time. A survey in the USA showed that second twins accounted for 5-10% of all cases of cerebral palsy.(14).

Optimal care of patients with multiple gestation require liberal use of ultrasonography, antenatal fetal surveillance and aggressive treatment of preterm labor in the absence of fetal maturity.

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OBSTETRIC CASE 4
PRETERM PROM: PRETERM LABOR- LIVE BIRTH

NAME: NW
AGE: 19YEARS
PARITY: PRIMIGRAVIDA
LMP: NOVEMBER 2005

IP.NO: 1095873
DOA: 28TH MAY 2006
DOD: 12TH JUNE 2006

PRESENTING COMPLAINTS
She presented with a history of drainage of liquor for six hours

History of presenting complaints
She woke up at night and realized she was wet. She went to the bathroom and realized she was draining clear fluid vaginally. It was not foul smelling and was not associated with abdominal pain. There was no history of vaginal bleeding.

History of current pregnancy
She had attended antenatal clinic at a Nairobi City Council clinic. Until then no problem had been detected.

Antenatal profile:
- Blood group: O Positive
- HIV : Negative
- VDRL : Negative
- Urinalysis : Nil significant

Gynecologic history
Her last menstrual period was in November 2005 but she was not sure of the date.
Menarche was attained at 15 years. She had irregular menses. She had used male condoms for contraception only occasionally.

Family and social history
She was a married college student. She did not smoke or use alcohol. The husband is a computer technician.

Her past Medical and surgical history was unremarkable.

Physical examination
She was a young lady in good general condition. She was not pale and afebrile. There was no edema or lympadenopathy.
Her systemic examination was normal.

Abdominal examination
The fundal height was corresponding to 28 weeks of gestation. The lie was longitudinal with cephalic presentation. The presenting part was not engaged. There was no area of tenderness in the abdomen. No contractions were marked. The fetal heart was 140 and regular.

Speculum examination
The external genitalia were wet. The vaginal walls were normal. The cervix was closed, long and firm. Pooling of clear fluid on the posterior fornix was noted.

A diagnosis of preterm premature rupture of membranes was made.

Management
A decision for conservative management was made.

Treatment
1. Oral Augmentin 1gm twice daily
2. Dexamethasone 8 mg was given 12 hourly x 4

She was instructed to have bed rest in the hospital and to chart fetal kicks daily.

Investigations
1. Full blood count: WBC: 8.1x 10^9/L; Hb. 9.6g/dl:
2. Urine analysis: no signs of infection. On culture, there was no growth.
3. Obstetric ultrasound:
    a. There was a single viable intrauterine pregnancy at 28 weeks 5 days.
    b. Severe Oligohydramnios was also reported.
    c. The Biophysical profile was reported as 8/8
4. Endocervical swab:
    - Gram stain; no organisms seen
    - Culture: no growth.

On 8th June 2006 the mother reported abdominal pain that was intermittent and radiating to the back. On abdominal palpation two moderate contractions were

marked in 10 minutes. A diagnosis of preterm labor was made and she was sent to labor ward. Labor was augmented with a Oxytocin. She progressed well and had vaginal delivery to a live male infant who weighed 1300g with an Apgar score of 5/1; 7/5; and 8/10. The neonate was admitted in the New Born Unit. The mother had no problems postnatally. The baby died in NBU on the second postnatal day. The mother's breasts were not active. She was discharged and advised to put on a firm Bra.

DISCUSSION

The case presented was a 19 year old primigravida who had spontaneous premature rapture of membranes at 29 weeks. She was managed conservatively with the aim of reaching 34 weeks of gestation. This is the gestation associated with favorable outcomes in our unit. After 10 days she went into spontaneous labor and delivered a preterm infant who eventually died due to prematurity.

Premature rupture of membranes is defined as the rupture of the chorioamniotic membranes before the onset of labor. The definition is independent of the gestation. Rupture before 37 completed weeks is rightly termed preterm premature rupture of membranes. (1). This is what the patient presented had.
Amniotic membranes and the fluid they contain play an extremely important role in the growth and development of the fetus.
The membranes act as a barrier against infection and prevent prolapse of any intra-amniotic structures through the cervix. The fluid environment allows for full fetal movement enhancing normal muscle development and growth. It also serves as a cushion against trauma. Fetal swallowing and urination are important in normal fluid balance and in the development of the gastrointestinal tract and genitourinary tract. Amniotic fluid in fetal tracheo-bronchial tree allows for normal development of the fetal lung.

By allowing the umbilical cord to float freely, it protects it from compression during fetal movement or uterine contractions. Amniotic fluid and membranes, in addition, function as a repository for substrates required for many biochemical processes such as Phsphoglycolipids and Prostaglandins.

The incidence of premature rupture of fetal membranes varies from 3 to 18% depending on the definition and the population studied. (2). The incidence is higher in populations of low socioeconomic status and where the rates of sexually transmitted infections are high. (3).

Approximately 8 to 10% of patients at term present with PROM. Preterm premature rupture of membranes(pPROM), accounts for 25% of PROM and is responsible for 30% of all preterm deliveries and are responsible for a very high rate of perinatal morbidity and mortality.(1). The incidence of PROM at Kenyatta National Hospital has been reported to range from 6 to 10%(4,5).

The etiology of premature rupture of membranes is not known for sure. A number of risk factors have been identified. Infection, increased intrauterine pressure, cervical incompetence, and smoking have been implicated. Patients in early gestation who are carriers of Group B streptococcus, Chlamydia, Trichomonas and Gardnerela Vaginalis have substantially increased incidence of PROM later in pregnancy. (6,7). Histologic chorioamnionitis is much more prevalent in preterm than in term PROM.(8). Premature PROM is also more commonly seen in the setting of polyhydramnios, multiple gestation and previous PROM and previous cervical operations. Studies have shown that bacteria that attach to fetal membranes elaborate proteases that cause membrane weakening. (9).

Pregnancies complicate by PROM have an increased risk of preterm labor, cord prolapse, abruption placenta and chorioamnionitis. Prolonged severe oligohydramnios can cause fetal compression syndrome. In cases of severe preterm PROM pulmonary hypoplasia often occurs (10).

The diagnosis of PROM is based on history and demonstration of fluid from the cervical os on aseptic speculum examination. Amniotic fluid can be differentiated from other fluid by use of a Nitrazine paper test and ferning test when applied to a slide and allowed to dry. A history consisting of a large gush of fluid followed by persistent leakage is accurate in 90% of cases. (11).

A patient presenting with a history suggestive of PROM should have the following factors established.

- Confirm the diagnosis
- Determine the gestational age
- Evaluate for the presence of Maternal/Fetal infection
- Rule out onset of labor
- Rule out fetal distress

If amnionitis is present, delivery is instituted regardless of the gestational age. Fever is the only reliable indicator of amnionitis, but other parameters may be suggestive. These include rising pulse, elevated WBC (>16000), or rising WBC

count, abdominal tenderness and foul smelling liquor.(1,2,3,11). All these parameters were normal in the case presented.

Delivery is recommended for 34 weeks gestation and above. For patient presenting with PROM between 24 and 32 weeks, several interventions may improve outcome. They should be managed expectantly with antibiotics, Corticosteroids an tocloysis. (1,2). Of all these measures only the use of antibiotics have been shown to increase time of delivery by an average of one week and to reduce the risk of maternal and perinatal infection(mercer97). For patients presenting with PROM below 24 weeks (28 in our setting), expectant management or termination are to be considered since the prognosis is very poor.(1,2).

The management of a patient with PROM is a common and perplexing problem. Despite many efforts, little progress has been made in obstetrically toward reducing complications of this problem, especially from prematurity. Primary goals of managing PROM include making the diagnosis promptly without increasing the risk of infection in the process and evaluating the patient for signs of infection, fetal distress, and impending labor. Since prematurity is the main cause of perinatal morbidity and mortality, management to minimize complications of prematurity is appropriate. Efforts should also focus on infection and asphyxia.

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OBSTETRIC CASE 5

CORD PROLAPSE – EMERGENCY CESAREAN SECTION, LIVE BIRTH

NAME: CM
AGE; 23 years
PRIMIGRAVIDA
LMP: 5TH February 2006

IP.NO: 1128956
DOA :9TH November 2006
DOD: 13TH November 2006
EDD: 12TH November 2006

Presenting complaints
Spontaneous rupture of membranes followed by umbilical cord protruding through the vagina

History of presenting illness
She presented with a history of spontaneous rupture of membranes which prompted her to come to hospital. While waiting at casualty she felt something come out through the vagina. She reported it to the staff and she was immediately rushed to labor ward. In labor ward the cord was found to be warm and pulsating. On vaginal examination the fetus was found to be presenting breech and not fixed in the pelvis. The cervix was 4 cm dilated. She was immediately rushed for emergency cesarean section.

History of current pregnancy
She had antenatal care at a clinic within the suburbs of Nairobi. She had been told she could be having twins. Otherwise the antenatal period was uneventful.

Gynecologic history
Menarche was at 14 weeks. She had regular 3/28 cycles. She had not used any form of contraception.

Family and social history
She was married to a Security officer and se was a house wife. There was no family history of twinning.

Her past medical and surgical history was unremarkable.

Management
She was made to lie in the left lateral Sim's position with the foot of the bed elevated. An intravenous line was fixed and started on Intravenous fluid.

Oxygen was also given by mask. The umbilical cord was pushed into the vaginal canal to keep warm and moist.
The abdomen was opened with a midline incision.
The first baby was delivered breech. The membranes of the second twin were still intact. Membranes were ruptured and the baby delivered cephalad. The outcome was twin female infants with separate palcentae and membranes.
Twin I: Apgar score 8/1; 9/5; 10/10, weight, 2100g
Twin II: Apgar score 8/1; 10/5, weight, 2400g
The babies were examined by Pediatrician and found to be in good condition. They received routine care and joined the mother.
The uterus and abdomen was closed. The estimated blood loss was 600ml.

Postoperative care
Vital signs were monitored continuously until the mother was fully awake. It was then done half-hourly for two hours then 2 hourly thereafter.
The rest of the postoperative period was uneventful. The mother and her babies were discharged home in stable condition on 13th November 2006.
The mother was given hematinic and multivitamin supplements for one month. She was to be followed up in the postnatal clinic in one week.

DISCUSSION

Umbilical cord prolapse is defined as descent of the umbilical cord into the lower uterine segment, where it may lie adjacent to the presenting part (occult cord prolapse), or below the presenting part (overt cord prolapse). (1). Whether occult or overt, umbilical cord prolapse is associated with significant perinatal morbidity and mortality.(1,2).

In occult prolapse the cord cannot be palpated on clinical examination, whereas in funic presentation (cord at or below level of presenting part before rupture of membranes) the cord can easily be palpated through the membranes. In some cases the prolapse resulting in compression is temporary and may be relieved y changing maternal position.

Prolapse of the umbilical cord to the level below the presenting part exposes the cord to intermittent compression between the presenting part and the pelvic inlet, cervix, or vaginal canal. Compression of the cord compromises fetal circulation and depending on the intensity and duration, may lead to fetal hypoxia, brain damage and death.

In overt cord prolapse, exposure of the umbilical cord to air causes irritation and cooling, resulting in further vasospasms of the cord vessels.

The incidence of overt umbilical cord prolapse in cephalic presentation is 0.5%, frank breech 0.5%; complete breech 5%; footling breech, 15% and transverse lie, 20%. (2). The overall rates reported in Nairobi and Kenyatta National Hospital is less than 1%. (3,4). The perinatal mortality rate associated with all cases of overt prolapse approaches 20%. Prematurity, being itself a cause of cord prolapse, accounts for a considerable proportion of this considerable loss.

The risk factors for cord prolapse are any Obstetric condition that predisposes to poor application of the fetal presenting part to the cervix. The commonest cause as: prematurity (<34 weeks), malpresentation (breech, brow, compound, face, transverse,). Occipital posterior positions of the head, pelvic tumors, placenta previa, and cephalopelvic disproportion.

Overt prolapse of the cord is associated with rupture of membranes. This displaces the umbilical cord into the vagina and often out through the introitus. The patient discussed had breech presentation and the cord prolapse followed spontaneous rupture of membranes.

The diagnosis of overt cord prolapse demands immediate action to preserve the life of the fetus. Immediate pelvic examination should be done to determine cervical effacement and dilatation, station of the presenting part. If the fetus is viable, the patient should e placed in the knee –chest position (1,5) or trendelenberg position (5) and the examiner should apply continuous upward pressure on the presenting part to lift and maintain the fetus away from the prolapsed cord until preparation for cesarean delivery is complete. Oxygen should be given to the mother until the anesthetist is ready to administer induction of anesthesia.

Pediatric team should be on standby for immediate resuscitation of the fetus. Detection of occult cord prolapse should also be delivered expeditiously be cesarean section.

Vaginal delivery is the route of delivery for the immature fetus and where the patient is in second stage rapid delivery is anticipated. Complete cord occlusion for more than 5 minutes and prolonged partial cord compression can result in various degrees of neurological compromise or death.

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OBSTETRIC CASE 6

DIABETES DIAGNOSED IN LATE PREGNANCY: HYPEROSMOLAR NONKETOTIC COMA AND IUFD

NAME.JB.
AGE: 26 YEARS
Parity: 3+0, G4

IP.NO: 5465
DOA: 4TH APRIL 2005
DOD: 15TH APRIL 2005

Presenting complaints
Difficulty in breathing, dehydration, decreased level of consciousness

History of presenting Illness
She was referred from the district hospital where she had presented with above symptoms. She was also reported to have been febrile at the time of admission. She had been started empirically with treatment for malaria and Meningitis. She was commenced on: Quinine, Crystalline penicillin and Chloramphenicol. The condition continued to deteriorate and she was referred.

History of present pregnancy
She had only attended a mobile antenatal clinic once during this pregnancy. No antenatal tests had been done.

Past medical history
She was not known to be diabetic and there was no significant illness in the past.

Family and social history
She was married and lived with husband. Both were peasant farmers. There was no family history of diabetes in the family.

Examination
The patient was very ill. She was severely dyspnic, dehydrated and comatose. She was not pale and was not febrile.
Vital signs:
Temperature 35.60C
BP 90/60mmHg
Pulse 120/minute

Respiratory system
The respiratory rate was 34 per minute and labored. It was clear on Auscultation.

Cardiovascular examination
She had rapid thready pulse. There were no murmurs.
Abdominal examination
The fundal height was corresponding to 34 weeks. The lie was longitudinal and the presentatation was cephalic. No fetal heart tones were detected.
Pelvic examination was not done at that time

Immediate Investigations

1. Random Blood sugar 36.44mmol/L
2. Urinalysis: sugar 4+, Ketones 1+; WBC- Packed field, no bacteria.
3. Hemogram: Hb. 14.8g/dl; WBC. 23,700/mm3

A working Diagnosis of DKA in pregnancy and UTI was made

Management
The patient was admitted to ICU and started on:

1. I.V. Normal saline bolus of 2000cc in the first 2 hours then at 500cc per hour for the next 4 hours.
2. Insulind drip 57 IU in 500cc of normal saline to run at 20cc per hour (2 IU/hr)
3. Foley's catheter was inserted for monitoring input and output status
4. 40 Meq/KCl was added to Normal saline when urine output was above 30cc/hr.
5. Blood sugar was checked 2-hourly
6. When the blood sugar was 13mmol/L, the fluid was changed from normal saline to ½ -normal saline with 5% dextrose.
7. Electrolytes (Na+ and K+) were checked 4 hourly
8. She continued on Antibiotics (Rocephin and Flagyl) for 5 days.

Other investigations
While in ICU portable obstetric ultrasound was done which confirmed fetal demise at 34 weeks. The fetus was in cephalic presentation.
Pelvic examination was done. The cervix was then dilated 3 cm and well effaced. Before long contractions were marked. She expelled a male fetus with early signs of maceration.

By the following day the mother was awake. The blood sugar level was ranging between 10 and 7 mmol/L.
Glucose and insulin infusion was stopped and the patient started on soluble insulin 10 IU subcutaneously 8 hourly. Blood sugar was checked 4 hourly and insulin administration adjusted as per a sliding scale. The patient was put on diet as tolerated.
By day 5 postpartum, the patient had recovered well. Blood sugar control was good and she required only 15 units of soluble insulin per day.

Insulin was stopped but blood sugar checks continued before dinner and before breakfast. The highest sugar recorded was 10mmol/L. The patient was started on oral hypoglycemic agents and observed for another day. The blood sugars remained within normal limits. She was discharged on 5 mg Glybenclamide once a day and asked to come to the diabetic clinic in one week.

Follow up
On follow up blood sugars were normal and Glybenclamide was stopped and managed only on diet.
Oral glucose tolerance test was done after 6 weeks. Blood sugar after 2 hours was 9.3mmol/l which showed that she had some degree of glucose intolerance.
She was counseled on family planning and future pregnancies. She was then to be followed up regularly by the physicians in consultation with the obstetricians.

Discussion
The case presented is a 26 year old who presented with complications of undiagnosed diabetes late in pregnancy. During follow up it emerged that she probably was a latent diabetic whose glucose intolerance was aggravated by pregnancy. Urinary tract infection must have also contributed to this.
Approximately 2% of pregnancies are complicated by Diabetes that either develops during pregnancy or was antecedent to pregnancy (1). In either case, diabetes has significant implications for pregnancy, and conversely, prgnancy significantly affects diabetes. Although 90% of these is gestational diabetes, arising only during pregnancy involving only brief episodes of hyperglycemia, the associated fetal and neonatal morbidity is disproportionate. Compared with weight matched controls, infants of diabetic mothers(IDMs) the risk of serious birth injury is doubled, the likelihood of Cesarean section is tripled , and the incidence of neonatal intensive care admission is quadrupled.(2). Recent studies indicate that the magnitude of such risks is proportional to the degree of maternal hyperglycemia. As such, the excessive fetal and neonatal morbidity of

diabetes in pregnancy is preventable or at least reducible by meticulous prenatal and intrapartum care.

Prior to the 20th Century, pregnancy in a woman with diabetes portended death for the mother, fetus or both. A review by Dancun in 1882 reported the survival of only 10 out of 22 newborns and death within five days of delivery of 9 out of 15 of their mothers(2). Later studies between 1916 and 1925 reported an overall 30% incidence of abortion, and premature labour, stillbirths in 50% and infant deaths in about 14%.(3,4).

The discovery of Insulin in 1922 by Banting and Best heralded a new era in which reproduction by women with diabetes became possible. By 1939, Priscilla White and colleagues reported successful management of 245 diabetic pregnancies, and they noted that the incidence of maternal ketoacidosis (DKA) had fallen dramatically and the frequency of antepartum fetal death was half of that reported in the pre-insulin period.

Using the American Diabetic Association Classification, three forms of diabetes are recognized. Type I diabetes refers to diabetes diagnosed in childhood. It is thought to be a result of immunologic destruction of B- cells of the pancreas. It is difficult to control and Keto-acidosis is common. Type II diabetes refers to a patient who develops glucose intolerance in adulthood. This type of diabetes is thought to be due to peripheral resistance to insulin and exhaustion of B- cells of Pancreas rather than their destruction.

Gestational diabetes is defined by the Third International Workshop Conference on Gestational Diabetes Mellitus as "a carbohydrate intolerance of variable severity, with onset or first recognized in the present pregnancy." In most patients, it is a reversible condition, although glucose intolerance in subsequent years is more common in this group of patients. The patient presented probably had Type I diabetes diagnosed for the first time during pregnancy. She still had glucose intolerance six week after delivery and, so needed continuing treatment.. However the degree was much milder than during pregnancy meaning pregnancy aggravated it.

For patients with preconceptional diabetes mellitus in pregnancy, it is clinically useful to categorize them as those with no diabetic sequelea and those with significant medical complications (5). These complications include preproliferative and proliferative retinopathy, nephropathy, autonomic neuropathy, and coronary artery disease.

Pregnancy for the woman with diabetic sequelea is substantially more risky for both mother and the fetus and requires more intense and specialized medical care.

Classification of diabetes in Pregnancy

1. Gestational Diabetes (patients developing diabetes for the first time in Pregnancy)
2. Preconceptional Diabetes without diabetic sequelea (both type I and II)
3. Preconceptional Diabetes with significant diabetic sequelea (Nephropathy, retinopathy, or coronary artery disease).

Pregnancy is accompanied by a series of metabolic changes which include hyperinsulinemia, Insulin resistance, relative fasting hypoglycemia, increased circulating plasma lipids and hypoaminoacidemia (6). These changes are intended to ensure an uninterrupted supply of metabolic fuels for the fetus. It is now clear that these changes are ordered by hormones elaborated by the feto-placental unit. (6).

Levels of diabetogenic placental and steroid and peptide hormones – Estrogens, progesterone and human placental lactogen-continue to rise linearly throughout the second and third trimesters, resulting in increased resistance to maternal insulin action. This leads to maternal then fetal hyperglycemia.

The degree of hyperglycemia and its timing are important factors contributing to the morbidity in pregnancy associated with glucose intolerance. When maternal postprandial glucose levels surge excessively, the subsequent fetal hyperglycemia is accompanied by fetal hyperinsulinemia. Fetal hyperinsulinemia lasting only 1 to 2 hours, has detrimemtal consequences to fetal growth and well-being.(2). Fetal hyperinsulinemia promotes storage of excess nutrients resulting in Macrosomia. It also drives catabolism of the excess nutrients using energy and depleting fetal oxygen stores leading to episodic fetal hypoxia. This leads to outpouring of catecholamines which in turn causes hypertension, cardiac remodeling and hypertrophy. Stimulation of Erythropoietin results in polycythemia, poor circulation and postnatal hyperbilirubinemia.(7).

Among women with overt diabetes prior to conception, the risk of structural anomaly in the fetus is increased four- to eight-fold. The majority of lesions involves the central nervous system, the cardiovascular system as well as genito-urinary and limb defects (7). There is no increase in birth defects in children of diabetic fathers, pre-diabetic women and women who develop diabetes after the first trimester, suggesting that glycemic control during embyogenesis is the main factor in the genesis of diabetes associated birth defects. (2,8).

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In 1989, Lucas and co-workers reported an overall malformation rate of 13.3% in 105 diabetic patients , but the risk of delivering a malformed infant was nil with HbA1, less than 7%; 1`4% for HbA1 of 7.2 to 9.1%, 23% with HbA1 of 9.3 to 11.1% and 25% for HbA1 greater than 11.2% (8,).

The mechanism by which hyperglycemia disturbs embryogenesis is multi-factorial, but altered arachidonic acid and myoinositol levels and accumulation sorbitol and trace metals in the conceptus has been postulated.(9). Giving diabetic animal's diet rich in antioxidants reduced the incidence of neural tube defects to near background levels (10).

The majority of women with Gestational Diabetes are asymptomatic and so a screening method has to be employed for early detection. Controversy exists whether all pregnant women should be screened or only those with risk factors for diabetes mellitus (family history of diabetes, history of unexplained stillbirth, , malformed or macrosomic infant, presence of maternal hypertension, obesity or maternal age greater than 30years) .

The American College f Obstetricians and Gynecologists (ACOG) recommends screening these high risk group women between 24 and 28 weeks of gestation. The National Diabetic Data Group (NDDG) and the Society for Perinatal Obstetricians recommend screening all risk group women at their first prenatal visit and again between 24 and 28 weeks of gestation if the initial screen was negative.

Studies employing universal screening have demonstrated that almost half the women diagnosed with gestational diabetes did not have risk factors and that more than half of them were less than 30 years of age.(11,12). As such it is recommended that all pregnant women should be screened for glucose intolerance. Screening early also has to advantage of diagnosing occult type I diabetes.

Two screening major diagnostic protocols are presently on use: a single 75-g , 2-hour test recommended by The World Health Organization (WHO 1980) , and the two-step system recommended by the NDDG.(1979) involving a 50-g , 1-hour challenge and a 100-g oral glucose tolerance test (OGTT) for those with abnormal response glucose challenge test results. The WHO test scheme has the advantage of a single set of criteria for diagnosing adult diabetes during and out of pregnancy. Measurement of maternal glycosylated hemoglobin and random

postprandial or fasting blood glucose has been shown not to be useful diagnostic indicators for gestational diabetes mellitus (13)

WHO Diagnostic Criteria for Diabetes Mellitus

DIAGNOSIS	FASTING	2 HOURS
Normal	< 140mg/dl	< 200mg/dl
	(<7.8 mM)	(< 11.1nM)
Impaired glucose tolerance	<140mg/dl	> 140mg/dl and <200mg/dl
	<7.8mM	> 7.8mM and < 11 mM
Diabetes	>140mg/dl	> 140mg/dl
	> 7.8mM	>11.1mM

100-g 3- hour glucose tolerance test for gestational Diabetes

Test prerequisites
1-hour 50-g glucose challenge result >135mg/dl
Overnight fast of 8 to 14 hours
Carbohydrate loading 3 days including > 150 g carbohydrate
Seated, not smoking during the test

Two or more values must be met or exceeded

	Venous plasma	Carpenter and Coustan
Fasting	105mg/dl	95mg/dl
1-hour	190mg/dl	180mg/dl
2-hour	165mg/dl	155mg/dl
3-hour	145mg/dl	140mg/dl

Summary and recommendation of the third International workshop-conference on gestational diabetes mellitus.Am J Obstet Gynecol 1982; 144: 768

Care of pregnant diabetics requires a team approach, involving a perinatalogist, neonatologist, endocrinologist as well as a diabetic nurse specialist and nutritionist. The patient and her family are equally important part of the team and should be fully educated, instructed and involved I her care (1).

The goal in the management of all pregnant diabetics is to conclude a pregnancy with a healthy mother and infant. The cornerstone of therapy is the maintenance of a euglycemic environment throughout pregnancy for proper fetal growth. This is achieved through a combination of proper diet, insulin therapy and glucose monitoring. Home glucose monitoring which should include fasting, pre and

postprandial blood glucose levels is the ideal method but is out of reach for many patients in our setting.

The strategy of diet therapy is to utilize small frequent feeding to avoid ketogenenesis and large glucose loads. Bed time snacks are also important to prevent somogyi effect. Complex carbohydrates, with high fiber are advocated to prevent rapid high increase in blood glucose levels. Oral agents, alpha-glucosidase inhibitors such as Acarbose, which reduce rate of glucose absorption from the gut offer particular promise in pregnancy due to their limited uptake from the gut. (2).

The choice of insulin and the insulin regimen is determined by the patient's own glucose profile. Adequate control is often achieved with split-dose therapy of insulin as shown in the table below. Guidelines for twice-daily dosing

Breakfast Lunch	Dinner	Bedtime
1 Reg + NPH	Reg + NPH	
2 Reg + NPH Reg	Reg.	NPH
3 Reg	Reg	NPH

Give two-third total dose in the morning: 2/3 NPH+ 1/3 Reg
Give one-third total calculated dose in the evening: ½ NPH + ½ Reg
Doses of regular insulin before major meals, is designed to minimize insulin surges following these meals.

Antepartum fetal surveillance, utilizing ultrasound to monitor fetal growth and development and, and antepartum testing in the third trimester to monitor fetal well-being are equally important tools. The principle is to verify fetal viability in the first trimester, validate fetal structural integrity in the second trimester; monitor fetal growth for most of the third trimester, and ensure fetal well-being in the late third trimester.

Table

TEST	FREQUENCY	REASSURING RESULT	COMMENT
Fetal kick chart	every night from 28wks	10 in 60 mins	performed in all
NST	Twice weekly	2 accelerations in 20mins	from 28 to 34wks (36 for those on diet)
CST	weekly	no decelerations for 3/10 contractions	same as for NST
Biophysical profile movements=2 1 flexion =2; 30s breathing = 2; 2 cm amniotic fluid =2	Weekly	score of 8 in 30 minutes	

NST non-stress test. CST, contraction stress test

Timing and mode of delivery should be selected in such a way as to minimize maternal and neonatal morbidity and mortality. Delaying delivery to as near as possible to the expected date of delivery (EDD) helps maximize cervical ripeness and, the chances of spontaneous labor and vaginal delivery. In patients in whom fetal evaluation is reassuring and maternal blood sugar control is good, delivery should be delayed till after 38 weeks of gestation. Where delivery has to be conducted earlier, increase in failed induction of labor, and poor neonatal pulmonary status must be considered (2, 14). Fetal lung maturity should be documented unless the delivery is being undertaken in the interest of the health of the mother

Patients scheduled for elective induction of labour or delivery by cesarean section should be done in the morning. The morning insulin dose is withheld and patients receive 5% dextrose solution at maintenance dose of 125cc/hr to void ketosis. A second intravenous line for insulin infusion should be started at a rate of 0.5 to 1.0 units per hour for those requiring insulin. Blood glucose levels are monitored 2-hourly and the rate of infusion titrated to maintain levels at 80 to 100mg/dl. Hyperglycemia should be avoided during labor and delivery, as glucose crosses the placenta and may produce severe hypoglycemia in the newborn due to endogenous insulin release. After delivery, the mother may not need insulin for 24 to 48 hours. It is acceptable to keep serum glucose levels between 150 to 200mg/dl.

Neonatal complications include macrosomia with increased risk for birth injuries, hypoglycemia, respiratory distress syndrome, cardiomyopathy,

polycythemia and hyperbilirubinemia. Euglycemia throughout pregnancy can minimize these complications.

Diabetes complicating pregnancy is without doubt a major challenge in obstetrics. Efforts should focus on preventing unwanted pregnancy among known diabetic women; prenatal counseling and preparation for those desiring pregnancy. This should be undertaken to ensure that they conceive under the most optimum condition for fetal growth and development. For all pregnant women not known to be diabetic, universal early screening during antenatal visits will give opportunity for early intervention and so minimize morbidities and mortalities that would arise from poor control.

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OBSTETRIC CASE 7

UNSENSITIZED RHESUS NEGATIVE MOTHER WITH BOH : INDUCTION OF LABOR, LIVE BIRTH

NAME: A.W.
AGE: 35YEARS
PARITY: 2+3
LMP: 21ST AUGUST 2005

IP.NO. 0772642
DOA: 11TH MAY 2006
DOD: 19TH MAY 2006
EDD: 28TH MAY 2006

Reason for admission
She was admitted electively for removal of MacDonald stitch and Induction of labor.

History of current pregnancy
This is a patient that had been seen at St.Mary's Hospital in the past because or frequent pregnancy wastage. She was referred to Kenyatta Hospital for management. Besides the rhesus negative status, she was also suspected to have some degree of cervical incompetence. She was first seen in the antenatal clinic at 8 weeks of gestation.
She had Macdonald stitch inserted at 14 weeks.

Antenatal Investigations
Blood group: O Negative
Husband's group: A positive
HIV: Negative
Hb. : 11.8g/dl
VDRL: Negative
ICT at 28 weeks and 34 weeks: Negative
Random blood sugar: 4.6mmol/l
Obstetric U/S: 8th May 2006. Normal intrauterine pregnancy at 37weeks, 3 days: Placenta was fundal and amniotic fluid was adequate.

Past Obstetric history
1st Pregnancy was in 1998; she had a term vaginal delivery to a male infant. The child was killed in a road accident at 2 years of age.
2nd pregnancy: 2000, had spontaneous abortion at 3 months
3rd pregnancy: 2001, induction of labor at 37 weeks, live birth, (only living child). Rhogam was given on the first postnatal day.

4th pregnancy: 2003, spontaneous abortion at 5 months
5th pregnancy: 2004, spontaneous abortion at 5 months.

Gynecologic history
Menarche was at 15 years. She had regular menses ad had not used any modern of contraception.

Family and social history
She was married, a high school teacher living with her husband in Uthiru, Nairobi. The mother is diabetic.

Physical examination
She was in good general condition. She was not pale and had no edema.

Vital Signs: BP = 120/80
Pulse= 70
Temperature= 36.80C
Her respiratory and cardiovascular examination was normal.

Abdominal examination
The fundal height was term. The fetus was in longitudinal lie and in cephalic presentation.
The fetal heart was heard and regular.

Speculum examination
A speculum examination was done. The stitch was noted to be in place. It was cut and removed. The cervix was and found to be closed, of moderate consistency and in mid-position.
A decision was made to ripen the cervix with prostaglandin pessaries. The first dose was inserted on 14th May 2006 at 5:30 pm.
On 15th May the fetal heart was found to be irregular. Emergency cesarean section was done.
The outcome was a live male infant who scored 7/1; 9/5; 10/10 APGAR score, and a birth weight of 3100gm.

Postoperatively she recovered will.
The baby's blood group was A- positive. The Direct Coomb's test was negative.
She was given Anti-D immunoglobulin on 16th may 2006.

She was discharged on 19th May 2006 in stable condition.

Follow up

She was reviewed in the postnatal clinic on 9th June 2006. She had recovered well.

DISCUSSION

The case presented was a 35 year old female with recurrent pregnancy wastage whose cause was probably not related to Rhesus isoimmunization. She received care that focused on possible causes of pregnancy wastage suggested by her history which were cervical incompetence and potential risk of rhesus isoimmunization.

Rhesus (Rh) Erythroblastosis fetalis represents one of the greatest success stories in the fields of Hematology, Genetics, Immunology, Neonatology and Maternal-fetal Medicine. It is the classic example of the importance of progressive application of technology in therapy that has resulted in the decrease in incidence and the impact of a genetic condition.(1).

More than 400 red cell antigens are known to be in existence. The one most commonly associate with hemolytic disease is the D antigen. Others are Kell, Duffy, Kidd, MNS, Diego, Lewis, Lutheran among others (2,3,). The incidence of Rhesus negative varies from race to race. The highest population of rhesus negative individuals is found among the Basque community of France and Spain, with a prevalence of 20 to 40%. Among Caucasians the rate is about 15% and 7% among black Americans.(2). At Kenyatta National Hospital the rate of rhesus negative mothers attending antenatal clinic is about 4 %(4). The rate among mongoloid race is nil (2).

Isoimmunization can occur with exposure to incompatible blood antigens. This may result from transfusion or from feto-maternal hemorrhage.(1,2,3). In the classic case, the unsensitized Rh-negative woman is exposed to Rh-positive cells by fetal transplacental hemorrhage. This trafficking of red cells increases as gestation progresses. Bowman et al showed at least 0.01 ml of fetal cells in 3%, 12%, and 46% of women in each trimester in most women, this load of Rh-D antigen on fetal erythrocytes and erythrocyte precursors does not stimulate the mother's immune system because fetal red cells are rapidly cleared by her reticulo-endothelial system. However, when a large volume of fetal blood enters the mother's circulation, her immune system is stimulated and B lymphocyte clones that recognise the RhD antigen are established. (5)

The frequency and the amount of fetal-maternal hemorrhage may be increased with antepartum bleeding, external cephalic version, cesarean section, manual removal of placenta tumultuous labor, operative vaginal delivery and preeclampsia(1,2,3,). Since Rh- antigens have been detected in the fetus as early as 38 days after conception, the risk of sensitization following a first trimester abortion and chorionic villus sampling is real and is estimated at 2 to 4%. (5). The amount of transplacental hemorrhage influences the risk of isoimmunization. 8 % of Rh-negative women are sensitized by 6 months postpartum.

Most often, primary exposure to the foreign antigen during pregnancy results in minimal antibody production but significant immunologic memory.(2,5). A subsequent Rh-negative pregnancy will carry an additional risk of 8%; making the overall risk 16%. As parity increases the anamnestic response may diminish reaching 50% by the fifth pregnancy. The risk of sensitization prior to delivery is 2 %(5).

It is important to realize that not all patients receiving Rh-incompatible blood will develop sensitization. Only 33% receiving 40ml of whole blood will develop an immunologic response. Many of these initial responders will fail to develop significant titres with subsequent exposures (1, 2, and 3). This may be the case with the patient presented. After four pregnancies going into the second trimester, there was no evidence of sensitization. However, other patients may develop marked anamnestic response on as little as 0.1ml of blood. In patients who develop an immune response, immunoglobulin G (IgG) which crosses the placenta, is produced after a short period of IgM production.

An alteration in the incidence of sensitization occurs when there is a maternal-fetal ABO incompatibility. In this instance, the Rh-positive fetus confers some protection against sensitization by interfering with the immunologic recognition of Rh antigen sites on the red blood cell membrane. Here the risk s reduced to just 2%.(2,5).

Management of isoimmunization is critically dependent on identifying women at risk and detecting sensitization. All women presenting for the first time for antenatal care should have blood samples taken for grouping and antibody screening where indicated. Although 8% of reported cases of erythroblastosis fetalis involve either ABO or Rh-incompatibilities, this does not preclude the development of hydrops fetalis but this is very rare.

Prevention of isoimmunization is achieved through prophylactic immunization with Rh immunoglobulin (Anti-D). The protective effect is dose-dependent. A single dose of 300ug suppresses the immune response produced by 30ml of whole Rh –positive blood or 15ml of packed cells. Transplacental transfusion greater than this, occurs in approximately 1:300 pregnancies at risk, leading to a failure rate of only 0.3%. Rh-negative women without detectable Rh or irregular antibodies require immunization. Evidence show that administration of Anti-D at 28 weeks and also post partum is effective in preventing isoimmunization.(2,5). The postpartum dose is given if the fetus is rhesus positive. The beneficiaries of this administration are those few unsensitized women developing antibodies during pregnancy.

Current recommendations for immunoprophylaxis from the Royal College of Obstetricians and Gynecologists and NICE are as follows:

- After delivery, irrespective of the dose of antenatally administered anti-D immunoglobulin, postnatal prophylaxis must be given and include a screening test to identify women with a large fetomaternal haemorrhage who need additional immunoglobulin
- Anti-D immunoglobulin should be given after sensitizing events before delivery and after abortion
- Anti-D immunoglobulin is no longer necessary in women with threatened miscarriage with a viable fetus and cessation of bleeding before 12 weeks' gestation
- At least 500 IU of anti-D immunoglobulin should be given to non-sensitized Rh-D negative women at 28 weeks and 34 weeks of pregnancy

The management of pregnancy in a sensitized woman poses a challenge. The development of detectable maternal antibodies indicates sensitization and requires further diagnostic evaluation. A "critical titer" is that titer below which no severe erythroblastosis has been observed. This ranges from 1:16 to 1:32 depending on the laboratory. If there is no past history of an affected infant or fetal death, and the initial titer is below the critical titer, the patient is kept under observation with monthly anti-D titer from 16 weeks onwards. Amniocentesis is performed only if the titer reaches the critical value, or is at that level at the first examination (6).

In patients who have had a previous severely affected fetus, amniocentesis is performed 1 to 4 weeks before the time the fetus was noted to be severely affected in the previous pregnancy.(6). Amniocentesis is done under ultrasound guidance so that a clear specimen is found and the fetus is not harmed.

Once the fluid is obtained, it is place in a brown bottle to prevent photo oxygenation of bilirubin. The optical densities are obtained and plotted on a graph. Successive measurements are plotted against estimated gestational age. Using the Liley charts the degree of compromise of the fetus can be inferred. The trend is more predictive than a single value. A plot in Zone III is ominous and requires immediate decision of either percutaneous umbilical sampling or possible intrauterine transfusion or delivery of the fetus. Using this approach, the decrease in morbidity and mortality is striking.

The management of Rh-D alloimmunisation has been revolutionized by two important discoveries. Firstly, it is now possible to establish fetal Rh genotype non-invasively by using a maternal blood sample. Using polymerase chain

reaction techniques, fetal Rh-D status can be detected with 100% sensitivity.(2). Fetal DNA extracted from maternal plasma is analyzed for the Rh-D gene with a fluorescence based polymerase chain reaction test that is sensitive enough to detect the Rh-D gene in a single cell. This technique has obviated the need for invasive fetal testing to ascertain the fetal genotype. The fetal Kell and c genotype can now also be ascertained by using this non-invasive method. The second advance in management is the use of velocimetry of the fetal middle cerebral artery to monitor affected pregnancies. Peak systolic velocities greater than 1.5 multiples of the median for the specific gestation are predictive of moderate or severe fetal anaemia,[5] with 100% sensitivity and a false positive rate of 12%.

This way amniocentesis is only performed if there is pericardial effusion. This reduces the number of amniocentesis and risks associated with it. Percutaneous umbilical blood sampling is also made easier. The sample can be used for assessment of fetal anemia and for fetal blood typing.
Ultrasound also permits intravascular transfusion when the hematocrit is less than 45%.

Recent studies using maternal intravenous immunoglobulin have shown some benefit in severe cases of RhD incompatibility. The mechanism of action is still not well understood but may entail down regulation of the maternal immune response, placental antigenic blockade, or antigenic blockade at the level of the fetal reticulo-endothelial system. It may prolong the time interval before the first intrauterine treatment is required. (8,9)

The timing of delivery is determined by gestational age, pulmonary maturity, the outcome of previously affected pregnancies, and the presence or absence of hydrops.(5).

The mode of delivery is dependent on whether vaginal delivery might adversely influence an affected fetus. The mode that ensures optimum conditions for a favorable outcome should be chosen. In the case presented, vaginal delivery was initially chosen at 38 weeks but when the fetal status was detected to be non-reassuring, emergency cesarean section was performed with a good outcome.

In conclusion, screening of mothers to identify those at risk, prenatal assessment, early delivery, exchange transfusions and use of Anti –D immunoglobulin has improved the outcome of pregnancies complicated by isoimmuniation.

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OBSTETRIC CASE 8

ADVANCED ABDOMINAL PREGNANCY - LAPARATOMY LIVE PRETERM INFANT

NAME: J.A. IP.NO. 1129781
AGE: 32 YEARS DOA: 19TH 0CT 2006
PARITY: P3+0 G4 DOD: 27TH OCT 2006
LMP. 2ND MARCH 2006 EDD: 9TH DEC 2006

Presenting complaints
Vaginal bleeding and abdominal distension for 3 days

History of present pregnancy
She was eight months pregnant. She had attended antenatal clinic in Siaya District hospital. She reported that she had been generally ill for most of the duration of this pregnancy. She had frequent abdominal pain, distension, constipation and vomiting. She also reported sporadic episodes of vaginal bleeding which was much less than the episode that brought her to hospital.

Past Obstetric history
1998, normal delivery at term
2001, normal delivery at term
2005, normal delivery at term

Gynecologic history
She had regular 28 day cycles with 3 days of menstrual flow. There was no dysmenorrhea. She had not used any form of contraception.

Family and social history
She was married. She lived separate from her husband who was working as a security officer in Nairobi while she lived in their rural home in Siaya District. She did not smoke or use alcohol.

Physical examination
She was obviously uncomfortable. She was wasted, moderately pale. She was not febrile and she had no lymphadenopathy or edema.
Vistal signs: BP 134/93mmHg
Pulse 120/minute
Temperature 36.4 ^{0}C
The respiratory examination was normal.
On cardiovascular examination, she had tachycardia with a systolic murmur.

Abdominal examination

The abdomen was distended with fullness of the flanks. The abdominal wall was thin with visible peristalsis. There was diffuse tenderness with no shifting dullness. The fundal height was corresponding to 34 weeks. It was not possible to define the presenting part, partly due to the discomfort experienced by the patient. There was no shifting dullness. The fetal heart was heard and regular.

Speculum examination

The cervix was closed and long and displaced anteriorly. There was a small amount of dark blood in the os but there was no active bleeding. The cervix bled easily on contact. An impression of Antepartum hemorrhage was made the patient was sent for an urgent Obstetric ultrasound.

Ultrasound Report

There was an abdominal pregnancy with a live fetus in breech presentation. The uterus was displaced to the right side of the pelvis, was bulky but was empty.

Management

Emergency laparatomy was done. The abdomen was opened with an extended midline incision. Upon entering the abdomen via a Pfannenstiel incision a term-size live fetus was found inside an intact amniotic sac within the abdominal cavity. No hemoperitoneum was present. After amniotomy by slow decompression, a normal live female infant was delivered breech. It weighted 1300 g and had an Apgar scores of 3/1; 4/5 and 5/10. The uterus was 12 weeks gestational size and pushed to the right hemipelvis. Tubes and ovaries were normal in size and shape. The placenta was attached to a broad area encompassing the left abdominal and pelvic sidewalls, posterior cul-de-sac and the posterior surface of the uterus. Other structures were normal. Blood loss was estimated to be less than 200ml. The cord was ligated very close to the placenta and tied with a chromic suture number 0.

The placenta was not touched. Membranes were trimmed and peritoneal lavage was done with warm saline. The patient was reversed well. She was put on antibiotics, analgesics and hematinics. Her postoperative recovery was slow. She had persistent ileus and dizzy spells although her hemoglobin was above 8g/dl. This may have been contributed by poor hydration status since she could not tolerate oral feeds until day seven postoperatively when she began tolerating oral feeds. This was advanced slowly and by the tenth postoperative day. She was discharged but remained in the ward for another one week since the family had not come to clear her bill.

On November 1, 2006 I reviewed her. The wound had healed well. He abdominal distension was still present but significantly reduced.
She received 100mg Intravenous Methotrexate. While in the ward no complications were noted. She left for home one week after receiving Methotrexate in stable condition. She was booked for review in the postnatal clinic on November 10, 2006.

DISCUSSION

About 2% of all pregnancies are ectopic, accounting for 10% of all pregnancy-related deaths.(1) More than 95% of ectopic gestations occur within the fallopian tubes.(2)

Abdominal pregnancy, where implantation occurs within the peritoneal cavity, is much more uncommon. It has a worldwide incidence of 1:3300 to 1:10200 and occur in 1-4% of all ectopic pregnancies.(3,4,5). Even more uncommonly does it reach an advanced stage of gestation, and a viable abdominal pregnancy with a successful outcome is a rare event indeed.(6,) Abdominal pregnancies are usually secondary and seem to follow primary nidation in the fallopian tube. The conceptus escapes through a rent on the tube and the chorionic villi begin to implant secondarily to peritoneal surfaces or any or any one of the abdominal viscera and continues as a secondary abdominal pregnancy.(7). The patient may present with vague abdominal pains and vaginal bleeding may occur (8). These symptoms were present in the case presented.

The risks for abdominal pregnancy are those of ectopc pregnancy and relate to pelvic inflammatory disease. It is reported to be most common in the Bantu population in South Africa due to a high rate of pelvic inflammatory disease. The incidence is 1 in 402 deliveries.(9). The rate in developed countries has been noted to increase as a result of assisted reproductive technology.(10).

Diagnosis of abdominal pregnancy is difficult and often missed.(1,4.) Many times in Kenyatta National hospital the diagnosis has only been made after failed

induction. In theses cases, the ultrasound report was that of an intrauterine fetal demise.(kab case) . A high index of suspicion should be maintained, especially in patients who have had a prolonged history of infertility or pelvic inflammatory disease. Signs and symptoms such as abdominal pain, gastrointestinal symptoms, painful fetal movements, abnormal presentations, uneffaced and displaced cervix, vaginal bleeding and palpation of a pelvic mass distinct from the uterus, are considered suggestive of abdominal pregnancy.(3,4.)

Abdominal pregnancy is a potentially life-threatening condition with high maternal-fetal mortality and morbidity. Maternal and perinatal mortality rates of 0.5-18% and 40-95 respectively, have been reported in the literature.(1).

Ultrasound should b a very useful tool for the diagnosis of abdominal pregnancy, but the examiner must suspect, otherwise they will be reported as intrauterine pregnancy. Even under the best circumstances, and using sonography, the diagnosis is often missed. (6, 11)

A lateral x-ray of the abdomen showing fetal small parts overlying the maternal spine, may also be helpful.3 However, CT scan and magnetic resonance imaging have been used successfully to complement sonography in making an accurate preoperative diagnosis of abdominal pregnancy.(1,11) But this would be unnecessarily expensive and beyond the reach of many patients

Once the diagnosis is made, optimal management requires careful evaluation and planning. There is a general consensus that for pre-viable abdominal pregnancies, i.e. prior to 23-24 weeks of gestation, immediate operative intervention is indicated. For viable pregnancies presenting after 24 weeks of gestation, there has been some debate in the literature regarding the appropriateness of a more conservative management.(4) . This, however, should not be undertaken unless the patient can be kept under strict observation, and preferably, hospitalized.

Management of advanced abdominal pregnancy poses a great challenge to even the best of clinicians. It is often associated with severe blood loss, for which one should be prepared.(6,12)

Massive hemorrhage occurs more frequently when attempts are made to remove the placenta.6,28 Unless the entire blood supply of the placenta can be ligated, it is best to leave the placenta in-situ, as was done in the present case after the bleeding was controlled.6 The patient should then be followed with serial beta-HCG levels and sonograms (preferably color doppler) for placental involution. (12). This was not done for the case presented due to limitation of costs and lack of ready access to Doppler facilities.

The use of Methotrexate to hasten placental involution and resorption, is currently controversial since it often leads to accelerated placental destruction with accumulation of necrotic tissue, and ultimately to infection and abscess formation.1. This was used in this particular case due to persistent distension and difficulties with follow up since the patient lived very far from hospital and follow up would not be possible once she left the hospital. Her prolonged hospital stay provided ample opportunity for close monitoring of potential complications.

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OBSTETRIC CASE 9

HIV IN PREGNANCY; VAGINAL DELIVERY: LIVE BIRTH

NAME: A. N.
IP: 1083466
AGE: 31
PARITY: 1+0 G2

LMP: 19/07/05
EDD: 26/04/06
GDB: 38
DOA: 12/04/06, DOD: 19/04/06

Presenting Complaints
Drainage of liquor for 10hrs
Labor pains for 2 hours.

History of presenting illness

She reported a sudden gush of fluid which ran down her lower extremities to the ground. This was followed by labor pains which had been going on for over two hours by the time she arrived in labor ward. She had also noticed bloody mucoid discharge in her garments.

She had attended antenatal clinic at Kenyatta National Hospital from 28 weeks.
The Antenatal profile was as follows:
-Blood group - A positive
-VDRL – Negative
- Hb. 10.4g/dl
- HIV – positive
- CD4 – 249
She was counseled on PMTCT measures and antiretroviral therapy.
Throughout the third trimester of pregnancy the fundal height was less than dates
She was started on Combivir and Kalletra (Lopinavir+Ritonavir) from 34 weeks of gestation.
She chose to give baby formula milk from birth

Past Obstetric History
Her first delivery was in 1995 at term at Kitui District Hospital. She was not married then.

Gynecologic history

Menarche was at 17yrs. She had regular 28 day menstrual cycles with 4 days of flow. There was no history of dysmenorrhea. She had not used any form of contraception.

Her past medical and surgical history was unremarkable.

Family and Social History

She had been married for 2yrs.

Her husband was a Butcher. They lived in Mathare North. She was a house wife.

The husband takes alcohol and uses tobacco.

No family history of chronic illness.

Physical Examination

She was in fair general condition. She was not pale or jaundiced. There was no lymphadenopathy. There was temporal wasting. There was an old herpetic scar on the right pectoral region

The respiratory and cardiovascular systems were essentially normal.

Abdominal Examination

The fundal height was corresponding to 34 weeks

The presentation was cephalic, with the presenting part engaged and a descent of 3/5. The fetal heart was 148 per minute and regular.

Two moderate contractions in ten minutes were marked.

Speculum examination was done which confirmed rupture of membranes and clear liquor draining. The cervix was dilated with membranes visualized.

On digital examination the cervix was 4cm dilated and 80% effaced. There was no molding or caput. No cord was palpated.

The pelvis was found to be adequate

A diagnosis of active labor in a patient with HIV, preceded by premature rupture of membranes was made. For this reason the planned cesarean section was suspended as it was unlikely to be of any added benefit in reducing perinatal HIV transmission.

Labor was augmented with Oxytocin and vaginal delivery was achieved in 4 hours.

The outcome was a live male Infant who weighed 2.3kgs and scored 7 at 1 minute and 9 at 5 minutes and 10 at 10 minutes. The baby was given 6mg orally as a single dose and put on AZT 12mg orally, twice daily for 6 days.

The mother and baby were discharged in stable condition on 19/04/06.
The mother was to continue with antiretroviral treatment for live. The baby was to be given alternative formula feeds. The mother was given enough to last one month when she would be given more during the next follow-up visit.

Follow up
She was seen in the high risk clinic on 6th May 2006.
She was doing well. She was counseled on family planning and condom use although she said she said was going to be abstinent. She was to be followed up in this clinic for six months then transferred to the comprehensive care clinic where she would continue HIV care.

DISCUSSION

Human Immunodeficiency Virus (HIV) is a single stranded RNA retrovirus which replicates itself by using a unique enzyme, reverse transcriptase, to translate its genomic RNA into DNA which is incorporated into the host cells DNA. Acquired Immune Deficiency Syndrome (AIDS) results from the progression of HIV Infection. HIV mainly infects help T-Lymphocytes, monocytes and macrophages.

AIDS was first recognized in 1981 as a Sexually Transmitted Infection (STI). The causative agent (HIV I) was first isolated in 1983 among Homosexuals. In 1985, HIV 2 was isolated in persons living in West Africa. The HIV Virus mainly infects helper T lymphocytes (CD4 lymphocytes), monocytes and macrophages. In general, cells are infected after binding of the glycosylated envelope protein of HIV; GP120 to both CD4 receptor protein and a chemokine, which are found and the surface of the target cells. Being a single strand RNA retrovirus, it uses a unique enzyme, Reverse Transcriptase to translate its genomic RNA into DNA. This DNA is then inserted into the Host cells DNA. Here it may remain latent or be actively transcribed to produce more viruses.(1)

The function and number of CD4 lymphocytes and other affected cells are diminished by HIV infection, with profound effects on both humoral and cell mediated immunity. Without treatment, HIV infection causes generalized Immune Incompetence and eventually AIDS. HIV infection occurs as a continuum but is divided clinically into 4 stages for management purposes.(2)
Stage I of the disease is the acute retroviral infection that develops several weeks after exposure to the virus. At this time there is a higher level of viraemia.

Eventually the level of viremia declines with a concurrent appearance of an HIV specific host Immune response. The plasma viremia usually reaches a steady-state level 6-12 months after primary infection. The amount of virus present in plasma at that point is predictive of the rate of disease progression for the individual.(1)

Stage II is the latent phase. Despite ongoing virus replication a period of clinical latency occur; lasting between 1-12years during which the infected person is not different from the uninfected. The virus and the host Immune response are at a state of equilibrium. Eventually the balance favors the virus and the viral load rises as the CD4 level falls. The patient enters Stage III.

Stage III is characterized by frequent opportunistic infections and weight loss. Ultimately the patient enters stage IV, (clinical Aids) which has a very high mortality from opportunistic infections. The patient presented was in stage III. Heterosexual transmission is the most important mode of transmission among adults and vertical transmission is the commonest mode transmission in the pediatric age group in our region. As such the management of pregnant women with HIV focuses on reducing vertical transmission.

Pregnancy in itself does not accelerate HIV progression in women who are in the asymptomatic stages of infection. The situation may be different for women with high viral loads and clinical Aids.(3,4). Pregnancy complications that have been noted to occur more frequently among pregnant women with HIV than in HIV-negative women include genital and urinary tract infections, ore frequent and severe blood loss, anemia, bacterial pneumonia, IUGR, PROM, premature delivery and Low birth weight.(5,6). The client presented had IUGR, LBW, and PROM.

Pregnancy in a woman infected with HIV presents two challenges: the prevention of mother to child transmission (PMTCT) and the care of the mother from the effects of the disease and attendant opportunistic infection as well as the resulting complications. Vertical transmission can occur transplacentally before birth, perinatally by exposure to maternal blood and body fluids and postnatally through breastfeeding.

In non-breastfeeding populations, the majority of transmission occurs during labor and delivery which accounts for 65- 75% of the transmissions. Overall vertical transmission rates in this population without intervention is 15 -30% with antepartum transmission accounting for 15 to 25%. (7). In breastfeeding

populations, where breastfeeding lasts 18 to 24 months, majority of transmissions occur during breastfeeding, accounting for 40-50% ; Antepartum and intrapartum transmissions accounting for 15 to 30% and 20 to 35% respectively. The overall transmission rates in this population without intervention are 40-50%.

A number of factors have been associated with an increased risk of mother to child transmission of the HIV virus. These include a high viral load; as in recent infection or advanced disease, vaginal delivery, rupture of membranes for more than 4 hours, prematurity and breastfeeding.(7).

The measures that are currently available for the prevention of vertical transmission target these factors. These are: Antiretroviral Therapy (ART), avoidance of breastfeeding and elective cesarean section where indicated. ART is one of the most important of these measures. Its role is based on its ability to decrease the viral load to undetectable levels. In addition to reducing the risk of vertical transmission, it also alters the course of maternal disease as the CD4 count increases and the frequency of opportunistic infections is also reduced.

A landmark study____ Aids Clinical Trial Group (ACTG) protocol 076 demonstrated that the use of Zidovudine monotherapy after first trimester till delivery, and for the infant for six weeks reduced the rate of transmission by 67%. Another study in Thailand using a shorter duration showed a 50% reduction in transmission in a breastfeeding population.(8). Using combination therapy has shown even better results.(9).

Antiretrovirals in pregnancy are used either as prophylaxis or treatment. Prophylaxis refers to the short-term use in order to reduce HIV transmission from mother to the infant. This is offered to women who do not need treatment due to the clinical stage of their disease. In Kenya, the Ministry of Health recommends prophylaxis for pregnant women who are in WHO clinical stage I and II and those with CD4 counts greater than 350.(). The regimen recommended is AZT 300mg twice daily from 28 weeks or as soon thereafter. Intrapurtam, AZT 300mg is given at onset of labor and repeated every 3 hours or till delivery plus Niverapine 200mg single dose or 600mg plus Niverapine 200mg single dose given at onset of labor. The infant is given 2m/kg Niverapine single dose and AZT is given at a dose of 4mg/kg for one week.

Treatment with triple combination therapy is given to mothers who are clinical stage III or IV or whose CD4 counts are below 350. This treatment is given

during pregnancy and is continued after delivery. In addition to reducing the risk of mother to child transmission of HIV, treatment also improves the health of the mother. The recommended regimen in pregnancy is Zidovudine, Lamivudine and Niverapine. Efavirenz may be substituted for Niverapine after the first trimester.

Delivery by elective cesarean section before onset of labor and rupture of membranes has been shown to further reduce the rate of transmission in those with viral loads above 1000 copies per milliliter.(10). The client presented had been scheduled for elective cesarean section but presented after rupture of membranes for ten hours and was in established labor, which eliminated potential for benefit from cesarean section. Labor was augmented and she delivered in four hours. No episiotomy was given. This further reduces contact with maternal body fluids.

When a woman chooses to deliver vaginally, active management of labor is done to avoid protracted labor. Elective rupture of membranes is delayed, episiotomy is only given when it is absolutely necessary, no invasive fetal monitoring is undertaken and deep suctioning of the oropharynx is avoided unless there is meconium; Once the baby is delivered it is wiped dry with sterile cloths and when possible bathed in warm water.

Providing alternative feeds is one of the major efforts to minimize the risk of vertical transmission and the client presented received free formula milk for the baby.

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OBSTETRIC CASE 10

CERVICAL INCOMPETENCE, CERVICAL CERCLAGE: TERM DELIVERY

Name: E.N. IP.NO. 0386203
DOA. 24. 07. 2006. DOD. 27. 07. 2006
Age. 36 years Para 3 + 3 Gravida 7.
LMP. 9. 04. 2006, EDD. 16. 11. 2006

Presenting history
Four consecutive pregnancy losses at 28 weeks
She reported no problems with the current pregnancy.

Past Obstetric history
1st delivery 1989, term pregnancy, had rapid labour and delivered live male infant weighing 2.5 kg in 2 and a- half hours.
2nd delivery 1992, 2- hour preterm labor at 7 months, FSB
3rd delivery 1993, short lasting preterm labor at 7 months, live infant died soon after delivery.
4th delivery 1994, preterm labor at 7 months, neonate died of prematurity
5th delivery 1996, preterm delivery at 8 months, preterm infant weighing 1.8 kg; alive and well
6th delivery 2001, term delivery, had Macdonald stitch, live male infant, 3.5 kg, alive and well.

Gynecologic history
Menarche was at 18 years
She had regular 25- day cycles with 4 day menstrual flow. She had no dysmenorrhoea.
She had used depo provera from 2002 till 2004 when she stopped because she wanted to have a baby.
Family, social and economic history
She was married to an office messenger. She was a house wife. None of them used alcohol or tobacco. Her mother was hypertensive.

Physical Examination
She was in good general condition. She was not pale and examination of her systems was essentially normal
Speculum Examination
The cervix was noted to have a large defect at 9 o 'clock position.

Management

A diagnosis of cervical incompetence was made and the patient was advised to return to the hospital 1n two weeks (at 14 weeks) for cervical cerclage.

The patient presented to labor ward on 24th July. Blood was taken for full blood count and renal function test. Consent was obtained and the patient transferred to antenatal ward to await cervical cerclage the following day.

She was not to eat anything after midnight that day. On 26th July 2006, she was wheeled to theatre after pre-medication with 0.6mg of Atropine.

In theatre she was put under general anesthesia and then lithotomy position. The bladder was emptied using a Foley's catheter after vulvo- vaginal toilet. She was prepped and draped in a sterile fashion.

Using a weighted speculum and a Sim's speculums the cervix was exposed. A purse-string suture was applied at the most proximal end of the cervix with number 2 mercelain suture which was tied posteriorly. There was minimal bleeding from the puncture sites.

The anesthesia was reversed and the patient was handed back to the ward staff in stable condition. She was observed in the ward over-night. In the morning, she discharged home on the instructions that; she was to have bed rest for one week, no coitus for one month. She was also instructed to return to hospital any time she experienced vaginal bleeding or abdominal cramps.

Follow up

She was seen at the antenatal clinic after two weeks.

She had no complaints. A speculum was used to inspect the stitch which was found to be properly in place, not too lose or too tight.

She was seen in the antenatal clinic at 26 weeks and at 35 weeks and had no problems detected.

DISCUSSION

Few subjects have generated as much controversy as has cervical incompetence, a term intended to convey the idea that a structural weakness, or "incompetence" of the cervix, causes the loss of an otherwise normal pregnancy (1). Although the concept may look straightforward, the definition, pathophysiology, clinical presentation and the management of this disorder have been a subject of many arguments.

Cervical incompetence as a clinical entity was first recognized in 1658 in a text entitled Practice of Physick by Cole and Culpepper, who described cervical incompetence and possible etiology:

...the second fault in women which hindered conception is when the seed is not retained, or the orifice of the womb is so slack that it cannot rightly contact itself to keep in the seed; Which is chiefly caused by abortion, or hard labor, and childbirth, whereby the fibers of the womb are broken in pieces, one from another , and they, and the inner orifice of the womb, overmuch slack..

The use of the term Cervical Incompetence is attributed to Gream in an 1865 issue of the Lancet. In 1922, Child described an operative procedure to restore the functional integrity of the cervical os. In 1955 and 1957, Shirodskar and McDonald, respectively, introduced methods of transvaginal cerclage that remain the most currently used procedures for the treatment of cervical incompetence.

In 1965, Benson and Durfee advocated a trans-abdominal approach to the placement of a cerclage for patients in whom trans- abdominal approach had failed, or in whom cervical scarring or congenital abnormality was so severe as to make the trans-abdominal approach technically in impossible. The etiology of decrease or absent cervical function may be placed into three major categories; congenital factors, physical injury or trauma or biochemical influences.

The cervix consists primarily of fibrous tissue with only 10 to 15 % of smooth muscle (2). The proportion of cervical smooth muscle varies from 29% at the upper one third to 4.6% in the lower third. During pregnancy, the muscular uterine isthmus distends and elongates the 12th and the 20th weeks of gestation making its inferior border with the fibrous cervix the functional internal os. It is this anatomic and histologic junction that is responsible for keeping the products of conception in utero during a normal pregnancy. (2). It appears that primary disorders of this sphincteric mechanism may result from the abnormalities in the muscular isthmus and the upper cervix as well as the derangement of the cervical fibrous tissue decreasing its resistance.

The most prevalent 'Congenital 'factor contributing to cervical incompetence is cervical length. Women with cervical length below the 5th percentile have a tremendously increased risk of spontaneous preterm birth (1,3,4). Other congenital causes include abnormalities in mullerian duct fusion and congenital uterine anomalies.

Cervical incompetence attributable to trauma may be iatrogenically induced during obstetric or gynecologic operative procedures, or may be the result of spontaneous obstetric lacerations during labor or delivery. (4). The cervix may be lacerated, may heal poorly, or may be stretched beyond tolerated. Overzealous dilation of cervix and cervical conization has a role in the etiology of cervical incompetence. The risk of preterm birth is increased when the cone height is at least 10mm (**5**). Serum relaxin levels have been associated with preterm birth in twins independent of cervical length.

There are three clinical scenarios in which the diagnosis of cervical incompetence should be considered. The first is a patient with a history of mid-trimester pregnancy loss, often recurrent. The second is the acute presentation of during pregnancy of advanced cervical effacement and dilation in a woman with no history of pregnancy loss. A third scenario has arisen in the era of cervical Ultrasound technique: the observation of cervical funneling or effacement, made either in the process of a patient whose gynecologic or obstetric history has suggested the possibility of cervical incompetence or in whom ultra-sound findings suggestive of incompetence were observed incidentally (3)

The diagnosis of cervical incompetence is made most often considered and most securely established where there is a documented history of painless cervical dilatation in absence of contractions ,bleeding, infection, rupture of membranes, fetal anomaly or elevated maternal serum alpha-fetoprotien that might indicate significant feto-maternal bleeding.(3).

There may be a history of cervical trauma from surgical manipulation or traumatic delivery, termination of pregnancy, dilatation and curettage or placenta previa. The case presented had precipitate first delivery, followed by consecutive mid-trimester pregnancy losses with very short duration of labor.
On examination, the cervix was found to have a defect at 9 o'clock position. Insertion of MacDonald stitch in a previous pregnancy resulted in term delivery that occurred soon after removal of the stitch.

When a diagnosis of cervical incompetence is considered, but does not meet the narrow clinical criteria, it is prudent to insert an empirical stitch. Ger and co-workers constructed a scoring system to predict efficacy of cerclage based on clinical observations made in 47 patients with diagnosis of cervical incompetence. They concluded that cerclage is most likely to be efficacious in preventing preterm delivery and fetal loss in women who met three or more of five criteria.

1. Previous premature delivery or mid-trimester abortion without a cause.
2. Visual evidence of surgical or obstetric trauma to the cervix.
3. History of painless premature labor or rapid delivery.
4. Progressive dilatation or dilatation greater than 2 cm on initial examination during the mid-trimester.
5. Previous diagnosis of cervical incompetence with previous cerclage.

The patient presented had a score of 4/5 and most likely would benefit from cervical cerclage. Additional information may be obtained by use of ultrasound. Suggested Sonographic criteria for diagnosis of cervical incompetence in a patient with suspicious history include:

1. Cervical shortening to a length below the fifth centile (20mm) to 10th centile(25mm) accompanied by a funnel that comprises at least 30-40% or the total length (funnel =residual length) of the cervix, observed spontaneously or in response to fundal pressure.(8).Although these criteria have been applied clinically, they have not been tested clinically through a prospective blinded observational study in women with abnormal cervical competence , nor has cerclage been shown to offer significant advantage over bed rest and or other non-invasive therapy when such findings are observed.(4).

Despite of the lack of anything other than case series in support of its efficacy, cervical cerclage has become standard treatment for cervical incompetence. Data on the outcome of pregnancies treated using cervical cerclage presented as reports of collected cases boast a success rates of 75-90 %(9). However they are flawed by the practice of comparing pregnancy outcome with that of previous pregnancies in the same woman.

Many studies that have attempted to randomize patients at risk have failed to demonstrate significant advantage of cervical cerclage. Others have actually reported increased hospital admissions and use of tocolytics in cerclage patients.

In 1993, The Royal college of Obstetricians and Gynecologists reported final results of a large multicenter randomized trial of cervical cerclage that included 1292 women. The most typical cases of incompetence were excluded. After randomization to either cerclage or no cerclage, 92% were actually treated as allocated. the cerclage group had statistically fewer deliveries less than 33 weeks, fewer infants less than 1500g and fewer pregnancy losses I, including miscarriages , stillbirths, and neonatal death.

The authors concluded that while there was statistically significant benefit in the cerclage group, the differences were not large and would require 25 cerclage operations to prevent one preterm delivery. The apparent benefit was real, but limited to a small group of women with incompetent cervix who could not be easily distinguished from others with similar histories. The benefit of cerclage seemed to be concentrated in the groups of women with multiple previous pregnancy losses or preterm deliveries (10).

MacDonald stitch is the commonest cerclage procedure in our setting. This is usually done electively between 13 and 16 weeks.
Contraindications include ruptured membranes, evidence of cervical or intrauterine infection, major congenital anomalies of fetus, unexplained vaginal bleeding, and active labor.

Postoperative care depends on the circumstances that led to the procedure, including gestational age at the time of cerclage. For elective procedures between 13 and 16 weeks, rest is advised for about five days. Intercourse, prolonged standing and heavy lifting are avoided. Emergency cerclage may require admission and tocolytics.

Sonographic assessment of the suture postoperatively has been shown to be of use. There is a correlation between good perinatal outcome and the immediate postoperative appearance of the cervix. This includes increased cervical length above and below the stitch and decreases funnel width. (11).
The stitch is removed electively at 38 weeks or later when delivery is anticipated. it must also be removed in the event of labor, vaginal bleeding, intra uterine infection ,or spontaneous rupture of membranes. Labor usually follows the removal of the stitch. In women in whom no funneling or shortening occurs, the diagnosis of incompetence was probably wrong and may not need cerclage in subsequent pregnancies. However sonographic assessment is still necessary.

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OBSTETRIC CASE 11

TERM PREGNANCY; ELECTIVE INDUCTION OF LABOR, LIVE BIRTH

NAME: JN
PRIMIGRAVIDA
AGE; 26YEARS
LMP; 30TH NOVEMBER 2006.

IP.NO: 1112121
DOA: 1 5TH AUGUST2006
DOD: 22ND AUGUST 2006
EDD: 6TH AUGUST 2006

Presenting complaints
Abdominal pain for one day; There was no drainage of liquor or vaginal bleeding.

History of current pregnancy
She had attended antenatal clinic at a private clinic in town. An ultrasound done at 16 was less by 2 weeks compared to gestation by dates. By extrapolation the gestation was 39^{+} weeks at the time of presentation to hospital.

Antenatal profile
- Blood group was A- positive
- HIV was Negative
- VDRL was Negative
- Urinalysis had no protein
- Hemoglobin 11.2g/dl

Past Gynecologic history
Menarche was at 14 years. She had regular menses. She had used male condoms frequently for contraception.

Family and Social history
She was a University student married to a Computer Technician. She did not smoke or take alcohol. There was no family history of any chronic illness.

Past medical and surgical history
This was unremarkable.

Physical examination
She was a young lady in good general condition. There was no pallor or edema.
Vital signs:
BP 110/70 mmHg

Temperature 36.4^{0}C.
Pulse 96/minute

Her Cardiovascular, Respiratory, and Nervous systems were normal.

Abdominal examination

The fundal height was term. The lie was longitudinal with cephalic presentation. The presenting part was engaged and descent was estimated as 4/5.
The fetal heart was 132 /minute and regular. No uterine contractions were marked. There was mild suprapubic tenderness.

Pelvic examination

She had normal external genitalia. The cervix was closed, in mid-position, of moderate consistency and partially effaced. The presenting part was at station -1. The Bishop's score was 5.
A diagnosis of term pregnancy with unfavorable cervix was made.
This was communicated to the patient and her partner. They requested Induction of labor since she was due to sit for her final examinations in 6 weeks. The procedure and risks were explained to the couple who appeared to have a good understanding of the situation.

Management

A decision was then arrived at to start labor induction beginning with cervical ripening by use of prostaglandin E_2. The prescription was given to the husband who went to buy it immediately.

The first dose was inserted into the posterior fornix at 9.30pm. She was reviewed 6 hours later. The cervix was found to be much softer and was 1cm dilated. There were no uterine contractions detected. The fetal status was reassuring. A second dose was inserted. After 4 hours she began experiencing intermittent low abdominal pains radiating to the back. She was taken to labor ward where labor progress was monitored.

Pelvic examination found the cervix to be 3cm dilated and about 80% effaced membranes were bulging. Artificial rupture of membranes was done. Clear liquor drained. No cord was felt. She was allowed to continue labor spontaneously. She was reviewed after another 4 hours and the cervix was 5cm dilated. Fetal heart was good. She had 2 strong uterine contractions in 10 minutes. Augmentation with oxytocin was done.

She progressed well and was confirmed to be in second stage within 3 hours. She delivered a live male infant who weighed 3400g and had an Apgar score of 8/1 and 10 at 5 minutes. Third and 4th stages of labor were without any problems. The estimated blood loss was 150ml. She was discharged to the postnatal ward where she was observed overnight. Both mother and baby were discharged home the following day in good condition.

DISCUSSION

A 26 year old primigravida presented with a history of lower abdominal pain which was found not to be labour. By her last menstrual period and Ultrasound done at 16 weeks the gestation was 39 weeks. She was in college and was due to sit for her final examination in 6 weeks time. Evaluation revealed that the pelvis was adequate, the fetal weight was estimated clinically to be about 3000g and the fetal status was good. All factors considered induction of labor was deemed to be appropriate.

A decision was made to induce labour, beginning with cervical ripening using Dinoprostone (Prostaglandin E_2).

In its simplest terms, labour consists of myometrial contractions, which cause effacement and dilation of the cervix to that leads to the expulsion of the fetus.

Induction of labour is the stimulation of uterine contractions before the onset of spontaneous labor, with the goal of achieving delivery. This may be indicated or elective. Indications for induction of labor may be medical, obstetric or fetal complication of pregnancy. Elective induction of labor may be performed for the convenience of the patient or professional staff. (2)

Many studies have demonstrated the safety of elective induction of labor provided the patient was at term and the cervix was partially effaced and dilated at least 2cm (3, 4, and 5) Long term follow-up of children have not found any evidence of neuro-developmental abnormalities related to elective induction of labor. (6, 7) For post-term pregnancy, elective induction has shown to be more cost-effective than serial antenatal monitoring.(8)

The decision to induce labor should include clear discussion with the patient and her care giver. This should also be communicated to other staff in labor and delivery as well as the nursery. Ideally there should be a collective agreement on the criteria for patient selection; there should be a protocol for the labor induction procedure, including lines of authority and areas of professional responsibility (2).

Since normal labor depends on efficient myometrial contractions acting on a compliant cervix to efface and dilate it. Methods of labor induction must take account of both components of the uterus.

Methods used for induction of labor are either mechanical or pharmacologic. Mechanical agents use physical stimulation provokes cervical effacement, dilation and uterine contractility. These include; Amniotomy, membrane stripping and stretching, hygroscopic tents, catheters and balloons (10). Pharmacological agents act by modifying the cervix and stimulating uterine contractions; the most commonly used are Oxytocin and Prostaglandin compounds (11,12).Current obstetric practice utilizes rational combination of amnniotomy, oxytocin and prostaglandin.(13,14)

Although the mechanism by which amniotomy induces labor is not clearly know, it is the corner stone of successful induction and progression of labour. Amniotomy may act locally by stimulating the synthesis of prostaglandins and reduction of intrauterine volume due to drainage of liquor may also play a role (13).

Oxytocin has been used in clinical obstetrics since 1906.It causes myometrial contractions by its action at the cellular level. Oxytocin induction in addition to amniotomy has a success rate of 97.8% compared to 39% when amniotomy is not performed (16). It is now standard practice to perform amniotomy before initiating Oxytocin administration. The dose of Oxytocin is titrated to achieve uterine contractions. Amniotomy stimulates the release of prostaglandin from the amnion decidua. This appears to sensitize the myometrium to the action of oxtocin (17). In the case of fetal demise HIV infection and cardiac disease amniotomy is delayed in order to minimize risks of infection.

The use of prostaglandin for induction for induction of labor was first described in1968.The main prostaglandin F2 (PGF_{2x}) and E2 (PGE_2) have been used extensively for cervical ripening and induction of labor. They are effective in producing uterine contractions even when the uterus is insensitive to Oxytocin (18).

Prostaglandin act through specific receptors which mediate contractions of smooth muscle in a number of tissues through mechanisms that include increased calcium utilization and inhibition of intracellular cAMP. They appear to contribute to the transition from phase 1 to 2 rather than initiate the labor process (20).

Perhaps the best indication for a role of prostaglandin in parturition include evidence for increased prostaglandin production before the appearance of labor-like myometrial contractions and the effects of prostaglandin inhibitors such as indomethacin in supporting myometrial contractility and prolonging gestation (21).

The main advantage of use of prostaglandin lies in their ability to produce many features of spontaneous labor. It is not also very demanding on staff compared to oxytocin which requires titration every so often. Unlike oxytocin, however, once started it cannot be stopped. With many preparations available in market, dosing is a problem and incidence of precipitate labor, cervical tear and uterine raptures have been witnessed.

Patient selection and preparation are critical for the success of labor induction. The Bishop score (22) or some suitable modification of it, holds the key to appropriate induction techniques. This is especially true of primigravidae women.

Bishop Scoring

	POINTS ASSIGNED			
FACTOR	0	1	2	3
Dilation (cm)	0	1-2	3-4	5-6
Effacement (%)	0-30	40-50	60-70	80
Station	-3	-2	-1or 0	+1or+2
Consistency	Firm	medium	soft	
Position	Posterior	mid	Anterior	

If the Bishop score is less than 5, amniotomy and Oxytocin infusion are associated with unacceptably high incidence of fetal and maternal complications (23).In this circumstances, cervical ripening is indicated. The best method is by

the local application of PGE_2.This may be in the form of gel vaginally or endocervically or form of vaginal pessary. These compounds are highly effective in ripening the cervix and reducing problems of failed induction and prolonged pregnancy (24).They stimulate both cervical ripening and uterine contractions in a way that mimics natural labor (2).Sometimes, however, the contractions are introduced before adequate cervical ripening, with the result that labor may be resistant. This may be because PGE_2 is only one of many chemical agents required for successful cervical ripening (1,2).Wrong dates is also another factor since induction of labor is more difficult remote from term.

Other therapies may soon be available for me in the process of labor induction. These include Relaxin and Nitric Oxide (25,26) antigestagens and cytokines (27).These agents may allow full cervical ripening to be fully expressed before uterine contraction contractions are stimulated, thereby minimizing the complications of induced labor.

Reference;

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OBSTETRIC CASE 12

CARDIAC DISEASE GRADE IV: LIVE BIRTH

NAME: H.N.
IP.NO. 1059695
19 YEARS
PRIMIGRAVIDA

DOA: 27TH APRIL 2006
DOD: 12TH AUGUST 2006
LMP:21: OCTOBER 2005
EDD28TH JULY 2006

Presenting complaints

Cough Shortness of breath on exertion, Orthopnea, paroxysmal nocturnal dyspnoea, and hemoptysis for three weeks.

History of presenting illness

She was well until November 2005 when she developed above symptoms to the medical clinic, where she had been followed up for Rheumatic heart disease. Evaluation revealed that she was in Congestive heart failure due to Rheumatic heart disease. She was on monthly Benzathine penicillin injection, Lasix and Atenolol.

She had not seen her menses for three months and a pregnancy test done showed that she was pregnant. Apparently she had not been advised on relationship of pregnancy in the setting of cardiac disease. She was then transferred to the antenatal ward.

Gynecologic history

Menarche was at 15 years. She had regular menses 15; 3-4/ 28-30 day cycles
There was no history of dysmenorrhoea.
She had never used any form of contraception

Family, Social and Economic history

She was unmarried and unemployed, living with her sister in Nairobi. There was no family history of cardiac disease or other chronic illness.

Physical Examination
Vital Signs

Blood Pressure: 110/ 70 mmHg
Pulse rate : 118/ min
Respiratory rate: 32/min

Temperature: 36.40C
She was dyspnic at rest, not pale and afebrile.
There was jugular venous distension.
The respiratory eaximination revealed tachypnea, with bilateral basal crepitations.

On the cardiovascular system, there was tachycardia with a gallop rhythm. There were both a systolic and diastolic murmurs.

On abdominal examination, she had a tender hepatomegally of 4 cm below costal margin along mid-clavicular line.
The spleen was not palpable
The fundal height was 18 weeks.

Investigations
Hemogram: HB. 10.5
WBC. 11,300
Platelets. 248,000

Chest X-ray: Revealed Cardiomegally with a raised Apex and Basal haziness consistent with congestive heart failure

Echocardiogram; Showed severe mitral valve stenosis with normal left ventricular function.

Management

- She was admitted to the antenatal ward
- Started on Intravenous Lasix, 40mg twice daily
- Digoxin 0.125 mg once a day
- She wa s propped up in bed
- Oxygen was given by mask as needed.

She responded well to treatment and was asymptomatic by the third day after admission.
She was kept in the ward for the entire period of pregnancy which lasted 19 weeks.

While in the ward full blood counts were done on alternate weeks, urinalysis was done weekly and obstetric ultrasound was done twice in addition to monitoring of Vital signs. All these did not reveal any pathology.

Labor and Delivery

In the labor ward, she was propped up and oxygen given by mask. Pethidine 100mg was given intramuscularly for analgesia.

She was given Benzyl penicillin G 2 mega units six- hourly and Gentamycin 80 mg 8 hourly for prophylaxis against Bacterial endocarditis.

On abdominal examination, the fundal height was term, presentation was cephalic. The presenting part was engaged with a descent of 3/5. The fetal heart was 138 and regular.

There were 2 moderate contractions in 10 minutes

Initial Vaginal examination found the cervix to be dilated to 4 cm and well applied to the presenting part and almost fully effaced. Membranes were found to b intact with a small collection of amniotic fluid on the posterior side. No cord was felt. There was no caput or molding. The pelvis was reassessed and found to be adequate.

A diagnosis of active labor was made and monitoring of labor with a partograph was started.

An emergency tray containing; Aminophyilline, Digoxin, Frusemide, Sodium bicarbonate, and Calcium gluconate was prepared and kept ready. A vacuum extractor was assessed to ensure it was in good working condition and kept ready for use during second stage.

The pediatric team was also made aware of the plans of delivery.

Maternal vital signs, fetal heart rate and uterine contractions were monitored half-hourly.

Repeat vaginal examination was done after four hours and she was found to be 9 cm dilated.

Thirty minutes later she reported an urge to push. Examination found that she was fully dilated with the presenting part at station +1.

She was transferred quickly in the same bed to delivery room.

While still in the recumbent position, vulvo vaginal toilet was done and bladder emptied with a sterile straight catheter. A left lateral episiotomy was made after infiltration with lignocaine.

The medium sized plastic cap was applied to the fetal scalp, care being taken to ensure maternal soft tissue was not involved. With each contraction, tension was applied to pull the fetus along the axis of the vaginal outlet. The fetus was delivered on the third pulling. Active management of third stage was done. Estimated blood loss was 150, placenta was normal and complete with membranes weighed 400gm. The episiotomy was repaired after inspection of the birth canal was done and no tears were found.

Good uterine contractions were obtained by massaging the uterus and there was no need for oxytocin. 80 mg of Frusemide was given immediately postpartum to minimize the effects of increased blood volume that occurs soon after delivery. The outcome was a live female infant who weighed 2700gm, who stayed with mother and started breast feeding once the mother was stable in the acute room. The mother remained stable throughout 4th stage and was transferred to the acute room where close monitoring was continued for 24 hours.

She was then transferred to the post-natal ward. While there, vital signs were monitored four- hourly. She continued with Frusemide and Digoxin. Antibiotics were changed to Intravenous Augmentin for another five days.

For the period she was in hospital counseling on family planning and risks of pregnancy in persons with cardiac disease were done. Her partner was not available for counseling, but since they were planning to get married later in the year, she was advised to come with him for counseling during her post natal visit.

She was discharged on through the cardiac clinic and to be reviewed in the postnatal clinic in one week.

DISCUSION

The patient presented was a 19 year old primigrvida. She had been diagnosed with Rheumatic heart disease at 17 years and was being followed up in the cardiac clinic. She was on medication for heart failure and prophylaxis for streptococcal infection. She presented in heart failure and was found to be 14 weeks pregnant. She was admitted to the antenatal ward where she was managed until she delivered safely.

Cardiovascular disease is the most important non- obstetric cause of disability ad death among pregnant women (1). It complicates 1-2% of all pregnancies. The incidence at Kenyatta National Hospital ranges from 0.5 to 1 %(2, 3).

In developing countries like ours, the commonest cause is rheumatic heart disease while in the developed countries, congenital heart disease predominate. A study at KNH in 1969 found that rheumatic heart disease accounted for 95% of heart disease. (2). A repeat study in 1982 found a lower rate of 86.4% and 12.9 % due to congenital heart disease. This trend should persist as antibiotic are becoming widely available and advances are made to manage patients with congenital heart disease so that many survive to reach reproductive age.(4).

Significant hemodynamic changes occur during normal pregnancy. Total blood volume increases by 40 to 50 % over non-pregnant values. Cardiac output increases by 30 to 40% and the pulse rate by 10 to 15 beats per minute.
These changes can aggravate symptoms and precipitate complications. In patients with limited ability to increase cardiac output secondary to valvular or intrinsic myocardial disease this leads to symptoms in early pregnancy blood volume has increased significantly. This is most likely what happened in the patient presented since she developed heart failure in spite of medication at 12 weeks of gestation.

Heart disease can be congenital or acquired, operated or non-operated. In pregnancy, the New York Heart Classification is useful in evaluating all types of cardiac patients with respect to pregnancy. It is a functional classification which is independent of the type of heart disease.
Class I: Asymptomatic but with cardiac disease
Class II: Symptoms with greater than normal activity
Class III: Symptoms with normal activity
Class IV: Symptoms at rest or CCF.

Mitral stenosis is the commonest lesion in young women with rheumatic heart disease. In KNH about 35% of pregnant patients with cardiac disease have mitral stenosis (2). Often it coexists with aortic or tricuspid valve disease.. Most patients with to moderate mitral stenosis tolerate pregnancy well. The normal hemodynamic changes of pregnancy put patients with mitral stenosis at special risk of developing pulmonary congestion. Those with moderate to severe form are likely to develop complications such as pulmonary venous congestion or frank pulmonary edema, Right ventricular failure, pulmonary vascular hypertension, hemoptysis, atrial fibrillation and systemic or pulmonary

emboli.(1). However sudden and unexpected deterioration can occasionally occur during pregnancy in patents with any degree of mitral stenosis
New onset atrial fibrillation in a previously asymptomatic patient can precipitate acute pulmonary edema which may require emergency commissurotomy. Superimposed infective endocarditis is an ever present reality even in hemodynamically mild disease.

The pregnant cardiac patient is also at risk of developing thromboembolic complications due to the hypercoagulable state of blood during pregnancy, as well as the venous stasis in the lower extremities.

The risk of developing congestive heart failure increases progressively throughout pregnancy. It is further increased during labor and delivery and immediately postpartum. Cardiac output increases by 20% with each uterine contraction as 300 – 500 cc of blood is expelled from the contracting uterus. Following delivery, and depending on the amount of blood loss , the cardiac output and plasma volume increase by 20 to 60% because of the shift of blood from uterus and placenta into the vascular space.(1). This is the time when cardiac decompesation can occur in an otherwise stable patient. Those with mitral stenosis characteristically develop pulmonary edema at this time. (6,7). Oxytotic drugs can produce further hemodynamic changes.

Considering all the above potential complications for pregnant patients with cardiac disease, the management of a patient with known cardiac disease should begin prenataly. But this is not always possible because some are not diagnosed until they develop complications as in the case of the patient presented.
The management calls for a team approach involving an obstetrician and a cardiologist. (1,6,7). The NYH classification is important in the management of these patients. Patients with grade I and II cardiac disease are managed as outpatients with frequent regular antenatal assessment as they can deteriorate any time. The patients and her family are educated so that they can recognize signs and symptoms that require patient to be brought back to hospital at any time. Things to watch for are; rapid weight gain, tachycardia, anemia, infection and rhythm changes. As long as they remain stable, they continue to be managed as outpatients till after 35 weeks when they are admitted and managed as inpatients until they deliver.

Those with NYH class II and IV are usually managed as in patients since the time of diagnosis. (1,7,). Restriction of maternal physical activity tends to avoid cardiovascular compromise and improves utero-placental perfusion. (9). The

supine position should be avoided in order to prevent pressure of the gravid uterus on the inferior vena cava which would decrease venous return. Anemia, respiratory and urinary tract infection must be sought for and treated effectively. Oxygen should be given whenever respiratory difficulties develop.

The fetal status is monitored by serial ultrasound studies and antepartum surveillance. Vaginal delivery is the preferred mode of delivery.

Patients with functional class I and II and compensated Class III should wait spontaneous labor at term. A maternal indication for delivery such as pre-eclampsia, protracted cardiac decompensation, or a fetal indication such as severe IUGR or fetal distress may necessitate earlier delivery.(2).

Intrapartum management of a cardiac patient is challenging. The care team should include an Obstetrician, a Cardiologist and a critical care nurse and an anesthesiologist.(1).

The patient should labor in the left lateral recumbent position. Antibiotic prophylaxis for bacterial endocarditis should be given at onset of labor. Relief of pain and anxiety is important as this would increase the work load for the heart. The patient presented was given a penicillin and Gentamycin for prophylaxis and Methadone for pain and relief of anxiety. Ongoing emotional support by the delivery team helps in allaying anxiety too. Epidural anesthesia is the ideal form method of pain relief but it is not practiced in our unit. Second stage should be shortened by use of assisted vacuum delivery with the patient being spared the need to bear down. Oxygen should be given when indicated.

Active management of third stage should be done with uterine contractions being achieved by massage. If this does not succeed oxytocin may be used to control bleeding. Ergometrine should be avoided since it causes titanic uterine contractions and peripheral vasospasm which may lead to cardiac decompensation or hypertension due to rapid expansion of the intravascular volume.(5,6). A bolus of Frusemide, 40 to 100 mg is given late second stage to minimize the effects of the increased blood volume following delivery. The client presented received 40mg of Frusemide. Massage of the uterus was sufficient to control bleeding and did not need uterotonics. Cesarean section is indicated for obstetric reasons.

Close observation must be continued for the first 24 to 48 hours. To achieve this patients in our department are kept in the acute room for at least 24 hours. Early

ambulation is important to minimize the risk of thrombosis. Routinely cardiac patients are observed for 10 to 14 days before discharge.(9). Before discharge, issues regarding contraception and future pregnancies are discussed with the patient and her family. Barrier and progesterone based contraceptives are appropriate. When the desired family is achieved or where another pregnancy would poses an unacceptable risk for the mother, sterilization by tubal ligation is recommended (1,6).

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OBSTETRIC CASE 13

INTRAPARTUM FETAL DISTRESS- CESAREAN SECTION, LIVE BIRTH

NAME .CN
AGE: 34
PARITY: PARA 3+ 0
LMP: 29TH Jan 2006

IP.NO: 1125468
DOA: 22ND OCTOBER 2006
DOD: 31ST October 2006
GBD: 37+

Presenting complaints
Labor pains for 6 hours. The pain had started around 9 pm the previous day. She ruptured membranes at about midnight. She arrived in the hospital at 6 am.

History of current pregnancy
She had attended antenatal clinic at a City council clinic and at KNH. There were no abnormalities detected during this period.

Antenatal profile
Blood group: O positive
HIV: Negative
VDRL: Negative
Random blood sugar: 4.6 Mol/L
Obstetric ultrasound: 23rd September 2006: A single intrauterine pregnancy at 36 weeks. Placenta was fund-anterior. Amniotic fluid was adequate.

Past Obstetric history
1998 Term delivery to a live male infant, weight 3.8kg, alive and well
2003 term delivery to a live female infant, weight 3.9kg, alive and well

Gynecologic history
Menarche was at 15 years. She had no menstrual problem was on Norplant after her first delivery which was removed before she got her second baby.

Family and social history
She was married and worked as a secretary. The husband was a businessman. There was a history of diabetes in her family.

Her past medical and surgical history was not significant.

Physical examination
She was a young lady in good general condition. She was not pale and was not febrile.

The cardiovascular, respiratory and nervous system examination was normal

Obstetric examination
The fundal height was term and the fetus was in cephalic presentation. The presenting part was engaged with a descent of 4/5. The fetal heart rate was 132 beats per minute and irregular.

Pelvic examination
The external genitalia were wet and the pad was meconium stained.
The cervix was 4cm dilated, edematous and loosely applied to presenting part.
There was a small caput but not much molding. There was meconium stained liquor estimated to be grade II.

A diagnosis of fetal distress with no imminent delivery was made.
A decision was made to expedite delivery by cesarean section.
The mother was counseled on the diagnosis and the need for cesarean section. She consented for cesarean section and also requested fro BTL. She was prepared for emergency Cesarean section and taken to theatre.

An emergency cesarean section was performed. Intraoperatively, the fetus was found to be in occiput posterior position. The liquor had meconium grade II.
The fetus was delivered cephalad. No other abnormalities were noted. Resuscitation was done by a pediatrician. The Apgar score was 6/1, 7/5 and 9 at 10 minutes respectively. The birth weight was 3200g. The baby was admitted in Nursery for suspected meconium aspiration. She was treated and responded well to treatment. She was discharged from nursery to join the mother on the 4th post natal day.

Postoperative management
Vital signs were monitored continuously until she was fully awake, then half hourly for 2 hours and then 4 hourly thereafter.
She was put on Intravenous fluids and prophylactic antibiotics and analgesics for 48 hours.

She recovered well and was discharged on the fifth postoperative day and was to be reviewed in the post natal clinic in 2 weeks' time.

DISCUSSION

The case presented was a 34 year old who presented in active labor. On evaluation an impression of non-reassuring fetal status was made on the basis of persistently irregular heart, meconium stained liquor. A decision was made to expedite delivery by cesarean section since imminent delivery was not feasible due to poor descent and the presenting part was poorly applied to the cervix. Intraoperatively the fetus was found to be in occiput posterior position which may have caused obstruction to normal progress of labor. The outcome was a moderately asphyxiated infant who responded well to resuscitation.

Fetal distress may be defined as a complex of signs indicating a critical response of the fetus to stress. It implies metabolic derangement, notably hypoxia and acidosis that affect the vital organs to the point of temporary or permanent injury or even death. Fetal distress may be acute or chronic. Skillful monitoring will detect some degree of fetal compromise in at least 20% of obstetric patients. (1).

The oxygen supply of the fetus depends principally on the adequacy of uterine perfusion, placental gas transfers and fetal circulation. The physiology of fetal circulation is such that it can efficiently extract oxygen from maternal circulation. This is achieved by the high hemoglobin content and the high affinity of fetal hemoglobin for oxygen. This ensures that the fetus can remain unaffected by mild to moderate hypoxia. However, in severe hypoxia, fetal tissues requirement for aerobic metabolism exceeds the oxygen supply and fetal tissue hypoxia begins. As a result the fetus turns to anaerobic metabolism, which causes a rise in lactic acid levels and a consequent fall in the tissue and blood PH. Hypoxia may result from effects on placental perfusion, placental oxygen transfer or umbilical blood flow.(2).

Placental perfusion may be affected by maternal chronic illnesses such as hypertension and diabetes. Maternal position and exercise also affect placental blood flow. Pressure of the pregnant uterus on the inferior vena cava can significantly affect venous return and affected placental perfusion. Maternal hypotension, placental infarcts or premature placental separation, all interfere with fetal oxygen supply.(3).

Fetal oxygenation can be improved by, having the mother lie on her left lateral position, oxygen supplementation and intravenous fluid to correct hypotension and improve tissue perfusion.(1,2,3) During labor, uterine contractions cause a brief interruption of blood flow through the inter-villous space. If the

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contractions are prolonged or titanic the utero-placental reserve may e exceeded and fetal hypoxia results. Pressure on the umbilical cord also results in decreases blood flow to the fetus.(1,2)

The purpose of antepartum and intrapartum fetal surveillance is to detect fetal distress. Current modalities for monitoring include; intermittent auscultation, Electronic fetal monitoring and quality of amniotic fluid. Biophysical profile, fetal blood sampling and umbilical blood flow velocimetry are useful methods for antepartum monitoring.(3,4).

Abnormalities of the fetal heart rate and rhythm are the most widespread methods for detecting fetal distress.(3). Quality of liquor, in particular, the presence of meconium is another indicator of fetal well-being. In the presence of meconium in amniotic fluid, perinatal morbidity is increased by 5 to 10%(5) Interpretation of intrapartum well-being is made in the context of the entire obstetric situation, including maternal and fetal factors and the course and anticipated duration and outcome of labor. In general, if there is evidence of progressive fetal hypoxia and acidosis in a situation where vaginal delivery is remote, cesarean section is indicated for fetal reasons. Vaginal delivery is prudent if it is judged that vaginal delivery will occur soon enough not to result in serious fetal injury o death.

The significance of meconium in labor is controversial but is generally accepted as an indicated of abnormalities in fetal physiology. This is especially so in pregnancies below forty weeks of gestation. Meconium in the setting of prolonged labor or abnormalities on the fetal heart rate most likely is and indication of fetal compromise than either meconium alone or fetal heart rate abnormalities alone.(5). This was the situation in the case presented. Perhaps the most important clinical value of meconium-stained amniotic fluid is to alert the Obstetrician to look for signs of fetal distress and plan for the presence of a Pediatrician to attend the delivery.

Fetal hypoxia may result in increased autonomic outflow stimulating gut motility leading to passage of meconium. This may also stimulate fetal breathing movements resulting in gasping movements with the risk of meconium aspiration intrapartum. The management of fetal distress involves the modification of factors that may contribute to distress and expediting delivery.(5,6)

Maternal position: Mother to lie in the left lateral position. This relieves pressure on the vena cava and leads to improved venous return. This is why all mothers

in labor should adopt this position. Correction of maternal dehydration/hypotension with intravenous crystalloid infusion

Oxygen supplementation improves placental oxygenation

Delivery is the definitive treatment for fetal distress. If the degree of fetal compromise is not severe and delivery is deemed to be imminent, vaginal delivery can be pursued. In all other cases delivery by cesarean section is indicated. In the presence of thick meconium, extreme care must be exercised to prevent aspiration at delivery. The head of the fetus must be wiped and meconium suctioned from the oro-pharynx before the fetus id delivered and it takes its first breath. Immediate neonatal care is important to ensure optimum outcome.

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OBSTERIC CASE 14

CANCER OF THE CERVIX IN PREGNANCY: PRETERM LABOR, EMERGENCY CESAREAN SECTION, RADIOTHERAPY

Name. R.W.
38 years P 2 + 0 G 3
EDD. JULY 2006
DOA. 16th. July 2006

IP. NO. 1098595
LMP. ? December 2005
GBD. 34 weeks
DOD. 3rd. August 2006

Presenting complaints
Vaginal bleeding, lower abdominal pain for one day

History of Presenting Illness
The patient had been seen at a district hospital three months earlier, where she had presented with complaints of post-coital bleeding and foul smelling vaginal discharge. On evaluation she was found to have a cervical mass which was confirmed by histology to be a poorly differentiated squamous cell carcinoma of the cervix. She was then referred to Kenyatta National Hospital (KNH) for further management.

She did not come to this hospital soon after referral. On the day of admission she started experiencing lower abdominal pain associated with heavy vaginal bleeding. This prompted her to come for treatment. There was no history of rupture of membranes.
During her antenatal care her blood pressure had been normal, urine examination was normal and her antenatal profile was as follows:

Blood group was O positive
HIV was negative
Serology for Syphilis was negative

Past Obstetric and Gynecologic History
She had had two successful pregnancies which ended with normal vaginal deliveries at term v and normal puerperiums. Her menarche was at 41 years and her sexual debut was at 16 years. For most of her life she had regular menstrual cycles lasting approximately 28 days with 3 days of menstrual flow. There was no history of dysmenorrheal. For contraception she had used combined oral contraceptive pill, Depo provera, emergency contraception and condoms at different times of her life. Prior to this pregnancy she had not been on any form

of contraception due to what she described as irregular menstrual bleeding. This may have been due to bleeding from the cervical mass.

Past Medical and Surgical History

She had no history of any significant Medical or Surgical condition

Family and Social History

She had been separated from her husband with whom she had two children for ten years. The current pregnancy was from her partner with whom they had related for one year. She ran a clothing stall. She did not smoke or use alcohol. Her partner was a Butcher. There was no family history of nay chronic illness.

Physical Examination

She was in fair general condition.

She was moderately pale. There was no lympadenopathy. Her respiratory and cardiovascular examination was normal.

On Obstetric examination, the fundal height was corresponding to 34 weeks of gestation. The presentation was cephalic, and the presenting part was engaged with a descent of 4/5. Two moderate contractions in 10 minutes were detected. The fetal heart rate was 140s and regular.

Vaginal speculum examination

There were fresh blood stains on external genitalia and perineum. There was an ulcerating mass of the cervix which was bleeding. No amniotic fluid drainage noted. Cervical dilatation and effacement could not be assessed.

A diagnosis of preterm labor in a patient with cancer of the cervix was made. The situation was explained to the mother who gave consent for emergency cesarean section. She also gave consent for bilateral tubal ligation. Blood was drawn for grouping and cross-matching. An intravenous line was fixed and secured. The patient was premedicated and taken to theatre.

In theatre examination of the tumor was done under anaesthesia. The findings were consistent with cancer of the cervix stage 3A as per FIGO classification

The abdomen was opened through a sub-umbilical midline incision. On exploration, there was no obvious evidence of tomour in the pelvis as seen from above. The lower uterine segment could b identified. The uterus was opened with a transverse incision which was made a little higher than would otherwise be made. This was a precaution for preventing excessive hemorrhage if there was tumor involvement reaching the lower segment. The baby was extracted cephalad. Placenta and membranes were removed manually. A live male infant was extracted. The APGAR score was 8 in 1 minute, and 10 in five minutes. The

weight was 2200gms. The cervix was dilated using the index finger to allow for drainage of lochia. The uterus was closed in two layers with excellent hemostasis. The fallopian tubes were tied and ligated using number 2-o chromic suture. The estimated blood loss was estimated to be 600 ml. The abdomen was closed in layers. Anesthesia was reversed without any difficulties. The patient was taken to the recovery room where she was observed for 20 minutes. She was handed over to the ward nurses in stable condition. She was put on prophylactic antibiotics for 24 hours.

During the postoperative period, there was no complication. The hemoglobin level done on the second postoperative day was 7.5g/dl. There was no complication and both mother and the baby were discharged in stable condition on hematinics and analgesics.

Follow-up

The patient was reviewed in the postnatal clinic on 29th July 2006. There was no per vaginal bleeding but the discharge was present. The surgical wound was healing well. The uterus had involuted well.

The client was then booked for radiotherapy in three weeks. However due to the work load at the radiotherapy department, the earliest she could begin treatment was on September 5th, 2006.

She received a total of 52 Grays over 28 cycles by external beam radiation.

As at the last dose of radiotherapy the only complications notable were the darkening on the skin around the site of radiation. At that time as well, the brachytherapy machine was broken down. The patient was referred to Mulago Hospital for one course of intracavitary radiation. I did not see her after this.

DISCUSSION

The case presented was a thirty eight year old pregnant lady who complained of foul smelling vaginal discharge and post-coital bleeding. She did not have obvious risk factors except early sexual debut and multiple sexual partners. I diagnosis of cervical cancer was made in the second trimester and definitive therapy was deferred until fetal viability was achieved. As a matter of fate she went into preterm labour at 34 weeks when the fetus was mature enough for extra uterine life. Postoperatively she received Radiation therapy which is the treatment recommended for this stage of disease.

It is difficult to conceive a set of circumstances more stressful for a patient and her physician than the discovery of a malignancy in a pregnant woman. Many pertinent issues come to mind: Can definitive therapy be deferred safely until the

fetus is viable or should it be terminated? Will pregnancy adversely affect the prognosis for the pregnant patient or will the treatment of the malignancy adversely affect the fetus? The other question is whether the malignancy can metastasize to the fetus. (e.g. melanoma).

The frequency of cancer in association with pregnancy is approximately 1 per 1000 live births (1). Breast and cervical cancer are the commonest malignancies during pregnancy. The others are Leukemia, Lymphomas, and Melanoma. (1,2). Cervical cancer is the most frequently diagnosed invasive neoplasm in pregnancy, occurring in approximately 1 per 200 to 2500 pregnancies globally. Locally the frequency is not known but could be higher since cancer of the cervix occurs at an earlier age in our setting (4). It constitutes about 25% of all malignancies in pregnant women. Nearly 3% of all cervical cancers are found during pregnancy (1,2). This underscores the need for careful evaluation of all pregnant women for cervical cancers and its precursor lesions.

A high index of suspicion for women presenting with bleeding n pregnancy can avoid delays in diagnosis of an occasional case. The case presented had complaints of bleeding in pregnancy and speculum examination led to the diagnosis of the tumor on the first visit.

In theory, the hormonal, metabolic, hemodynamic and immunologic changes that occur during pregnancy impose many possible adverse effects in these women. These concerns are greatest for tumors arising from tissues or organs that are under hormonal control or that respond to hormonal stimulation. (1). It has been reasoned that the increased vascular supply in the breast and pelvic organs, enhanced lymphatic drainage of many organs may contribute to early dissemination of the malignant process. Whereas these hypotheses may be intellectually stimulating, their validity lacks solid supporting clinical data. When corrections are made for age and aggressive histological subtypes of cervical cancer, pregnancy is found to have little adverse effect on the overall survival for this disease (3,4).

The methods for the diagnosis and treatment of cervical cancer and its precursor lesions in either the pregnant or postpartum patients are the same a for the non-pregnant patient. Papanicolaou smear is useful for detecting pre-clinical lesions. Its accuracy in invasive disease can be compromised by the presence of blood or marked inflammatory changes that may obscure the underlying diagnosis.

Colposcopic visualization and directed biopsy can safely be done in skilled hands. Biopsy of a visible lesion is unquestionably necessary. The major diagnostic difficulty lies in the hesitancy of some physicians to take a biopsy specimen of the cervix of a pregnant woman (1).

The general philosophy for the diagnosis and treatment of intraepithelial neoplasia of the cervix detected during pregnancy is one of expectant management after careful analysis. Patients with abnormal pap smear should undergo colposcopically directed biopsy of suspicious areas to rule out invasive disease. When invasion is suspected on the basis of clinical or histologic assessment, a carefully directed incisional biopsy of sufficient depth to permit accurate diagnosis should be carried out (1,5).

The performance of a cone biopsy in a pregnant woman is a formidable undertaking with increased risk of hemorrhage and spontaneous abortion. (6). This procedure should therefore be carried out in a theatre setting as opposed to the office in non-pregnant state. The procedure described for pregnancy may be envisioned as the excision of a coin rather than a cone of tissue. Fortunately, pregnancy causes the squamo-columnar junction to be everted, hence limiting the need for tissue sampling high in the endocervix.

The Loop Electrocautery Excision Procedure (LEEP) is especially suited for the excision of a shallow tissue of sufficient breadth and depth to permit treatment decisions while a more extensive lesion is ruled out. Conization results distinguish patients with microinvasion, whose pregnancy can proceed to term without appreciable maternal risk from those with frank invasion in whom consideration must be given for early interruption of the pregnancy. Client presented had frankly invasive tumor. On counseling it was decided that pregnancy proceeds till 34 weeks then delivery could be done by elective cesarean section.

Table. Recommendations for management of the pregnant patient with abnormal pap smear findings

Results of colposcopically directed biopsy	Management
CIN I- III (consistent with CIN)	Differ further diagnostic/therapeutic procedure till 6 weeks postpartum
CIN I- III (cytology consistent with invasive Ca)	Cone Biopsy
Micro-invasive tumor	Cone Biopsy
Invasive tumor	Radical hysterectomy or Radiotherapy

Adapted from DiSai PJ, Creasman WT: Clinical Gynecology. St. louis, CV Mosby, 1981

The choice of treatment and the prognosis for cancer of the cervix is dependent on the stage and histologic grade (8). Tumor volume is also important in predicting the spread of disease and planning therapy(18). Gross tumour configuration also has a bearing on prognosis. Bulky exophytic or endophytic tumours, especially those that are barrel shaped have a poor clinical prognosis because of large volumes. Large tumours have poor blood supply which makes them less responsive to radiotherapyy due to hypoxia (8).

Lymph node metastasis has proved to be one of the most reliable prognostic factors. The number and whether the involvement is whether gross or microscopic is also important. (21). Poorly differentiated tumours have worse prognosis. (22).

Typically it arises from the squamo-columnar junction from preexisting dysplastic epithelium or de novo. (7). Spread occurs by direct local invasion in all directions or through the lymphatic system. Lymph node involvement is sequential beginning with those closest to the cancer: parametrial, obturator, hypogastric and external iliac nodes, common iliac and presacral and then para-aortic nodes.

Clinical staging as per The International Federation of Gynecology and Obstetrics (FIGO 1995)

Stage 0: Carcinoma in situ. The basement membrane has not been breached

Stage I: The carcinoma is strictly confined to the cervix (extension to corpus is disregarded).

IA: The carcinoma is strictly confined to the cervix

IA1: Minimal microscopically evident stromal invasion

IA2 : lesions detected microscopically that can be measured. Depth less than 5mm, and horizontally less than 7mm. larger lesions are stage Ib.

IB: Lesions greater than Ia2, whether seen clinically or not.

Stage II: the carcinoma extends beyond the cervix but has not extended to the pelvic wall. Involves vagina but not to the lower third.

IIA: No obvious parametrial invasion

IIB: Obvious parametrial involvement

Stage III: Tumour extends to the pelvic wall or involves the lower third of vagina or causes hydronephrosis or non-functioning kidney.

IIIA: Tumour involves lower third of vagina. No extension to pelvic wall.

IIIB: Tumour extends to the pelvic wall or causes hydronephrosis or non-functioning kidney.

Stage IV: Carcinoma extends beyond the true pelvis or has clinically involved the mucosa of bladder or rectum. Bulous edema not stage IV.

IVA: Spread of tumour to adjacent organs

IVA: Spread of tumour to distant organs

In pregnancy the choice of therapy should take into consideration the stage of the disease and the gestation of pregnancy. This is often influenced by the religious convictions of the patient and her family as well as the desires of the mother for her baby. Counseling, empathy and support for the mother and her family are very important. The patient finally kames the decision whether to treat the cancer or immediately or delay treatment I the interest of the baby.(1,8).

Generally, patients in the first half of pregnancy are advised to undergo definitive therapy immediately and thus interruption of pregnancy is usually recommended. These excludes patients with stage I disease who may be allowed to continue to maturity without undue risk to the mother. Patients who are at least 20 weeks, delay therapy until fetal maturity is attained unless hemorrhage Necessitates earlier intervention.(9). The client present was diagnosed at 24 weeks. A decision was made to delay pregnancy till 34 weeks. She was also referred to a tertiary institution with goon neonatal care facilities to optimize the survival of the neonate.

Treatment options depending on stage include surgery, radiotherapy or both. Cesarean radical hysterectomy at 34 weeks of gestation ensures fetal viability while delaying therapy for 14 weeks may not result in significant reduction in survival. (10,11). Cesarean hysterectomy allows the mother to go home with her baby without much interruption. In skilled hands, the rate of complications should not exceed rate for non-pregnant state. Although there is increased vascularity, normal tissue planes are clearly distinct, thereby facilitating pelvic dissection. (12). Extensive laparascopic hysterectomy is now a viable alternative in skilled hands.

Radiation therapy is equally efficacious for patients with early stage disease and is the treatment of choice for stages more advanced than IIA. Typically, treatment is begun in the first half of pregnancy with whole pelvis irradiation. Spontaneous abortion usually occurs within 5 weeks if initiation of therapy is begun in the first trimester and after seven weeks if in second trimester.

If spontaneous abortion has not occurred by the end of external beam radiation, the uterus may be evacuated by hysterotomy followed by conventional

intracavitary irradiation delivered within 1 to 2 weeks. Alternatively modified radical hysterectomy without pelvic lympadenectomy can be performed to remove the remaining central neoplasm.(13). The basic radiotherapeautic plan employed for cancer of the cervix in the non pregnant patient generally can be used for patients in whom cesarean section has been performed and uterine involution is complete(8). For young patients planned for radiotherapy as the primary mode of treatment or as adjuvant therapy, ovarian transposition out of the pelvis is recommended to avoid their ablation.(14, 17).

The most important considerations in choosing a method of therapy for any cancer are, first, effectiveness of the treatment in curing the disease and , second, morbidity and mortality rates associated with the treatment plan. (18). Morbidities and mortality rats associated with radiotherapy and primary surgery for early stage disease are about equal, but there are important major and minor advantages of primary extensive surgery over radiotherapy. The findings at operation and pathologic examination of the surgical specimen can be helpful in prognosis and for assessing those at high risk of persistence or recurrence. Preservation of ovarian function in premenopausal women and preservation of sexual function is possible.

Other complications of radiation therapy include radiation cystitis and proctitis including hemorrhagic types, intestinal fistulae, and small bowel obstruction. It is important to note that fibrosis incurred by radiation therapy progresses and is irreversible.(14, 19)

Despite carefully planned and executed treatment of stage I and IIA cervical cancer, 5 to 20% of patients show evidence of persistent or recurrent disease.(8). About half occur in the first year and almost all by 5 years. This goes to show how follow up must be an integral part of the treatment.

It is recommended that follow-up be instituted every 2 to 3 months during the first year and every 4 to 6 months in the following 3 years. Inspection of the vagina, cervix and bimanual examination and palpation of inguinal and cervical nodes are particularly important.

Cervical cancer remains the leading cause of morbidity and mortality in our setting. There experience of the develop countries, where routine screening and treatment of preclinical lesions has lead to drastic fall in the number of invasive disease should be reproduced locally if such efforts are instituted. (20).

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OBSTETRIC CASE 15

DEEP VENOUS THROMBOSIS IN PREGNANCY: ANTICOAGULATION; LIVE BIRTH

NAME: HN
AGE: 27
PARITY: 0+0
LMP: 22ND JANUARY 2006
EDD: 29TH OCTOBER 2006

IP.No.: 0951298
DOA[1]: 12TH MAY 2006
DOD[1]: 27TH MAY 2006
DOA[2]: 22ND OCT 2006
DOD[2]: 13TH NOV 2006

Presenting complaints

She presented with a one week history of painful swelling of her left lower extremity. The pain started spontaneously and the swelling and pain were both worsening and making it increasingly difficult to ambulate. There was no history of trauma or fever.

History of present pregnancy

She had not started antenatal care at the time of first admission. She however was booked to attend clinic at KNH after first discharge from hospital.

Antenatal profile

- Blood group A-positive
- HIV was Negative
- VDRL was negative
- Urinalysis was normal

Past gynecologic history

Menarche was at 14 years. She had regular menses coming after every 28-30 days with a flow of 4 days. She had used Oral contraceptive pills which she stopped 6 months before conception.

Family and social history

She ran a cloths Boutique in Nairobi town. She did not smoke or use alcohol. Her husband was a accountant in a high school. There was no family history of thrombosis or other chronic illness.

Past medical and surgical history was not significant.

Physical examination
She was a young lady in good general condition. She was neither pale nor febrile.

Vital signs
Blood pressure was 117/76mmHg
Temperature was 37.70C
Respiratory rate was 22/minute

Her respiratory, Cardiovascular and Nervous system examination was unremarkable.

Abdominal examination
The fundal height was corresponding to 20 weeks of gestation. The fetal heart was heard. There was no hepatomegally.

Examination of the lower Extremities
The left lower extremity was obviously swollen when compared to the right. The swelling extended from the leg to the groin. It was shinny, warmer than the right and tender on applying pressure. The iliac regions were non tender. There were no ulcers or bruises on the foot.

Measurements

Left lower extremity	Right lower extremity
Thigh 50.5cm	44cm
Calf 33cm	19.5 cm

Impression
An impression of lower extremity Deep Venous thrombosis was made.

Investigations
Hemogram: Hb. 10.8g/dl; WBC was 11,000/mm^3
Doppler Ultrasound: Color and gray scale Doppler studies were done from the ilio-femoral veins to the calf veins. Venous thrombosis was demonstrated; extending from the common femoral vein, the superficial femoral vein to the popleteal vein.

Management
The patient was admitted to the antenatal ward and started on Heparin infusion 30,000 IU every 24 hours. She was also put on oral Mefenamic acid 500mg 8-hourly for pain control. The dose of heparin was adjusted to 40,000 units in 24 hours based on KCCT finding.

Bed rest was advised for the first 4 days of admission. The affected extremity was elevated for most of the time during the acute phase of treatment.
Oral Warfarin was started at a dose of 5mg per day.

The level of anticoagulation was monitored using KCCT (aPTT) for Heparin and INR (International Normalized Ratio) for Warfarin.

On the fifth day the symptoms had significantly reduced and KCCT was 2.2 and INR was 1.9. Heparin dose was adjusted to 7,500 IU subcutaneously and Warfarin increased to 7.5 mg per day. The INR was reported as 3.1 on the 10th day and the dose of Warfarin was re-adjusted to 5mg per day. Heparin was then withdrawn.

After two weeks of treatment she was free of symptoms and she was discharged on 5 mg of Warfarin daily and to continue antenatal follow up and to be re-admitted at 36 weeks for conversion to Heparin before delivery.
Before discharge, the patient was educated on DVT and Warfarin and possible adverse effects. She was also educated on signs that would necessitate her coming back to hospital. This included bleeding and breathlessness.

RE-ADMISSION
She was re-admitted on 22nd October 2006 when she was 36+ weeks gestation for conversion back to heparin and is discontinuation of Warfarin.
At admission she was completely asymptomatic for DVT and limb measurements were comparable.

Obstetric examination
Fundal height was term, with cephalic presentation. The fetal heart was regular and the presenting part was not engaged.
Warfarin was sopped and heparin 5000 IU subcutaneously eight hourly.
She was counseled on the option of labor induction at 38 weeks gestation but she chose to await spontaneous labor.

Labor and Delivery
Heparin was stopped as soon as she reported symptoms of Labour. She was transferred to labor ward where she progressed spontaneously into active labor. She delivered a live female infant who weighed 3.2 kg and had an Apgar score of 8/1 and 10/5 minutes. The baby was examined by the pediatrician and found to be in good condition. She was discharged the following day on 5 mg of Warfarin daily. She was to return to the postnatal clinic in two weeks.

DISCUSSION

Deep venous thrombosis is a vascular occlusive disorder caused by the formation of pathological thrombus in deep veins. Liquid blood flowing through the vascular channel turn into a solid mass of platelets, cells and fibrin within the blood vessels (1,2).

The incidence of thrombosis in pregnancy varies from 0.5 to 3 per thousand. The wide variation may be due to the requirement for documentation by objective auxiliary tests. Waweru reported a rate of 0.16% of all pregnant women admitted to Kenyatta National Hospital.(3). Overall, the risk during pregnancy and the postpartum period is 5.5 times greater than non-pregnant controls (4).

More than a century ago, Virchow described a triad of factors that play an essential role in the initiation of intravascular coagulation:

- Injury to the vessel wall
- Stasis and,
- Changes in the local clotting factors

During pregnancy many changes occur in the coagulation system: Increased factor VIII, and other Vitamin K-dependent factors, resulting in shortening of prothrombin time (PT), and increased levels of circulating fibrinogen (5). Other changes that may predispose to venous stasis in the lower extremities include compression by the gravid uterus on pelvic veins, and decreased tone on the veins due to effects the effects of hormones of pregnancy. This tendency may also be augmented if the pregnant patient requires long periods of bed rest as in preeclampsia, threatened abortion or premature labor. However, venous thrombosis may occur without any identifiable predisposing factor. This was the case in the patient presented.

The apparent greater incidence of thrombosis in the postpartum period may be related to bed rest postpartum as may be occasioned by Cesarean section (9 fold compared to vaginal delivery) and operative vaginal delivery.

The diagnosis of DVT is requires a high index of suspicion, good clinical judgment, as well as an accurate interpretation of the objective tests. Whenever possible the diagnosis of DVT should be confirmed by an objective test because therapy is usually prolonged and is not without potential for harm. On the other hand, a missed diagnosis may result in a catastrophe which could have been prevented by treatment. Relying on clinical symptoms alone y has a false

positive rate as high as 50 %.(1,6). However in our setting, therapy is initiated on suspicion due to lack of immediate access to Doppler ultrasound studies. This is justified on the basis of risk of not treating.

The signs most commonly used in the diagnosis of DVT are: swelling, muscle pains, palpable deep linear cord, tenderness, Homan's sign and dilated superficial veins. Unfortunately, many of these complaints occur frequently as a result of the normal physiologic changes of pregnancy. In one study, of patients thought to have clinically certain DVT, 45% had an entirely normal venous system y venography.

Doppler ultrasonography has become the diagnostic study of choice in cases suspected of proximal vein occlusion (7). The sensitivity and specificity of evaluating popleteal and femoral vein thrombosis are 91 and 99%, respectively. It is less sensitive for calf vein thrombosis with a sensitivity and specificity of 36%. And 95% respectively.(8).

Heparin is the treatment of choice for the pregnant patient because it is a large molecule and does not cross the placenta. The response of individual patients is variable and, consequently, monitoring is needed to maintain heparin levels within he therapeutic range. Heparin does not dissolve the clot by itself; this is accomplished by the fibrinolytic system. Heparin inhibits the coagulation process by binding to antithrombin III, which in turn facilitates the binding and the neutralization of thrombin and factors IX a, Xa, XIa, and XIIa. The disadvantage of heparin is that it requires parenteral administration and refrigeration which is a problem especially in resource limited situations.

Coumadin derivative, Warfarin, is still used in our setting because of this limitation. It is used from 16 weeks until 36 weeks when it is converted to heparin. Warfarin crosses the placenta readily and has been shown to cause heparin embryopathy when given in the first trimester. These include: nasal hypoplasia and epipyseal stippling, with irregular bone growth. Central nervous system and a variety of eye defects have been observed irrespective of when Warfarin is given and fetal hemorrhage may occur following Warfarin administration in the third trimester or during labor (9). For this reason women on heparin are usually converted to heparin at 36 weeks in our unit.

The most commonly used method for the monitoring of heparin therapy is the activated partial thromboplastin time (aPTT), also called KCCT. The therapeutic goal is to prolong it 2-2.5 times the control. This should be done 6 hours after

administration of the subcutaneous dose and the dose adjusted as per the result . The dose is called the adjusted subcutaneous heparin. Heparin levels are more accurate, but are not available in most centers. A heparin plasma level of 0.2-0.4 U/ml, is needed to prevent propagation of thrombosis (10). Heparin is stopped with the first signs of labor and usually the effect of heparin will have disappeared by the time of delivery. Rarely neutralization of heparin with Protamine sulfate may be necessary.

Prothrombim time (PT) is used for the monitoring the anticoagulant effect of Warfarin. It should be continued until the therapeutic level is achieved, usually PT of 1.5 -2.5 the control. Postpartum Warfarin can be used safely even in breast feeding mothers. (11)

After the initial treatment by continuous heparin infusion, anticoagulation should be continued to prevent recurrences. For calf vein thrombosis, 6 weeks are usually sufficient. For proximal DVT and Pulmonary embolism, anticoagulant therapy should be continued for at least 3 months or longer if there is a persisting underlying cause or risk factor. (11)

There is no uniform agreement as to which patient should have prophylaxis. Generally patients with previous thrombosis with evidence of residual symtomatology, those with lupus anticoagulant or anti-cardiolipin antibodies, antithrombin III deficiency should receive prophylaxis. Heparin doses of 5000u 12-hourly is considered adequate.

Non drug ways to reduce the risk of thromboembolism should also be used whenever possible: these include intermittent pneumatic leg compression, during surgery, anti embolic stockings, leg elevation, and early postoperative ambulation.

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OBSTETRIC LONG COMMENTARY

TITLE: POST-CESAREAN SECTION WOUND INFECTIONS IN A MISSION HOSPITAL IN RURAL KENYA: A CLINICAL AUDIT

ABSTRACT

Background: Cesarean Section is perhaps the most important Obstetric intervention of our time. Whereas over the years cesarean delivery has evolved into a safe procedure, it remains critical that every obstetric unit systematically reviews its performance in order to ensure the lowest morbidity and mortality risks to mother and infant.

Objectives: To carry out a clinical audit of the management of Caesarean section clients in order to determine the rate of surgical wound infection and to identify preoperative, intra-operative and postoperative practices that impact on wound infection.

Design: A prospective descriptive surveillance study.

Setting: Tenwek Mission Hospital Maternity Unit.

Main measure of outcome: Confirmation of wound infection.

Subjects: All mothers delivering by Caesarean section during the period of study.

Results: The rate of post cesarean wound infection was 3.9%. *Staphyloccocus aureas* was the commonest cause of abdominal wound infections while *E. coli* was the commonest cause for Endometritis. A mixture of both organisms was found when the infection involved both the abdominal wall incision and uterus. Patients who had pelvic examination before referral were 9 times more likely to develop sepsis. [OR (95% CI); 9.0(1.8, 45.1) p Value ***0.002***], those who had ruptured membranes for more than 12 hours were almost 15 times more likely to develop sepsis compared to those who had intact membranes {OR 14.4(15, 137.0) p Value 0.004)}

The likelihood of developing sepsis amomg referred patients was almost five times higher than patients coming straight from home. [OR (95% CI) 4.6 (0.9, 22.9) p value 0.046].

Although it was not statistically significant, there was a trend for those who had been in labour for more than 12hrs and risk of infection.

Conclusion: There was no increase in the rate of post-cesarean wound infection at Tenwek Hospital maternity unit during the period of study. Pelvic examinations, prolonged rupture of membranes, especially among referred patients, were the three most important determinants of sepsis.

Key words: Cesarean section, wound infection.

LIST OF ABBREVIATIONS AND ACRONYMS

ANC Ante Natal Clinic

AIDS Acquired Immune Defficiency Syndrome

ART Anti-Retroviral Therapy

CPD Cephalo-Pelvic Disproportion

C/S Cesarean Section

Hb Hemoglobin

HIV Human Immune-deficiency Virus

KNH Kenyatta National Hospital

MOs Medical Officers

PMTCT Prevention of Mother-to-Child Transmission

TBA Traditional Birth Attendant

INTRODUCTION

The term 'Cesarean Section' denotes the delivery of fetus, placenta and membranes through an incision in the abdominal and uterine walls. The first documented operation on a living patient was done in 1610. The patient died on the 25th postoperative day due to sepsis. The first successful operation in the U.S. was done in a cabin near Staunton, Virginia in 1794; both mother and baby survived.

Cesarean section is, no doubt, the most important Obstetric interventions of our time. Cesarean section rates have been rising steadily and vary from 5% to over 20% in most reported series [1]. A teaching Hospital in Pakistan reported a rate of 51% [2]. The Nairobi Birth Survey found that 33% of deliveries in the city are by Cesarean section. This shows how important Cesarean birth has become since one out of three women in Nairobi delivering in a health institution does so through Cesarean Section. Studies done in public hospitals in Kenya give a cesarean section rates of between 4% and 21%.[11, 12, 13, 16, 18, 19]. More than one studies have been done at Kenyatta National Hospital and Pumwani maternity hospitals.

The subsequent studies reveal an upward trend in Cesarean rates. [12, 19]
As part of the effort to reduce Mother-to-Child transmission of HIV, Cesarean Section delivery is recommended to HIV-positive women during counseling in the antenatal clinics in addition to Anti-retroviral treatment and avoidance of breast feeding. This has lead to a disproportionately high rate of Cesarean section in this group of obstetric patients.[15]

No study has been done locally to determine the rate of Cesarean Section among this population, and the associated morbidity and mortality. In a South African

survey, the caesarean section rates among this sub-group in tertiary institutions were 22 to 54%.[15]. Several studies show that there is an increased risk of morbidity and mortality following laparatomy in HIV- positive patients, especially those with low CD4 counts and when the operation is done as an emergency.[17, 20]

Cesarean Section is indicated in cases where vaginal delivery is not feasible or where it would impose undue risk to the mother, baby or both. It is now preferable to a difficult vaginal deliver.[1] In spite of remarkable improvement of safety in anesthesia and surgical techniques; cesarean section increases the risk of maternal death 2-5 fold, as compared to vaginal delivery.[11] and carries a mortality rate of 4 to 8 per 10,000 worldwide. A review of Cesarean Sections at Kenyatta National hospital in 1980 found a case fatality rate of 1.4 per 1000 operations.[18] Studies done at Pumwani and Coast Provincial General Hospital, gave a rate of 6.8 and 4.8 per 1000 operations respectively.[16, 18]

The most common complications following cesarean section are: - sepsis, hemorrhage with increased need for blood transfusions, injury to urinary tract and risks associated with Anesthesia. In addition a cesarean delivery significantly impacts subsequent deliveries.[16]

In some literature, it has been reported that the single most important risk for postpartum infection is cesarean delivery.[5]Cesarean section is considered a clean contaminated procedure since the genital tract is entered. Most published reports give an infection rate of 3 to 8%.[1]

Sepsis following Caesarean Section is a major cause of morbidity especially in developing countries.[10, 14]. Review of studies in Africa gives wound infection

rates of 10 to 37%.[22] Studies at Kenyatta Hospital give a rate of 6.5 and 13.3%.[11, 12,. Other studies in some public hospitals in Kenya give a rate of 10 to 19%.[13,16, 18,20]. Those undergoing emergency operations have a much higher rate of up to 33%.[12] The most common pathogens are: Aerobes are *staphylococcus aureus, streptococci* groups A, B and D; Gram negative organisms are *E.coli, Klebsiella* and *proteus* species. In a study on postoperative wound infections at Moi Teaching and Referral Hospital, *Staphylocuccus aureus* was the commonest pathogen isolated.[21, 23.

Wound infection is responsible for the greatest increase in the length of hospital stay. Patients that develop wound infection at KNH have an average length of hospital stay of 14.1 days.[12]Rupani, working at Coast Provincial General Hospital, Mombasa; found that sepsis was responsible for 55% of stay beyond seven days, much higher than that from pre-maturity (43%) [7]

Factors that contribute to postoperative wound infection are of two categories:

(a) Factors related to bacterial contamination

(b) Factors that promote the growth of bacteria once they have been introduced to a wound.

Specific risk factors include obesity, immunosuppression as in Diabetes and HIV/AIDS, and factors that relate to the surgical procedure itself, such as the technique and duration of the operation. In Obstetrics, the duration of labour, rupture of membranes and number of vaginal examinations have been found to be associated with an increased risk of postpartum infection.[11,12, 13, 16]

The length of hospital stay prior to surgery increases the risk of postoperative wound infection two fold.[24] This may relate hospital-related alteration of bacterial flora on the skin acquired while in hospital.

Hemostasis is important in wound healing. Whereas serum and tissue fluid collection at incision site is the first step in the healing process, excessive fluid and blood provide a culture medium for bacteria.[25]

Prophylactic antibiotics used appropriately can decrease the rate of post-surgical wound infection by 50 to 65% for both elective and non-elective procedures.[21] It is also associated with a significantly less adjusted risk of wound infection with purulent drainage and less subsequent use of parenteral antibiotic treatment of wound infection.[5] A multiple dose regimen is reported to offer no added benefit over single dose regimen nor does the utilization of a broader spectrum agent.[6] The antibiotic choice for prophylaxis should have activity against potential infective pathogens.[14] For Maximal efficacy, prophylactic antibiotics must be present in adequate concentrations at the operative site at the time of incision and for as long as the wound is open. The shortest effective course of antibiotics should be used in order to reduce cost, limit toxicity and reduce risk of resistance to the antibiotics.

Rationale and Justification

Considering the importance of cesarean section in any maternity unit, it is important that regular efforts be made to assess the performance of the unit as compared to known standards in order to ensure the patients receive the best care. Wound infection following cesarean section is a major cause of morbidity and is responsible for the greatest length of hospital stay. This increases costs, utilizing more supplies and makes enormous demands on staff time.

Recent literature supports the use of surveillance as an effective means of decreasing the incidence of postoperative wound infection resulting in huge savings in costs.[24].

This study attempted to do so at Tenwek Hospital so that this would provide a bench mark for future audits. The results of this study will inform the development of protocols for standard operating procedures and promote evidence-based practice.

Hypothesis

There is an increased rate of wound infections after cesarean section at Tenwek Hospital

Broad objectives

The purpose of this study was to carry out a clinical audit on the management of Cesarean Delivery patients with emphasis on surgical wound infections.

Specific Objectives

a) To determine the rate of wound infection following caesarean section
b) To determine the type of bacteria causing the infection
c) To determine the pre-operative , intra-operative and post-operative factors responsible for the wound infection

Methodology

Study area

Tenwek Mission Hospital is a 300-bed hospital in Bomet District, Rift Valley Province. It occupies a watershed between the green Tea lands of Kericho, Bureti and Nyamira Districts and the semi arid areas of Bomet, Narok and Transmara Districts, for which it serves as a referral center. It has a seventy-bed maternity unit where an average of 3500 deliveries is conducted annually.

Study design

This was a prospective descriptive surveillance study

Study population

The study was undertaken at Tenwek Mission Hospital between 4th July 2006 and 14th October 2006. All women admitted for delivery at the maternity unit formed the population and all those undergoing cesarean delivery constituted the sample. They were recruited serially once the decision for cesarean section was made.

Sample size

Assuming a wound infection rate of 12 %(Rate reported from District and Provincial Hospitals in Kenya ranges from 10% to 19%) and the acceptable rate being 3%, using the following formula:-

$$n = \frac{Z^2pqD}{d^2}$$

Where:-

n is the desired sample size if population is greater than 10,000

Z is the normal standard deviate usually 1.96, corresponding to 95% confidence interval

p is the proportion of target population estimated with the desired characteristic,

q is 1- **p**

d is the degree of accuracy (usually 0.005) and

D = 1 where there are no comparisons or replications (the design effect).

The minimum sample size became 142

Data Collection

This was done by the chief researcher assisted by two medical officers attached to maternity during the period of study.

The data collection instrument was designed so that most information will be obtained from patient's charts. The admission forms are designed in such a way that all possible aspects of history and clinical findings are provided so that the admitting Doctor just ticks the appropriate findings; this way most details are available on the chart. Part of the work of the research team was to ensure that all important details concerning the patient and procedure were recorded. Missing information was obtained from patient interview in such a manner that it fitted into the normal history taking and physical examination and postoperative care. As the client is being counseled on the decision to deliver by caesarean section, she was also informed of the intention to use her medical information for this research.

The process of data collection then began at that point and continued for the time the patient was in hospital and ended at two weeks during the postnatal review. The cesarean sections were carried out by three Obstetricians, four Residents, one medical officer and two medical officer interns. About 30% of the cases involved a senior person teaching /supervising a Resident, Intern or medical student.

For repeat cesarean section, the scar was excised for each case. Diathermy was used after skin incision with a scalpel where there were dense adhesions and for hemostasis where it was thought to be appropriate. Where gross contamination was observed, the area was irrigated with normal saline till clean. In all cases absorbable sutures were used. All patients except one were operated under spinal anesthesia.

The wounds on all patients were exposed and inspected on the second postoperative day. The abdominal incision was also inspected on the third postoperative day and those who did not have any problem were discharged home. They were instructed to return to the hospital if they experienced increased abdominal pain, foul smelling lochia or pain and discharge from the incision site. Otherwise they were to return to the postnatal clinic at the end of two weeks for postnatal review.

In this study, wound infection was said to have occurred when there was erythema, induration and/or discharge from the wound.[2]. Foul smelling lochia associate with a tender uterus and a rising pulse or temperature was taken to be endometritis. In each case a swab of the discharge was taken for culture and sensitivity.

Data analysis

The completed questionnaires were entered in a data base designed in MS Access and later exported to a statistical package for analysis (SPSS). Data cleaning and validation was done before the actual data analysis was done. Distriptive analysis was ran to obtain means, frequencies, mode, and standard. Both

parametric and non-parametric test were used to establish significant relationships i.e. Chi Square was done to compare significant association between depend and independent variables. P-value of less 0.05 (5%) was considered significant and Odds Ratio (OR) was used get the likelihood of exposure variable at 95% CI.

Assumptions

1. All mothers who develop wound infection after discharge returned to the hospital for treatment
2. Antibiotics used for prophylaxis cover for the organism responsible for sepsis.

Limitations

1. Difficulties exist in ruling out occult infection at time of admission and operation.
2. Quality of laboratory services, especially for culture and sensitivity.
3. For HIV positive clients, no attempt was made to stage their disease by CD4 count levels.

Ethical considerations

1. The proposal for the study was approved by Kenyatta National Hospital Research and Ethical Committee and Tenwek Hospital Management
2. Clients recruited for the study did not undergo any additional examinations, tests and procedures other than those indicated for their clinical condition as this was an audit exercise.

Definition of terms

1. *Prophylactic antibiotics*: Antibiotics used to prevent and not treat infection. This usually is confined to 24 hours of the operation. In this study all antibiotic administration is included since part of the objective was to assess antibiotic use.
    - *Preoperative*: before skin incision is made
    - *Intraoperative*: between the times of skin incision to the time skin closure is completed.
    - *Postoperative:* From the time skin closure is complete to 3 hours after the operation.
2. *Protraction*: Labor longer than 12 hours. Included obstructed labor, failure to progress, secondary arrest etc.
3. *Duration of hospital day:* Was computed from the day of surgery to the day of discharge. This was not true for patients who had earlier admitted to the antenatal ward.

RESULTS

Table I: Socio-Demographic Characteristics of the Study Patients

Characteristic	*Frequency*	*Percentage*
Age distribution		
15 - 19	25	13.8
20 - 24	52	28.7
25 - 29	44	24.3
30 - 34	32	17.7
35 – 39	19	10.5
≥ 40	9	5.0
Parity		
1 – 2	96	53.0
3 – 4	46	25.4
≥ 5	39	21.6
Level of Education		
None	13	7.2
Primary	84	46.4
Secondary	57	31.5
College	27	14.9
Marital Status		
Single	6	3.3
Married	172	95.0
Separated/Divorced	3	1.7

During the period 4th July to 14th October 2006, there were a total of 1,021 deliveries at Tenwek Mission Hospital. Eight hundred and forty (840) were vaginal deliveries while 181 were by Cesarean section giving a Cesarean section rate of 17.7 %.

Emergency cesarean sections were the majority accounting for 84 %(152) of the cases while 16 %(29) were elective. About two–thirds (63%) were first time cesarean sections and 37% were repeat cesarean sections.

The majority of the women undergoing cesarean section (70.7%) were aged between 20 and 34 years, 13.8% were Teenagers while 15.5% were 35 years and above. The vast majority (95%) were married.

More than half (53.2%) were of up to primary school level of education. 31.5% had attained secondary school education while 14.9 % had college education. More than half (53%) were having their first or second child, 25.4% were having their third or fourth child and 21.6% were having their fifth or more.

The majority (91.7%) of the babies had an Apgar score of 7 and above at 5 minutes. Only two (1.1%) had Apgar score less than 7 at 5 minutes. Three (1.7%) were fresh stillbirths.

Table II: Preoperative characteristics

Characteristic	*Frequency*	*Percentage*
Hemoglobin level		
>10 g/dl	167	92.3
<10g/dl	14	7.7
HIV Serology		
Positive	7	3.9
Negative	108	59.7
Not Tested	66	36.4
Anti-retroviral thterapy(n = 7)		
Yes	2	28.6
No	5	71.4
Referring facility		
ANC ward	28	15.6
Home	82	45.8
Private Clinic	9	5.0
TBA	3	1.7
Dispensary /Healthy centre	25	14.0
Pelvic Examination before admission		
Done	55	30.4
Not done	126	59.6
State of Membranes		
Ruptured	99	54.7
Intact	82	45.3
Duration since rupture in hours (n = 99)		
< 6	21	21.2
6 – 12	53	29.3
13 – 24	20	11.0
> 24	5	2.8
Previous Surgery		
Yes	67	37.0
No	111	63.0
Type of C/Section		
Elective	29	16.0
Emergency	152	84.0

Preoperative characteristics

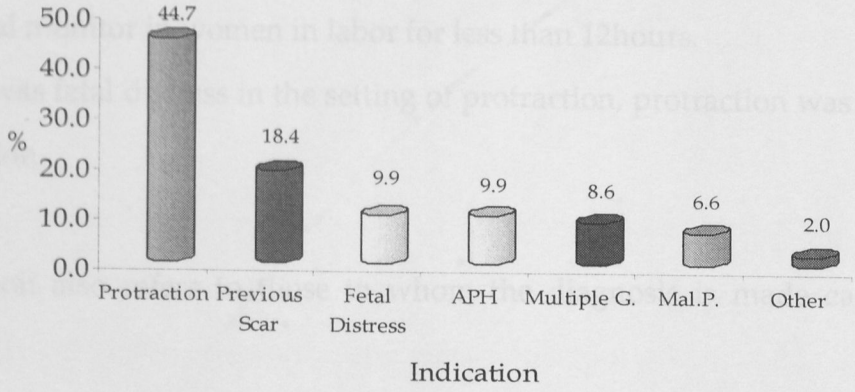
Majority (92.3%) had hemoglobin levels of 10 mg/dl and above. Only one had severe anemia (6.4mg/dl) and was transfused before surgery.

About two-thirds (63.6%) had their HIV test results and 3.9% (7) were HIV-positive. Of these, two were on Anti-retroviral triple therapy while the rest received a single 200-mg tablet of Niverapine for prevention of Mother-to-child (PMTCT) transmission of HIV.

About half of the mothers (48.5%) had come straight from home. 15.6% were from the antenatal ward. Thirty seven (20.7%) were referrals. Most of the referrals (67.5%) were from a Health Center or Dispensary; 9 (25.7%) were from private clinics and only 3(8.1%) were referred by a Traditional Birth Attendance (TBA).

As would be expected all referrals had had pelvic examination done at least once at the referring facility. More than half (54%) had ruptured membranes. 21.2% had been ruptured for less than 6 hours, 29.3% had ruptured for between 6 and 12 hours, 11% had ruptured for between 12 and 24ours while 2.8% had been ruptured for more than 24 hours.

Figure 1: Indication for Emergency C/S



Protraction was the leading indication for emergency cesarean section accounting for 45 %(68) of the cases. Previous scar with another obstetric complication, such as CPD was the second, accounting for 18.4% (28). Fetal Distress and APH were third accounting for 10% of the cases.

The commonest cause of protraction was CPD followed by malpresentation. Previous scar patients that were operated on as emergencies presented in labor and had another obstetric complication.

The commonest 'other' obstetric complications in this group were:- more than 1 previous scar, CPD, multiple pregnancy with malpresentation.

Of those indicated on the chart as 'other', two had Eclampsia with poor Bishop's score and one had cord prolapse.

Multiple gestations accounted for 6.6% of those undergoing cesarean section. All were operated primarily except two cases for retained 2nd twin and one set of triplets for retained 2nd and 3rd twins.

On the bar chart Fetal distress represents those diagnosed on the basis of Electronic fetal monitor in women in labor for less than 12hours.
Where there was fetal distress in the setting of protraction, protraction was taken as the indication.

Malpresentation also refers to those in whom the diagnosis is made early in labour.

Almost all clients (98.3%) received preoperative prophylactic antibiotics, 8.8% were shaved in theatre and 4.4% had taken bath before surgery. All these were in the elective list.

Significant intra-operative findings/events

Time

The mean time for the surgery was 44 minutes with the minimum time 15 minutes and the longest time was 168 minutes.

Incision

One hundred and sixty (88.4%) had pfannenstiel incision, 18 (9.9%) had sub-umbilical midline incision and 3 (1.7%) had extended mid line incision.

Condition of Liquor

Thirty (16.6%) had meconium, 4 (2.2%) had foul smelling liquor, 4 (2.2%) were bloody and the rest 104 (57.5%) had clear liquor.

The vast majority of neonates (92.3%) were delivered in good condition (Apgar score > 7 at one minute). Three fetuses (1.7%) were delivered dead, 10 (5.6%) had severe asphyxia.

The average estimated blood loss was 480cc with a minimum being 300cc and a maximum of 1000cc.

In 11 cases (6.1%) minor haemostatic difficulties were reported.

Postoperative morbidities

Ten patients (5.5%) developed fever (>38^{0}C) postoperatively. Of these, Nine (5.0%) eventually developed frank sepsis. Four (2.2%) had both abdominal wound infection and foul smelling lochia (signs of endometritis). Two (1.1%) patients had signs of endometritis alone. Three (1.7%) had signs of abdominal wound infection alone. None was found to have fascial dehiscence or pelvic abscess. Of the nine that developed sepsis, seven (77.8%) were referrals. Six (66.7%) had protracted labor. All had pelvic examination at the referring facility and four (44.4%) of them had prolonged rupture or membranes. All these were significantly associated with wound infection.

Table III. Culture Results

Microorganism	frequency	percentage
Staph aureus	2	22.2
E. coli/ staph	4	44.4
No growth	3	33.3
Total	9	100.0

Culture results were obtained for the 9 cases that were diagnosed with wound infection. *Staphyloccocus aureas* was grown from the two patients that had

surgical infection alone; *E. coli* was grown from the wounds of the four patients that had both Endometritis and abdominal wall incision. No growth was obtained in three cases.

Postoperative sepsis and preterm delivery with neonate admitted to the newborn unit were the two main reasons responsible for prolonged hospital stay.

The mean length of hospital stay for all patients was 5.1 days. The mean length of hospital stay for patients who had no sepsis was 4.9 days

The mean length of stay for those who developed septic complications was 9.9 days which is two times that of clients who did not develop sepsis.

Table V. Relationship between sepsis and Hospital stay

Out come (n)	*Mean (SE)*	*P-value*	*95% CI of the mean difference*
Sepsis (9)	9.9 (2.6)	***<0.001***	*(2.3, 7.7)*
No Sepsis (169)	4.9 (0.9)		
Gestation in weeks			
< 38 (9)	6.1 (0.6)	*0.051*	*0.004, 2.6*
≥ 38 (169)	4.7 (0.3)		

The mean length of stay for those who delivered before 37 completed weeks of gestation was 6.1.

Table VII: Association between Patient characteristics and Outcome

	Outcome		Statistical Calculations		
Characteristic	*Sepsis, n (%)*	*No Sepsis, n (%)*	*OR (95%CI)*	*X2(df)*	*P value*
Previous Surgery					
Yes	6 (5.3)	108 (94.7)	1.2 (0.3, 4.9)	0.1 (1)	0.814
No	3 (5.3)	64 (94.7)			
HIV Status					
Positive	1 (14.3)	6 (85.7)	4.3 (0.4, 44.1)	1.8(1)	0.183
Negative	4 (3.7)	104 (96.3)			
Level of Education					
Primary & Below	5 (5.2)	92 (94.8)	1.1 (0.3, 4.2)	0.02(1)	0.904
Secondary & Above	1 (14.3)	6 (85.7)			
Referring facility					
Antenatal ward	0.00	28 (100.0)	-	1.7 (1)	0.188
Other ref. facility	9 (5.9)	144 (94.1)			
Referring facility (not ANW)					
Other referring facility	7 (10.1)	62 (89.9)	4.6 (0.9, 22.9)	4.0 (1)	***0.046***
Home	2 (2.4)	80 (97.6)			
Pelvic examination Prior admission					
Yes	7 (12.7)	48 (87.3)	9.0 (1.8, 45.1)	10 (1)	***0.002***
No	2 (1.6)	124 (98.4)			
Membrane Status					
Ruptured	5 (6.0)	78 (94.0	1.5 (0.4, 5.8)	0.4 (1)	0.549
Intact	4 (4.1)	94 (95.9)			
Duration of Rupture					
≤ 12	4 (4.8)	17 (95.2)	14.4 (1.5, 137.0)	8.4 (1)	***0.004***
> 12	1 (1.6)	61 (98.4)			
Duration of Rupture					
≤ 6	5 (7.2)	64 (92.8)	-	1.1 (1)	0.299
> 6	-	14 (100.0)			
Type of procedure					
Emergency	8 (5.4)	140 (94.6)	1.8 (0.2, 15.4)	0.32 (1)	0.570
Elective	1 (3.1)	32 (96.9)			
Indication					
Protraction	6 (8.7)	63 (91.3)	3.5 (0.8, 14.3)	3.3 (1)	0.070
No Protraction	3 (2.7)	109 (97.3)			
Surgeon					
Registrars/MOs	7 (6.1)	107 (93.9)	1.8 (0.4, 9.0)	0.53 (1)	0.468
Consultants	2 (3.5)	55 (96.5)			

- Pelvic examination prior to admission to hospital was the single most important risk factor for developing postoperative infection {OR 9.0(1.8,45.1) p Value 0.002)}
- Duration of rupture of membranes was the second most important predisposing factor to postoperative infection. Those patients with rupture of membranes for longer than 12 hours were 14.4 times more likely to develop infection compared to those with intact membranes. {OR 14.4(15, 137.0) p Value 0.004)} The duration of rupture of membranes for 6 hours or less was not a significant risk factor.
- The third most important risk factor for developing postoperative sepsis was protracted labor (>12hours before referral). The risk of developing sepsis was 35 times higher than for women who were referred sooner. {OR 3.5(0.8, 14.30) p Value 0.070)}
- The experience of the surgeon appeared to have limited impact in that patients operated by Registrars and MOs had a 1.8 risk of infection. This was not statistically significant and may have to do with the fact that this cadre of surgeons did most of the operations.
- Age, parity, level of education, previous surgery, level of hemoglobin, the weight of the patients did not seem to affect outcome in this study. There was no significant difference between patients who received a single dose of Ampicillin and those who received multiple doses lasting between 24 hours and 48 hrs.
- There was no difference in the rates of infection for operations done during the day and those done at night (6:00 am to 6:00pm VS 6:00pm to 6:00am).
- The incidences of sepsis were randomly spread out throughout the period of study (No clustering), suggesting that there were no particular times

when there were breaks in the system resulting in alteration in the rates of sepsis for that particular period.

DISCUSSION

This study showed that the rate of Cesarean section at Tenwek Hospital during the period of the study was 17.8%. The rate of cesarean section among HIV-positive women was 21%. This is comparable to the rate at Kenyatta National Hospital that has been found in various studies to range from 17.8% to 20 %. [4,5] This is higher than the rate reported for other public hospitals in Kenya that include, Kericho and Kiambu District Hospitals, Coast Provincial general hospital, Mombasa, and Chogoria mission hospital.

The higher rate in HIV-positive women was due to elective cesarean section for reducing vertical transmission. The rate would be higher if there were no cost implications. Many HIV-positive women opted for vaginal delivery because they could not afford the cost of cesarean section, which is more than 4 times the cost of normal delivery.

The rate of wound infection was 3.9%. The rate of Endometritis alone was 2.1%.This falls within the global range of 3 to 8% reported in literature.[1] It is similar to the 3% reported at Chogoria mission Hospital, comparable to 6.5% at Kenyatta National Hospital[4]. It is, however, significantly lower than 10 to 19% reported in other public hospitals in Kenya.[4,5,7,9,13]

Virtually all patients undergoing cesarean section received 1gm of Ampicillin preoperatively. More than 80% received additional doses of Ampicillin for 24 hours and for 48 hours. Depending on the surgeon's assessment of the potential

risk for infection, some patients Gentamycin and Metronidazole. All patients that had foul smelling liquor received a five-day course of Ampicillin, Flagyl Gentamycin and oral antibiotics to complete 7 days of treatment. There was no difference in septic complications between those who received a single dose, multiple dose or multiple drug regimens. This finding is consistent with findings in other studies.[6, 21] This may suggest the extra doses of antibiotics may not have been necessary. This may require a larger sample size to validate.

The prevalence of HIV among patients undergoing cesarean section was 3.9% and HIV infection was not significantly associated with postoperative sepsis. There were only seven HIV-positive women undergoing emergency cesarean section and one developed postoperative infection. This is a small number on which no significant inference may be attributed to. Other studies have shown that asyptomatic HIV positive patients have a postoperative course that is similar to that of HIV negative patients.[10,26,27] A larger sample may be needed to give a true reflection.

None of the patients from the antenatal ward developed sepsis. It can be inferred that women who were in the antenatal wards were in labor for relatively shorter periods compared with those that came from home or other health facilities. They also probably had fewer vaginal examinations compared to those referred from other facilities. It is also possible that the indication for cesarean section was detected earlier and intervention made sooner, thereby eliminating the third delay that could result in adverse outcome.

Patients referred from another health facility were 4.6 times more likely to develop infection compared to women who came straight from home. These is

because patients referred from other facilities had had vaginal examination done at least once and were more likely to have had labor for longer periods than women who came straight from home. The time between diagnosis of the indication for cesarean section or referral to the time of cesarean section must have been longer for referred patients due to distance and transport logistics.

In this study, the most important determinants of wound infection were: pelvic examination prior to admission, rupture of membranes for longer than 12 hours, labor for more than 12 hours before cesarean section, and referral from another facility. Vaginal examination facilitates the ascension of microorganisms into the extra –amniotic space when fetal membranes are intat and into thr intra-amniotic space when membranes are ruptured. This has been shown by the finding that, in the setting of prelabor rupture of membranes, infection rates correlate more closely with the timing of the first digital examinations than the duration of rupture of membranes.[45] Repeated vaginal examinations multiplies this while a prolonged duration of labour gives time to the innoculum to incubate and multiply. All this are recognized factors that promote development of sepsis.[11, 12, 13, and 16]

The other factor was whether the operation was done electively or as an emergency. There was a two-fold increase in the risk of developing postoperative infection when the procedure was done as an emergency compared to an elective one. Only one patient who was operated on electively developed infection. These are recognized factors that modify the risk for infectious morbidity after cesarean section.[9,10,11,15,24]

Sepsis following cesarean section was responsible for the greatest increase in the length of hospital stay. Developing sepsis increased the length of hospital stay two fold. This is consistent with findings from studies at Kenyatta National Hospital and Coast Provincial General Hospital. [5,7]

In this study fever and foul smell of lochia were very sensitive predictors of infection. Almost all (90%) of those who had fever eventually developed overt infection. One patient who was re admitted with wound infection after discharge had actually been found to have fever on the second post operative day which may have been subsequently masked by oral analgesics she was taking. She returned with purulent discharge from the surgical wound on the sixth postoperative day.

CONCLUSIONS

1. There was no increased rate of post-cesarean wound infections at this Hospital during the period of study.
2. Staphylococcus aureas and E. coli are the commonest organisms causing sepsis in postoperative infections in this unit.
3. Pelvic examination prior to referral from another facility, prolonged rupture of membranes and being a referral patient were significant determinats of postoperative sepsis.

RECOMMENDATIONS

1. The choice of antibiotics for prophylaxis and treatment of postoperative sepsis should at least cover for *Stphyloccoccus aureus and E. Coli,* which are the two main pathogens responsible for sepsis.
2. It is necessary for Tenwek hospital to give feedback to facilities that refer patients to it to facilitate earlier referrals of cases. This may be achieved through feedback to the facility and facilitating Continuing Medical Education for staff in these facilities.
3. Postoperative fever should be followed by a thorough search for infection since 90% of those who had fever were eventually confirmed to have septic complications.

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GYNAECOLOGY SHORT CASES

GYNAECOLOGY CASE 1

HIGH GRADE CERVICAL INTRAEPITHELIAL NEOPLASIA (CIN III): COLD KNIFE CONIZATION

NAME: S.C:
AGE: 52 YEARS
PARITY: 7+1

F.NO. 140733
DOA: 15TH SEPTEMBER 2005
DOD: 16TH SEPTEMBER 2005

Presenting complaints
Post-coital bleeding

History of presenting illness
A 52 yr old lady presented with complaints of irregular per vaginal bleeding which had been going on for almost one year. She had been well and had not seen menses for about a year and thought she had reached menopause.
The bleeding occurred sporadically and was mainly spotting after coitus.

Past Obstetric and Gynecologic history
She was Para 7+ 1, last delivery was in 1994.
She had been ammenorheic for almost one year. Prior to this she had been seen at the Gynecologic clinic with history of irregular heavy menses for which no cause was found. This resolved when she reached menopause.
Her menarche was at 15 years; sexual debut was at 17 years and had had three sexual partners. She had used oral contraceptive pills earlier in her life but had BTL done after her last delivery in 1994.

Family and social history
She was the first of two wives. Her husband and she were both Teachers. The co-wife was a clerical officer for a Tea company. None smoked or used alcohol.

Past medical and surgical history
This was unremarkable.

Physical examination
She was a middle age lady in good general condition. She was not pale.
Vital signs: BP 140/90mmHg

Pulse 82/min
Temperature 36.8°C
Her systemic examination was normal.

Speculum examination
On speculum examination the cervix was noted to be hypereamic and would bleed easily on touch. Acetic acid was applied and aceto-white lesions were noted at 10 o'clock and six o'clock positions. Punch biopsy of the aceto-white areas were taken.

Pathology Report
The pathologic findings were reported as CIN III. The patient was counseled on the need for further diagnostic work up. Cone Biopsy was performed on 15th September 2005.

Follow up
The pathology report on the cone specimen was also reported as CIN III.
The result was discharged with the couple including the need for continued follow up and repeat pap smears in future. The couple chose to have hysterectomy at a date in the near future. The husband promised to come with his other wife for Pap smear too.

DISCUSSION
The patient presented was a 52 year old lady who had been followed up in the Gynecology clinic for abnormal uterine bleeding for almost one year. In the processes she reported post-coital bleeding as a new development. This resulted in the diagnosis of the condition at an early stage. This was more or less an incidental finding with life -saving consequences.

Cervical intra-epithelial neoplasia (CIN) means the disordered growth and development of epithelium lining the uterine cervix. High -grade dysplasia is considered a probable transitional phase in the pathogenesis of many cancers of the cervix.(1). As such early detection is extremely important in the management of this condition. There are various degrees of CIN. Mild dysplasia CIN I is defined as disordered growth of lower third of the epithelial lining. Abnormal maturation of two-thirds of the lining is CIN II; severe dysplasia CIN III encompasses more than two-thirds of the epithelial thickness with carcinoma in situ (CIS) representing full thickness dysmaturity .Understanding the natural history of the various degrees of CIN is central in the clinical management of patients.

Whereas histologically evaluated lesions are classified using the CIN nomenclature, cytologic smears are classified according to the Bethesda system (2). In this system, atypical squamous cells are divided into those with undetermined significance (ASC- US) and those in which a high -grade lesion cannot be cannot be excluded (ASC-H). Low-grade squamous intra-epithelial lesion (LGSIL, LSIL) denote cytologic changes consistent with CIN I and High grades squamous intraepithelial lesion (HGSIL, HSIL) denotes cytologic findings corresponding to CIN II and CIN III.

On cytology, dysplastic cells show anaplasia, increase in nuclear: cytoplasmoc ratio, hyperchromatism, multinuleation and abnormal differentiation. On histology involvement of various degrees of thickness of the stratified squamous epithelium is typical of dysplasia; anaplasia, hyperchromatism, loss of polarity in deeper layers and increased mitotic figures. The columnar epithelium of endocervical canal glands can also undergo neoplasia into adenocarcinoma in situ (ACIS). This can only be diagnosed by cone biopsy.

Lower genital tract intra-epithelial neoplasia is often multi-centric. Affecting multiple anatomic sites derived embryologicaly from uro-genital epithelium. Approximately 10% of women with CIN have concomitant pre- invasive lesion of the vagina, vulva or anus.

Prevalence figures for CIN vary according to the socio-economic characteristics and geographic area of the population being studied, from 1.05 % in some family planning clinics to as high as 13.7% in some women attending STI clinics. For those attending HIV clinics, a rate of 30 % has been reported.

The incidence of CIN is not known in developing countries because screening for cervical cancer is not yet widespread. In a retrospective study of Pap smear reports at Kenyatta National Hospital between 1977 and 1979, Kirima (8) found a rate of 20.4 per 1000. CIN is most commonly detected 10 t0 15 years earlier than that of the detection of cancer of the cervix. It is detected commonly in women in their 20s and carcinoma in situ (CIS) in women 25 to 35 years of age, while the incidence of cervical cancer rises after age 40(3,4).

In Kenya, Cancer of the cervix is the commonest gynecologic tumour though its true incidence is not known. The mean age of onset is 10 years earlier than in developed countries where the mean age is 51 years with two peaks at 35 years and at 50 to 55 years. The mean age in Kenya is 42 years with peak incidence at

25, 30 and 35 years. In the developed countries, mean age is 52 with peak incidences at 35 years and 50 to 55years.(5)

The epidemiologic risk factors for CIN are similar to those of cervical cancer and include multiple sexual partners, early onset of sexual activity, a high risk sexual partner (History or multiple sexual partners/HPV infection), lower genital tract neoplasia or prior sexual exposure to someone with cervical neoplasia, a history of STI as well as cigarette smoking, immunodeficiency, multiparity and long term contraceptive pill use.(6)

Human papiloma viruses (HPVs) are the prime etiologic factor in the development of CIN and cervical cancer. In fact, the above sexual and behavioral risk factors for cervical neoplasia become statistically insignificant as independent variables after adjusting for HPV infection. More than 80% of CIN lesions and more than 90% of cervical cancers are positive for HPV.(4,6).
Infection with HPV is extremely common and varies with patient age. In the USA the prevalence of detectable HPV infection rises from 1% in neonates to 20% in teenagers, to 40% in women 20 to 29 years, with a slow decline there after to a plateau of 5% in women 50 years and over. (3, 4).

The fact that only 5% of immunocompetent women with HPV infection will have histologically detectable CIN in a 2 year period underscores the importance of other core factors such as immunosuppression. Women who have persistent HPV infection, especially with high viral loads, have significantly higher chances of developing CIN and cervical cancer.

Based on their malignant potential, HPV subtypes (>70) are categorized into high, intermediate and low risk types. Low-risk HPV types (6,11,42,43, and 44) are associated with Condylomata and CIN I. Intermediate risk subtypes are (33, 35, 51 and 52) are found in high grade lesions (CIN II and CIN III) that tend to persist , but rarely progress, whereas high risk HPV (16,18,31,39 etc) is ,in addition to high grade lesions , found in invasive cancer.(7).

Once the epithelium is infected by HPV, one of three clinical scenarios ensues: a) Asymptomatic latent infection, b) Active infection in which the virus undergoes vegetative replication to form condyloma and, c) Neoplastic transformation following integration of oncogenic HPV DNA into the human genome. This leads to cell immortality and malignant transformation. (1).

Cigarette smoking and HPV infection have synergistic effects on the development of CIN. It is associate with a two-to four fold increase in the relative risk for developing cervical cancer. Cigarette smoke carcinogens have been found to accumulate locally in the cervical mucus.(8).

The cumulative exposure as measured by pack years smoked is related to the risk of developing CIN or carcinoma in situ, although the mechanisms by which these carcinogens contribute to cervical carcinogenesis are poorly understood.
The incidence of cervical neoplasia is increased in HIV-infected women, who, in some studies have a 20 to 30% incidence of colposcopically confirmed CIN. With increasing immunosuppression, there is an increase in de novo HPV infection, persistent HPV infection and progressive cervical neoplasia. (9). Since 1993, invasive cancer of the cervix has been included as an AIDS – defining illness.(10).
There are usually no symptoms or signs of CIN. As such it is recommended that all women who have been sexually active have a cytologic examination at least once a year.

After three of more consecutive satisfactory normal examinations, the screening interval may be extended to three yearly for some selected low risk patients. However screening should be continued annually for high risk patients. The diagnosis and management of CIN is very important as it may eventually lead to invasive cancer. In a study by McIndoe and colleagues in New Zealand which followed up patients with CIN who did not receive any treatment, found that 22% f the patients developed invasive cancer after follow up for 5 to 25 years.(11).

All abnormal pap smears require further evaluation in order to rule out the presence of invasive carcinoma and to determine the degree and extent of any CIN. These examinations include: Repeat pap smear, HPV testing, Schiller test (iodine staining), Colposcopy and directed biopsy and Endocervical curettage (ECC).

Colposcopy is the primary technique for the evaluation of an abnormal cytology smear. It uses illuminated low power magnification (5 to 15x) to inspect the cervix, vagina, Vulva, or anal epithelium. Abnormalities of the epithelium and vasculature can be identified after application of 3-5% aqueous Acetic acid solution.

Colposcopy is indicated for abnormal Pap smear result, positive HPV test, clinically suspicious or abnormal-looking cervix, unexplained intermenstrual or

post-coital bleeding, Vulvar or vaginal neoplasia. A coloscopically directed punch biopsy of the most severely abnormal areas should be should be done. Endocervical curettage should be done in every case in which colposcopy is unsatisfactory, where the lesion extends into the endocervical canal or where the colposcopic impression does not explain the cytologic findings. In up to 20% of patients with CIN, the endocervical curettage is positive

Diagnostic cone biopsy is indicated if colposcopy is unsatisfactory, if the lesion extends into the cervical canal beyond the view of the colposcope, where there is a two step discrepancy between cytology and colposcopic findings and if adenocarcinoma in situ is suspected.

Patient management is based on the correlation of the diagnosis as well as individual patient characteristics, such a pregnancy, HIV status, and the likelihood of compliance with management recommendations. Treatment options fall in two categories: those that ablate abnormal tissue and do not produce tissue for further histologic diagnosis and those that excise the area of abnormality and provide tissue for further histologic study. Ablative techniques are Cryotherapy and laser ablation. The three excision techniques are cold knife conization, Laser cone excision and Loop electrosurgical Excision Procedure (LEEP). Evidence of controlled trials shows these techniques to be of equal efficacy.(12) Success rates in the treatment of CIN approximately 90%. Cure depends on the size of the lesion, endocervical gland involvement, margin status of any excisional specimen, and ECC results. Hysterectomy is also an option especially in patients who may not be followed up well.((13).

Management of CIN in patients with HIV is a challenge because the recurrence rate approaches 80% in 3 years. Since HPV is the most implicated agent in the etiology of CIN and cervical cancer, preventive efforts would have to focus on the prevention of HPV infection. Primary prevention should focus on continuing to change sexual practices and other behaviors, such as cigarette smoking that increase a person's risk of getting HPV. Unfortunately condoms are not as effective in the prevention of HPV infection as it is for other STIs since HPV can be transmitted even by scrotal- labial contact. Teenagers must b alerted to appreciate this fact. They should be discouraged from initiating sexual activity and cigarette smoking. Secondary prevention would have to rely on scaling up screening programs so that early lesions are detected and treated effectively.

The most effective way to prevent cervical cancer and other genital cancers is an effective vaccine. Currently two vaccines are in the final phase of clinical trial.

These mainly target subtypes 16 and 18 of HPV and women would need to be vaccinated before they are exposed.

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GYNAECOLOGY CASE 2

UNSAFE ABORTION, UTERINE PERFORATION, SEPSIS, SUBTOTAL HYSTERECTOMY

NAME: R M.
AGE: 20 YEARS
PARITY: 1+1

IP.NO:1091346
DOA: 10TH APRIL 2006
DOD: 24TH MAY 2006

Presenting Complaints
Abdominal pain and distension, fever and vaginal bleeding for tree days

History of presenting illness
The patient had been well till three days prior to admission when she reported to have expelled products of conception following induction of abortion at a private clinic in a suburban area of Nairobi. After that she continued to bleed heavily. Later, she developed abdominal distension and fever and became very week. It is then that her neighbors brought her to hospital.

Past Obstetric and Gynecologic History
She had her first delivery in 2003. The child was alive and well.
LMP. 25th December 2005
Prior to this her menstrual periods were regular.
She had used contraception irregularly.
This included pills, injections, emergency contraception and condoms.

Family, Social and Economic History
She was a single mother of one. She was a hawker living in Dandora area of Nairobi. There was a positive family history of Epilepsy (her mother), but she had no history of seizures.
She did not smoke or use alcohol.
She had no known drug allergies

On examination she was found to be very sick, pale and febrile.
Her Vital Signs were
Blood Pressure was 90/60 mmHg
Pulse rate 120 per minute
Temperature was 38
The respiratory rate was 26 breaths per minute.

The respiratory system

There was shallow breathing but the chest was clear on auscultation

The Cardiovascular system

She had tachycardia but no murmurs

Abdominal Examination

The abdomen was distended and moving minimally with respiration.

She had generalized tenderness. There was guarding and rebound tenderness was elicited.

Pelvic examination

There was foul smelling, sero-sanguinous discharge.

Speculum examination revealed a lacerated cervix and a mass looking like the omentum was noted to be protruding from the cervical os.

An impression of septic Abortion, with uterine perforation and possible bowel injury was sustained.

The patient was prepared for emergency Laparatomy.

She was started on:

Intravenous Fluids

Parenteral Gentamycin, Flagyyl and Crystalline Penicciline, which were readily available

Blood was taken for, Hemogram, Typing and Cross-matching

Atropine and pethidine were given as premedication

Consent was obtained after counseling and the client was taken to Theatre

INTR-OPERATIVE FINDINGS

Generalized peritonitis

Posterior uterine wall perforation

A portion of large bowel was pulled into the uterine cavity through the perforation

On pulling out and inspection, there was no gut perforation noted.

The gut was bluish but viable

The Uterus had signs of extensive necrosis at site of perforation and there was pus around the Pouch of Douglas

Subtotal Hysterectomy and pelvic and peritoneal lavage was done. The abdomen was closed and a drain was placed on the left flank.

Sponge and instrument count was done and found to be correct

Patient was reversed successfully

Postoperative Care

Vital signs were monitored continuously till the patient was fully awake, then half- hourly for two hours then two hourly thereafter.

Intravenous normal saline alternating with 5% Dextrose was given at a rate of 125cc/hr.

100mg of Pethidine was given 6-hourly for analgesia

10mg of Plasil was also given 6-hourly for control of nausea and vomiting

The patient was to remain Nill per Oral (NPO) till further instructions were given

After Surgery, Gentamycin and Crystalline Penicillin was replaced with Rocephin 2gm intravenously every 12 hours

Over the next three days the patient's condition improved only slightly. Ileus persisted and there were occasional spiking of temperatures. The drain was not draining much.

On 18th April 2006, which was her fourth postoperative day, she was noted to have sero-sanguinous discharge through the incision site. An impression of wound dehiscence was made.

The patient was taken back to theatre on 19th 2006.

She was found to have complete wound dehiscence with pelvic abscess and peritonitis.

Inspection of bowels did not reveal any injuries

The vaginal cuff was intact

A sample of pus was taken for Culture and sensitivity

Loculations of pus were broken and drained.

Pelvic and peritoneal lavage was done till clear

The edges of the abdominal incision were freshened

Closure was done using Number 1 Nylon for Tension Sutures

The Fascia was approximated using number 1 Vicryl

The skin, which was well apposed, was not closed

The patient was successfully reversed and managed postoperatively as above.

Dressings were changed twice daily

The ileus subsequently resolved, the fever settled and the patient continued to improve, though slowly

After five days of dressing changes the incision was clean and granulating well.

Frequency of dressing change was done once daily till it was well healed

Counseling and emotional support wee provided since she had lost her ability to have children in future

After six week in the hospital, the patient had improved well and was discharged on 24th May 2006

Follow up

She was seen in the Gynecologic Out-patient Clinic on 15th June 2006. the wound had healed well. She was counseled further on the implication of hysterectomy

DISCUSSION

Unsafe abortion is defined as a procedure for termination of unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards or both (1). It is one of the five leading causes of maternal mortality and accounts for 13% of all maternal deaths globally but up to 50% in sub-Saharan Africa (1, 2). A retrospective study in Kenyatta National Hospital in 1995 found that 80% of maternal deaths between 1974 to 1983 were caused by unsafe abortion.(3).

Of the 46 million abortions that take place in a year, 20 million are considered unsafe, resulting in roughly 70,000 deaths and hundreds of thousands of disabilities. 95% of all unsafe abortions occur in developing countries. These abortions are often conducted in unhygienic conditions by untrained personnel. It is estimated that 10 to 50% of women who undergo unsafe abortion need medical care for management of complications (1, 2, 4,). These complications include infection, hemorrhage, and internal organ injury. These can also lead to long term health problems such as chronic pelvic pain, Pelvic inflammatory disease and infertility. In the case presented, the client had uterine perforation and developed severe sepsis that lead to the removal of her uterus rendering her incapable of future fertility.

In addition to the health impact of unsafe abortion, there are also significant financial costs (5). Costs to women and there families include costs for services, medicine and supplies, transportation and opportunity costs from inability to work. For example, in the case presented, the family had to hire private transport to get her to hospital since she was very ill. She was operated on two times due to resulting complications and spent six week in the hospital incurring a huge bill.

Unsafe abortion also places a huge burden on health care systems. Women with incomplete abortions and complications arising from it account for 50% of gynecogical admissions in sub-Saharan Africa. Their treatment requires bed occupation, and make demands on staff and supplies.(2). A survey in Kenyatta National Hospital found that 60% of clients admitted to the acute Gynecology ward have abortion related problems and that 62% of the abortions were probably induced.(6)

The main reason for termination of pregnancy is unwanted pregnancy
Of the 200 million pregnancies around the world annually, about one- third are thought to be unwanted (4). Unwanted pregnancy contributes to poor maternal health in one of two ways: First, many pregnancies are unwanted because they threaten a woman's health or well- being; She may have a preexisting health problem or lack the resources and the necessary support needed to have a successful pregnancy and raise a healthy child (7). Second, where women do not have access to safe abortion services, many unwanted pregnancies are terminated using unsafe procedures (2, 4, 8).

The problem of unsafe abortion may be addresses in two ways. By providing decentralized comprehensive post-abortion care services and by removal of legal restrictions that contribute to abortion related mortality and morbidity. In 1994, A World Health Organization meeting in Cairo agreed that abortion should be safe where legal, and that women who suffer from unsafe abortion have a right to treatment of complications.

Comprehensive post-abortion care services and family planning should be made available, accessible and affordable to all that may need it. The use of Manual Vacuum Aspiration (MVA) has been shown to be the most appropriate and the most effective way of managing incomplete abortion (9).

Without contraception, a woman can find herself in a vicious cycle of unwanted pregnancy and lack of access to safe abortion services (10). In Chile, the introduction of family planning lead to a drastic decrease in maternal deaths due to abortion, corresponding to the increase in the rate of family planning use.(11).

Even where family planning is widely accessible, unwanted pregnancy still occurs. This may be due to contraceptive failure, difficulties with use, non use or as a result of rape or incest. The existence of restrictive and punitive laws in relation to abortion found in many developing countries in sub-Saharan countries(10,11) force women to seek clandestine often unsafe abortion(10).

Countries that have liberalized laws and made safe abortion accessible demonstrate significantly reduced maternal mortality rates without a corresponding increase in demand for abortion services or a rise in unwanted pregnancies (7). In Romania ,for example, liberalization of abortion laws after 1989, resulted in a decrease of maternal mortality from 513 per 100,000 to 171 per 100,000 abortion related maternal deaths by 1991 (11).

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GYNAECOLOGY CASE 3

REPEAT TUBAL PREGNANCY AFTER CONSERVATIVE SURGERY FOR PREVIUOS TUBAL PREGNACY -SALPINGECTOMY

NAME J C
AGE. 25 YEARS
PARITY. P0+ 3
LMP 2ND SEPTEMBER 2005
AMMENORRHEA: 8 WEEKS

IP.NO. 4226
DOA. 12TH NOV. 2005
DOD: 15TH NOV.2005

Presenting Complaints
Abdominal pain for two weeks, spotting and vomiting for 2 days

History of presenting illness
She had been well until one week prior to presentation at the hospital when she started experiencing lower abdominal pain. The pain had become worse in the last two days and was associated with nausea and vomiting. Later that night she started noticing blood stains on her underwear.

Past Gynecologic history
Her last normal menstrual period was on 2nd October 2005 and so had amenorrhea of 8 weeks. Her periods were regular 30 day cycles, with a flow of 3 to 4 days normal volume.
There was a history of Dysmenorrhea.
In May of 2002 she had a spontaneous abortion at 9 weeks; MVA was done.
On 6th June 2002, she was treated for Pelvic inflammatory Disease (PID).
On 14th May 2003 she had laparatomy for a distal ampullary tubal Pregnancy. Linear salpongostomy was done.

Past medical history was unremarkable.

Family and social History
She was married to a businessman and she was running a salon. She did not use alcohol or tobacco but her husband did.
There was no family history of any chronic illness.

Physical Examination
On examination she was in fair general condition. She was slightly pale.

Vital signs
Blood Pressure 117/76mmHg
Pulse was 104/min
Respiratory rate was 24 /min

Respiratory examination was normal.

On abdominal examination, there was diffuse tenderness. There was no hepatomegally and no other mass was palpated.

Investigations

- Urine pregnancy test was positive
- Pelvic ultrasound revealed an empty uterus, a complex mass on the right adnexal region with free fluid in the peritoneal cavity.

A diagnosis of ruptured Ectopic pregnancy was made and the patient was immediately taken for exploratory laparatomy. Blood was taken for typing and cross-matching. Two units of fresh blood were ready by the time the patient was on the operating table.

Intraoperative findings
Hemoperitoneum of about 300cc of blood
A ruptured right ampullary gestation
The left fallopian tube was buried in filmy adhesions, both ovaries looked grossly normal.
Right Salpingectomy was done, peritoneal lavage was done with warm normal saline and the abdomen closed.

Postoperative period
She recovered well and was discharged home on 28th November 2005 on hematinics and analgesics.

Follow up
She was seen in the Gynecology clinic on 14th December 2005. The wound had healed well. Repeat hemoglobin was 9gm/dl.

On 6th February 2006 an HSG was done which showed a normal uterine cavity. The right tube was outlined with a blind end. The left tube was outlined in its entire length. The fimbrial end was dilated but there was no free spill of dye. She

was advised on the implications and she opted for attempted laparascopic tuboplasty.

DISCUSSION

Ectopic pregnancy occurs when the Zygote implants in an area than the endometrial lining of the uterus. This condition significantly jeopardizes the mother and is incompatible with continuing the pregnancy (1). In 1997 Makokha found that ectopic pregnancy was responsible for 5.1% of maternal mortality at Kenyatta National hospital. (5). More than 95% of extra-uterine pregnancies occur in the fallopian tube. (2). about 60 % occur in the ampula, 25% in the Isthmus, approximately 17% in the fimbrial end interstitial 2 %(1, 2). Ectopic implantations occur less often in the ovary, the cervix and the peritoneal cavity. (1).

Approximately 2% of all pregnancies are entopic. The incidence of ectopic pregnancies has been increasing in the USA from 4.5 per 1000 in 1970 to 19.7 per 100 in 1992 (1). At Kenyatta National hospital a survey by Webala in 1979 found a rate of one ectopic pregnancy for every 15 term pregnancies (3) and a similar survey later in 1982 found a rate of 4.5 pregnancies per week.(4).

The rising incidence is due in part to the increasing incidence of salpingitis, tubal surgery and ovulation induction (1). The etiology of ectopic pregnancy is not clearly understood. However, several risk factors have been found to be associated with ectopic pregnancy. The primary risk factor for ectopic pregnancy is a history of salpingitis. At KNH features of chronic salpingitis were found in 69% of cases of ectopic pregnancy.(3).Other factors include zygote abnormalities, ovarian factors, exogenous hormonal use and IUCD use.

Low socioeconomic status, history of infertility as well as emergency contraception has also been associated with an increases risk for ectopic pregnancy. A history of salpingitis increases the risk of ectopic pregnancy six fold. A previous history of ectopic pregnancy increases the risk of ectopic pregnancy 10 –fold. Previous tubal surgery, including tubal ligation, conservative treatment of unruptured ectopic pregnancy is associated with a 16 – 50% rate of ectopic pregnancy. The patient presented had conservative surgery for a tubal pregnancy one year earlier.

If pregnancy occurs in women taking progesterone only pills, 4-6% are ectopic (6). This may be attributable to the smooth muscle effects of progesterone interfering with zygote transport.

Typically, implantation occurs in the wall of the tube. Trophoblastic tissue invades local blood vessels causing hemorrhage. Distension of the tube then causes rupture.(2).

The presentation of ectopic pregnancy is heterogeneous. Patients may appear acutely ill and in shock or may have minimal signs and symptoms. The triad of abdominal pain, amenorrhea and vaginal bleeding has been reported in 80 to 100% of cases. (1). Since early diagnosis critical in reducing the morbidities and mortality associated with ectopic pregnancy, a high index of suspicion should be maintained when every pregnant woman in the first trimester presents with abdominal pain and/or vaginal bleeding. The dictum "all women are pregnant, and that all pregnancies are ectopic unless proven otherwise" is a useful rule of thumb.

Rupture is usually spontaneous. Isthmic gestations rupture earliest at 6-8 weeks. Ampullary one at 8- 12 weeks and the interstitial one last at 12 – 16 weeks., as the myometrium allows more room for expansion compared to the wall of the tube.

Physical findings range from a totally normal examination to in early unruptured ectopic pregnancy to hypovolemic shock and an acute abdomen in cases of ruptured ectopic pregnancy. Diffuse or localized abdominal tenderness is present in 80% of ruptured cases. Adnexal and /or cervical motion tenderness is present in over 75% of cases. A unilateral mass is present in over one third. The uterus undergoes typical changes of pregnancy and is slightly enlarged and soft. The history, physical findings and a high index of suspicion still constitute the basis on which most ectopic pregnancies are diagnosed. However, laboratory and sonographic studies have become integral in evaluating early pregnancy.

Initial assessment should include a pregnancy test. Urine pregnancy tests are now very sensitive and can detect b- HCG levels up to 50mIU/ml. They can be positive as early as the 14th day after conception. Serum B- HCG can detect it as early as 5 days after conception but are not available for routine clinical use.(1).

Ultrasound is useful in evaluating patients at risk of ectopic pregnancy by documenting the presence or absence of an intrauterine pregnancy.(7). Serial B-HCG titres and ultrasound studies complement each other in detecting ectopic pregnancy and have lead to earlier detection and subsequent decrease in adverse outcome. This is evidenced by decrease inn morbidity and mortality attributed to ectopic pregnancy in spite of a general increase in its incidence.

In a normal pregnancy B-HCG levels should double in 48hours (8). In An intrauterine gestational sac should be visible by transvaginal probe when B-HCG level is 1000 mIU/ml, and by trans abdominal ultrasound approximately one week later when B-HCG is 1800- 3600mIU/ml.(7). Thus when an empty uterine cavity is seen with a B-HCG titer above this threshold, the patient is likely to have an ectopic pregnancy.

If rupture has occurred ultrasound shows free fluid in the pouch of Douglas. Culdocentesis and paracentesis may be useful in diagnosing intraperitoneal bleeding. Intraperitoneal blood will not clot in contrast to that from a punctured vessel. A false positive result may be obtained with hemorrhagic corpus luteum cyst.

Laparascopy has the highest positive predictive value for the diagnosis of ectopic pregnancy as a single test. (3). This has resulted in a decrease in the proportion of ectopic pregnancies in which diagnosis is delayed or in which tubal rupture has occurred. The laparascope can also be used therapeutically once tubal pregnancy is visualized.

Uterine currretage is often performed following documentation of an abnormal pregnancy state. When villi are recovered, the risk of ectopic pregnancy is virtually eliminated, except in the rare case of heterotopic pregnancy which may occur in 1 in 40,000 of spontaneous pregnancies and in 1 in 100 in patients undergoing In Vitro Fertilization (IVF). (2).

Hormonal measurement, ultrasonographic studies and uterine curettage may be integrated into a diagnostic algorithm to diagnose ectopic pregnancy.(9) Improved detection expedites the delivery of care and allows for a greater degree of treatment options ranging from the traditional surgical approach to the more recent non-surgical remedies.

The non-surgical treatment involves the use of systemic drugs to selectively destroy the pregnancy. This includes cytotoxics _ Methotrexate or ActinomycinD; Potassium chloride or hyperosmolar glucose, Mefiprestone, Prostaglandins (PGF2x or PGE2) (10). Methotrexate is the most commonly widely used given as a singe dose of 50mg/ m2

Selection criteria for conservative treatment

- Hemodynamically stable
- No evidence of rupture

- Conceptus in tube being 3 cm or less
- No contraindication to Cytotoxics
- Patient's guarantee of follow up

Using the above criteria, one clinical trial showed that complete resolution occurred in 94.2% and 5.8% required surgical intervention.(11)

Surgical treatment can be achieved by Laparascopy or by laparatomy. This is determined by the following considerations: The patient's hemodynamic status, whether ruptured or not, location of the gestation with in the tube size of the gestation, accessibility/adhesions, and other complications such as uncontrollable bleeding.

Based on these considerations, the surgeon can perform one of the following procedures: Linear salpingostomy, segmental resection or salpingectomy. In a patient desiring future pregnancy, the most conservative of the procedures possible should be done.

Linear salpingostomy is the treatment of choice for unruptured isthmic or ampullary gestation in patients who desire future fertility. Subsequent pregnancy rates is about 60%and the recurrent ectopic pregnancy rate is 13 %.(12). The patient presented had linear salpingectomy done the previous year since she desired to preserve her fertility. She was re admitted one year later with another ectopic pregnancy on the same tube. This time round, salpingectomy was done. Milking of fimbrial gestations is associated with extremely high rates of continuing bleeding from the implantation site and an unacceptable recurrence rate of ectopic pregnancy.(13) Segmental resection is done for recommended for unruptured isthmic or ampullary gestations. Re-anastomosis of the segments is done later when edema has subsided. (14)

Whenever conservative treatment is offered, serial B-HCG levels must be done every three days until the undetectable levels are achieved. This is in order to detect persistent proliferation of the trophoblast after conservative treatment.(12).

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GYNAECOLOGY CASE 4

SYMPTOMATIC UTERINE FIBROIDS: TOTAL ABDOMINAL HYSTERECTOMY

NAME: E .W.
AGE: 42YEARS
PARITY: 3+1

IP.NO. 1082994
DOA: 3RD APRIL 2006
DOD: 10TH APRIL 2006

Presenting complaints
Prolonged heavy menses and abdominal pain for 8 months

History of presenting illness
She presented with a history that her periods had become progressively longer and heavier over the past eight months. Her last three cycles had been particularly heavy and included clots for up to 5 days and lasted 9 days. This was associated with severe abdominal cramps.
Over the past 2 years she had noted changes in her menstrual cycles but they were not severe enough to bring her to hospital.

Past Obstetric and Gynecologic history
She was Para 3 + 1.Her last delivery was 14 years ago. She had a miscarriage with her last pregnancy at 4 months and had not conceived since.
She had not used any family planning methods.
Her past medical and surgical history was unremarkable.

Family and Social history
She was married and lived with husband in Kiambu. They were both farmers and had attained their desired family size. There was no family history of any chronic illness.

Physical examination
She was in good general condition. She was not pale and was of good nutritional status. Her vital signs were within normal limits.
Her respiratory and cardiovascular examination was essentially normal.

Abdominal examination
The abdomen was not distended and had normal contours, on palpation there was a mass arising from the pelvis corresponding to 16 weeks of gestation. It was firm with irregular smooth edges. It was mobile and non tender.

Pelvic examination

The external genitalia were normal. On speculum examination, the vaginal walls were normal. The cervix was normal looking and porous. On digital examination the cervix was closed and of normal consistency. The uterus was enlarged with multiple nodules with smooth edges. There were no other adnexal masses felt. There was minimal discomfort. There was no abnormal discharge or blood on the examining finger.

Investigations

1. Pelvic ultrasound: the Uterus was enlarged with multiple fibroids, largest measuring 8cm by 7.8 cm by 7.8cm. Some fibroids showed signs of degeneration. The adnexae and pouch of Douglas were free.
2. Hemogram: Hb. 9.8g/dl. Other parameters were normal
3. Pap Smear: Reported to be normal
4. Renal function tests: Urea 1.1mmol/L
   Creatinine 54umol/L
   Na+. 141 mmol/L
   K+. 4.3 mmol/L
5. Blood group O positive

Management

She was counseled on the diagnosis of fibroids, its implications and options of management. She opted for hysterectomy. She was put on hematinics and non-steroidal anti-inflammatory drugs. She was also given an injection of primolut Depo. These efforts were aimed at building up her blood levels as she was being prepared for surgery.

She was admitted on 3rd April 2006. Further counseling was done and consent obtained. Two units of cross-matched blood were made available and the client starved from midnight. Fleet enema was given on the morning of surgery. She was pre-medicated with Atropine and Pethidine and wheeled to theatre.
In theatre she was put on the supine position and put under anesthesia. She was catheterized, prepped and draped. The abdomen was opened with a pfannenstiel incision. On inspection, the uterus was enlarged with multiple fibroids. The ovaries were normal and the pelvis was free of adhesions.

Total abdominal hysterectomy was done in the normal version without any complication. The abdomen was irrigated with warm normal saline and closed in layers with absorbable sutures. Sponge and instrument count was ok. Blood loss was estimate at 200ml.

The patient was reversed successfully. She was monitored continually until she was fully awake the half-hourly for another two hours then 2 hourly there after. She was to receive Intravenous normal saline alternating with 5% dextrose for the next 24hhours. The hysterectomy specimen was opened and inspected. The findings were consistent with benign disease. The specimen was submitted for pathologic examination

Postoperatively she recovered well and was discharged on analgesics and hematinics.

Follow up

She was seen in the gynecology clinic on 11th may 2006. She had recovered well. The wound was healed. The pathology report confirmed the diagnosis of fibroids. The cervix was also reported to e free of any malignant changes. The patient was discharged from clinic for review as needed.

DISCUSSION

Fibroids are the commonest tumors of the uterus and of the female pelvis.(1) Various terms are used to describe them and include leiyomayomas, fibromyoma, myomas etc. They are benign tumors composed mainly of smooth muscle cells but containing varying amounts of fibrous connective tissue.

Among Caucasians, fibroids are found in 20 to 25% of women of reproductive age, but among black women they are found more frequently so that 50% of black women will have fibroids by age 50.(2). At Kenyatta national Hospital, fibroids constitute 1.6% of acute gynecological admissions and are the reason for 66.7% of hysterectomies (3). The cause of fibroids is not known. Glocuse-6-phospate Dehydrgenase studies show that individual fibroids are unicellular in origin. (4).

While there is no evidence that estrogen causes fibroids, estrogens are certainly implicated in their growth. Fibroids contain estrogen receptors in high concentrations than surrounding myometrium but less than the endometrium. Continuous estrogen exposure, especially if uninterrupted by pregnancy and lactation, is thought to be the most important underlying risk factor in the development of fibroids. After menopause, with the regression of ovarian estrogen production, growth of fibroids ceases and they actually regress.(5)

Prolonged infertility predisposes to growth of fibroids and while fibroids may distort the uterine cavity enough to interfere with fertility. It is generally agreed that a uterus deprived of pregnancy consoles itself with fibroids (6).

Grossly, fibroids are discrete, nodular tumors that vary in size and number. They are classified according to their anatomic location into, sub mucous, intramural, and subserosal fibroids. Sub serous and sub mucosal fibroids may develop pedicles and become pedunculated. Pedunculated sub mucous fibroids may prolapse into the uterine cavity and out through the cervix into the vagina.(1,2). Fibroids may undergo degeneration. Six benign forms of degeneration are recognized and are: hyaline, atrophic, cystic, calcific, red and septic degeneration. Malignant transformation is very rare with a frequency of 0.1-0.5% of diagnosed fibroids.(7)

Most fibroids are asymptomatic. Symptoms are only present in 35 to 50% of cases. The symptoms depend on the location, size, and state of preservation, and whether the patient is pregnant or not. Abnormal uterine bleeding, pain and pressure effects are some of the common symptoms.

Abnormal uterine bleeding is the commonest symptom in our setting. At KNH, Wanjala found that 54% of patients seen with fibroids had mennrrhagia and dysmenorrheal.(3). Bleeding is heavier and pain more severe with sub mucous fibroids (8). Most myomas may be diagnosed on routine pelvic examination but in our setting, severity of symptoms is what prompts patients to seek medical help.

Bleeding and abortion may occur due to significant distortion of the endometrial cavity by the underlying tumor. Three mechanisms by which fibroids may cause bleeding re generally accepted. These are: Alteration of the normal myometrial contractile function, inability of overlying endometrium to respond to normal estrogen/progesterone menstrual phases, thus interfering with efficient sloughing of the endometrium as well as the pressure necrosis of the overlying endometrial bed.

The diagnosis of these tumors is made by clinical examination and imaging studies. Pelvic Ultrasound is the most commonly used imaging modality for the diagnosis of fibroids. Transvaginal ultrasound and hysteroscopy are more sensitive in diagnosing small intracavitary tumors.

The choice of treatment depends on the patient's age, parity, pregnancy status, desire for future fertility, general health and symptoms as well as size location and state of preservation of the tumors.

Anemia and menorrhagia may be managed by use of blood transfusion, hematinic supplementation, intermittent progesterone therapy and non-steroidal anti-inflammatory drugs.

Since fibroids are estrogen dependent, pharmacologic inhibition of estrogen secretion has been used as temporizing measures. This has been achieved by suppressing the hypothalamic-pituitary-ovarian axis by use of Gonadotrpin releasing hormone agonists (GnRH analogues). This is usually given for 3 to 6 months before planned surgery, but can also be used as a temporizing medical therapy until natural menopause occurs.(9).

GnRH analogs cannot only reduce fibroid size by 40-60%, but it can also lead to technically easier surgery with markedly reduced blood loss.
Surgical management of fibroids includes myomectomy, hysterectomy, hysteroscopic resection and laparascopic myolysis.

Hysterectomy is the definitive treatment for fibroids. Myomectomy is suitable for young patients who desire to preserve fertility. Hysteroscopic resection is suitable for small intracavitary fibroids or polyps. Concomitant endometrial ablation may be done for patients with menorrhagia who have completed childbearing.

Laparascopic myolysis disrupts blood supply to fibroids and can result in shrinkage of fibroids by more than 40%. Selective uterine artery embolization was first done in 1995 is now becoming very popular in the west. Arteries feeding fibroids are selectively obliterated. It can be done as a day case with rates of complications reported to be 1-2% only.(10).

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GYNAECOLOGY CASE 5

SECONDARY AMMENORRHOEA: ASHERMAN SYNDROME; DILATTION AND CURRETAGE, IUCD, HIGH DOSE ESTROGEN

NAME: LW. IP.NO: 1064562
AGE : 38 YEARS DOA: 7TH August 2006
PARITY: 3+0 DOD: 8TH August 2006

Presenting complaints
Ammenorrhea for 4 years

History of presenting Illness
She reported that she had not seen her menses since her last delivery in 2002. She had prolonged labor but eventually delivered a 4.2kg infant at a main city council maternity hospital. Later, she developed severe endometritis resulting in pyometra. She was then referred to Kenyatta National Hospital where she was treated with antibiotics and evacuation using MVA. She recovered well and was discharged. She did not resume menstruation but reported cyclic lower abdominal cramps that lasted three days which were not followed by menstrual flow as she had come to expect prior to developing the current problem.

Past Obstetric and Gynecologic history
She attained Menarche at 15 years and had regular menses during her teenage years and even after delivery.
She was para 3+0. Apart from the last delivery, all her other pregnancies, delivery and puerperal periods had been without any problem.

Family and Social history
She was married to a Taxi Driver. She was a housewife. There was no family history of any chronic illness.

Physical examination
She was in good general condition. She was in good nutritional status. Was not pale.
The examination of her other systems was normal.

Pelvic examination

The external genitalia were normal. The cervix was normal in appearance as seen on speculum and had normal consistency on digital examination. The uterus was retroverted and not bulky. The adnexae and pouch of Douglas felt normal.

Investigations

1. Pelvic Ultrasound: Uterus was of normal size and shape. The myometrium was of normal thickness and echotexture. No fibroid was seen. The endometrial stripe was seen and was of normal thickness. The ovaries were seen and were normal. There was no abnormality noted.
2. HSG: The dye outlined the cervical canal and a small part of the uterine cavity. There was some intravascation of dye noted.
3. Pap Smear: Reported as normal

Management

She was taken to theatre for Dilatation and curettage under anesthesia. In theatre, the cervix was dilated using hegar's dilators to size number 10. the uterine cavity was sounded and measured 3cm. Using a blunt curette the cavity was explored with attempts to separate the endometrial layers without perforation. Sharp curettage was done with minimal fibrous tissue being obtained. A copper –T IUCD was placed into the endometrial cavity and it fitted well, strings were cut short and anesthesia reversed.

Postoperatively there were no complications. The patient was discharged on premarin for 21 days.

Follow up.

She was reviewed in the clinic after one month. She reported having spotting after her medicine was finished.

The outcome, further options of management and the prognosis were discussed. Once the patient was aware this cause of amenorrhea was unlikely to affect adversely in future, she opted not to have further treatment. She had achieved the desired family size.

DISCUSSION

A 38 yr old female presented with a history of ammenorrhoea for four years. She had not resumed menstruation since she last delivered in 2002.This pregnancy had been particularly eventful. She had prolonged labour and eventually delivered a 4.2 kg baby at a city council maternity hospital. She later developed

severe endomentritis and pyometra and was expected to have retained products of conception. She was put on antibiotics and to Kenyatta National Hospital. Here she continued with parenteral antibiotics. Evacuation of the uterus was done with sponge forceps and MVA. The patient was discharged when systems of infection had resolved and she had no abnormal vaginal discharge. She breastfed her baby for eighteen months. She came for evaluation since she had not resumed menstruation for such a long time. She gave a history of a cyclic lower abdominal cramps and breast tenderness which she used to experience before menstruation.

Secondary Ammenorrhoea in the absence of menses for six months in a woman in whom normal menstruation has been established in the absence pregnancy (1,2).The incidence is variable from,3% in the general population to 100% under conditions of extreme physical or emotional stress (1).Ammenorrhoea is important because it can be associated with infertility, osteoporosis, genital atrophy and major social and psychosexual dysfunction.
The etiology of secondary ammenorrhoea may be anatomic defects in the hypothalamic-pituitary-ovarian axis, or systematic disorders that affect menstruation. In the case presented the cause was anatomic.

Asherman's Syndrome is a pathological condition of intrauterine adhesions that may destroy the endometrial cavity to varying degrees (1,2).It can cause secondary amenorrhea, other menstrual irregularities, infertility or recurrent abortions.

The phenomenon of intrauterine adhesions was first described by Fritsch in 1894 but it did not receive much attention until reports by Asherman's in 1950 hence the name Asherman syndrome (6). The incidence of intrauterine adhesions is not known. Many reports suggest that it may be more common than was initially thought. This has become possible with hysteroscopy.

Table 1: Frequency of intrauterine adhesions in various conditions

Condition	Percentage
Ammenorrhoea	4.0
Infertility	6.4
Incomplete abortion	13.0
Elective abortion	3.7
Postpartum hemorrhage	23.4
Missed abortion	30.9
Recurrent abortion	39.0

There are three common antecedent factors for development of intrauterine adhesions. The most common is curretage of the pregnant or recently pregnant uterus. Another common etiology for subsequent development of Yeas is the presence of endometritis. Tuberculous endometritis may be the sole cause of uterine synacheae. A third antecedent factor is previous surgery on the uterus. Adhesions have been noted following caesarean section, hysterotomies, myomectomies, metroplasties, and diagnostic curettages (8,9).

The common denominator for the development of uterine adhesions in all these conditions is trauma to the basalis of the endometrium. Additive factors in the patient who have been pregnant are titanic uterine contractions which maintain uterine walls in close a position. Low levels of estrogen soon after delivery which is further sustained by breastfeeding leads to reduced stimulus for endometrial regeneration (6).

Following curettage white blood cells infiltrate the endometrial surface and are replaced by fibroblasts. Adhesions are thin vascular strands initially. As they mature, the adhesions become thicker and more fibrous. The final product is an avascular, fibrous bridge of variable width and length, which maintains the uterine wall in a close position. In some patients trauma is followed by ammenorrhoea without adhesions. This condition is described as endometrial sclerosis, which can only be diagnosed by hysteroscopy. Histology in this case reveals only rare isolated islands of basal cells, which is evidence of extensive endometrial necrosis (5).

Patients with intrauterine adhesions present with ammenorrhoea, or hypomenorrhoea, infertility or recurrent abortions. Others conceive and deliver without difficulty but have problems with the delivery of the placenta.

The client presented had a two-timer history of abortion and endometrial curettage during puerperium, which resulted in ammenorrhoea. It is possible that she had milder degrees of intrauterine adhesions (IUAs), which worsened with post partum curettage.

The key to establishing a diagnosis is a high index of suspicion. All women who have menstrual complaints and/or infertility and who have a history of endometrial trauma should be investigated for the presence of intrauterine adhesions.

Ammenorrhoea with evidence of luteal phase activity such as a biphasic basal body temperature or an elevated level of progesterone is evidence of end organ failure (5). The client presented had symptoms consistent with premenstrual syndrome suggesting that she was ovulating. Same symptoms may occur with cervical stenosis but in this case there are often painful lower abdominal cramps. Failure to have uterine bleeding following combined or sequential estrogen-progestin treatment is also evidence of endometrial insufficiency.

Since IUAs may exist in patients with normal menses, this cannot rule out the presence of intrauterine syncheae. Difficulty in sounding the endometrial cavity or the impression of an irregular or small cavity also suggests the presence of adhesions.

Hysterosalpingography (HSG) under fluoroscopic control is the study utilized most often in the diagnosis of intrauterine adhesions. The presence of lacuna-shaped defects placed irregularly throughout the endometrial cavity is strangely supportive of the impression of IUAs. HSG was done in our case and there was no dye in the endometrial cavity suggesting complete obliteration of the endometrial cavity or cervical atresia. A high presence was utilized on these was evidence of intravascation of the dye.

Hysteroscopy provides the definitive diagnosis. Under direct vision, the extent, location and density of adhesions may be determined with accuracy and the disease may be classified (11,12).

Hysteroscopic classification of Asherman's Syndrome

Classification	Description
Severe	More than ¾ of uterine cavity involved; Ostia occluded
Moderate	¼ to ¾ of uterine cavity involved: Ostia and fundus partially occluded.
Minimal	Less than ¼ of uterine cavity involved: Filmy adhesions; Ostial areas, Fundus minimally involved or clear

(Modified from March et al)

The therapy for IUAs is directed at accomplishing four goals. One is the restoration of the normal intrauterine architecture; two the prevention of re-adherence; three the stimulation of the endometrial regeneration and; four is the verification that the uterus is normal before conception is attempted.

Adhesions are lysed using sharp endometrial curette. Better still under hysterescopic visualization adhesions can be lysed without traumatizing normal endometrium. Hykson, which does not mix with blood, is used to distend the uterus as it permits a clear view of the cavity (11,12).

Following adhessiolysis, device (IUCD) as possible is placed in the cavity and retained for two months. This reduces chances that the raw, dissected surfaces do not re-adhese. Copper IUDs may have too small a surface area to prevent adhesion formation (12,13) and those with copper may induce an excessive inflammatory infection. The client presented had copper containing IUD.

An 8-French Foleys' catheter with a 3-ml balloon can also be used. The balloon is inflated and left in-situ for one week a broad spectrum antibiotic prescribed during that period. Conjugated estrogen, Premarin 2.5mg daily is given for 25 days and medroxyprogesterone acetate 10mg OD given for the last five days of the estrogen therapy. This is repeated for another cycle (5). This high-dose steroid stimulates the endometrium maximally to promote re-epithelialization of previously scarred surfaces.

The adequacy of therapy can be assed accurately using hysteroscopy or by HSG following withdrawal bleeding. If HGS is normal, complete resolution is presumed (7,12,14).

The importance of post operative study to verify normally cannot be over-emphasized. Severe obstetric complications have been reported in patients who conceived prior to post operative studies to document complete resolution of adhesions (12,14).The complications include placenta previa or accreta, retained placenta with postpartum hemorrhage as well as recurrent pregnancy losses.

After hysteroscopic treatment, 90% of patients have normal follow-up hysteroscopy or HSG. The remaining requires repeat adhesiolysis. In other studies up to 98% of those who had ammenorrhoea or hypomenorrhoea resumed normal menses. 75% of those who desired pregnancy and had no other pathology become pregnant and 85% of them had successful pregnancies. Two had placenta previa and two required manual removal of placenta. One had retained placenta fragments which were detected when curettage was done to stop hemorrhage 3 weeks after delivery (14).

The phenomenon of intrauterine adhesions has significant implication in obstetrics and gynecology. Its incidence is perhaps much higher than is appreciated. Suction curettage may have minimal trauma to endometrium and use of prophylactic antibiotics may have a role in reducing incidence of endometritis and hence risk of adhesions. The hysteroscopic approach to IUAs offers complete management, diagnosis, treatment and follow-up. For each step hysteroscopy surpasses other alternatives (14).

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GYNAECOLOGY CASE 6

BATHOLIN'S ABSCESS --- MARSUPIALIZATION

NAME: WH IP.NO: 1122894
AGE: 26 DOA: 9TH NOVEMBER 2006
PARITY: 1+ 0. DOD: 11TH NOVEMBER 2006

Presenting complaints
She presented with a painful right labial swelling for 2 weeks. The pain had become very severe and she had difficulties sitting or walking in previous three days. She had no other complaints.

Past Obstetric and gynecologic history
Menarche was at 14 years. Her last menstrual period was on 5th November 2006. She had her only delivery in 2004 by cesarean section due to CPD.

Family and social history
She was married and a hair dresser at Maringo in Nairobi. Her husband was a Matatu driver. There was no family history of any chronic illness.

Her past medical and surgical history was unremarkable.

Physical examination
She was an obese lady in good general condition.
Vital signs; BP 129/66 mmHg
Pulse 74/min
Temperature 37.10C

Her Respiratory, Cardiovascular and Nervous systems were normal.

The abdomen was obese with a sub-umbilical midline scar. There was no tenderness and no masses were palpated.

Perineal examination
There was a pinkish fluctuant and very tender mass on the lower end of the right labial area. It had a small sinus with foul smelling purulent material was oozing out. The rest of pelvic examination was not done at that time due to pain.

A diagnosis of Batholin's Abscess was made and the patient was planned for marsupialization.

In theatre the patient was put under anesthesia and positioned in lithotomy. The perineum washed cleaned with antiseptic and the patient draped. A linear incision was made on the muco-cutaneous junction. Pus drained and the cavity irrigated with normal saline and hydrogen peroxide. The edges of the gland were sutured to the edges of incision to keep the gland permanently opened. The cavity was packed with gauze soaked in betadine solution. The patient was reversed successfully and was fully awake y the time she left the operating room. Monitoring was done for another two hours when the patient was found to be in stable condition and fully recovered from anesthesia. She was transferred to the ward where she was observed over night and put on analgesics. The following day the pack was removed. The cavity was clean and had minimal wetness. The patient was discharged on analgesics to continue sitz baths at home. She was asked to return to the gynecology clinic in one week.

DISCUSSION

The case presented was a 23 year old female who presented with a two week history of a painful swelling on the right labial area. Marsupilization of the infected batholin's gland was done with good results.

Batholin's glands are two rounded pear shaped glands that open to the vestibule of the vulva at 5 o'clock and 7 o'clock positions. They are homologous to the bulbo-urethral glands in the male. The batholin's ducts are approximately 2cm long and are lined by multilayered columnar cells. The secretions of the gland are colorless and have a characteristic odour. It is produced in response to sexual excitement and serves as a lubricant. The gland has limited function after menopause.(1,2).

A normal batholin's gland is not palpable. Obstruction of the batholin's ducts occurs usually near the orifice.(4). Obstruction of the main duct results in retention of secretions and cystic dilatation. Infection may be the primary cause of obstruction but congenital narrowing may be a cause as well. An obstructed gland may become secondarily infected causing an abscess.(5). Adenocarcinoma of the batholin's gland may also be the cause of obstruction especially in women above 40years and so pathological diagnosis of the growth is important.

Infection in the Batholin's gland is a common occurrence among women of reproductive age. Surveys at Kenyatta national hospital found that batholin's

abscesses constitute about 2% of acute gynecologic admission. The mean age of patients presenting with this condition was found to be 23.5 years with a range of 15 -39 years.(2,3). The client presented was 23 years old.

Traditionally it was thought that batholin's gland infection was caused by gonococcal infection, however many culture from gland abscesses show that the commonest infecting organism are similar to the normal flora found in the vagina (6,7,8) . Aspirations of the cysts were found to be sterile and 70% of abscesses have been found to have bacteria.(9).
An abscess of the batholin's gland tends to develop rapidly over 2 to 4 days. Symptoms include acute labial pain and dyspareunia. Pressure on the swollen gland causes severe pain and so affected patients have difficulties sitting and walking. Without intervention most abscesses rupture spontaneously be day four. The release of pressure results in significant reduction in pain. The patient may then not seek medical treatment. The orifice closes and fluid re-accumulates and with secondary infection the abscess recurs. This is why simple incision and drainage is often complicated by recurrence.

Marsupialzation has been found to be the surgical treatment the results in good outcome since the gland is everted and in many cases destroyed. The recurrence rate after marsupialization is approximately 5 to 10 %.(6).

Using a balloon accomplishes the same result yet it causes minimal trauma. The fat that this can be done in the office under local anesthesia makes more appropriate and should be encouraged.(10).

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GYNAECOLOGY CASE 7

2⁰ PPH:POSTPARTUM CHORIOCARCINOMA; RAPID DETERIORATION AND DEATH.

NAME: SM. DOA: 22ND APRIL 2004
AGE; 20YEARS DOD: 2ND MAY 2004
PARITY: 1+1.

Presenting complaints
Persistent vaginal bleeding postpartum

History of presenting Illness
She had normal delivery at a health Centre in Kiambu on 31st November 2003. The delivery was uneventful. Excessive bleeding was not reported. The patient was discharged in stable condition on the first postnatal day. Three weeks after delivery she returned to the same health centre with history of vaginal bleeding that had increased in the previous few days. On examination she was found to be moderately pale. The uterus was still palpable at about 14 weeks. She was referred to a nearby Mission hospital with an impression of 20 postpartum hemorrhages with retained products of conception. A pelvic ultrasound had features suggestive of retained products of conception. Vacuum aspiration, antibiotic and uterotonic treatments were given. The bleeding subsided and she was discharged home on hematinics. Tissues obtained from evacuation were sent for pathologic examination.

The patient returned to hospital 2 weeks later with history that bleeding had started again. A pregnancy test done came back positive. The uterus was now at 18 weeks.

Serum B-HCG assays came back as 430,000.
A diagnosis of Choriocarcinoma was made and the patient was referred to Kenyatta National hospital. For some reason the patient did not come to Kenyatta immediately as advised.

She was first seen at the acute gynecologic ward on 17th march 2004, about two months later. At that time she complained of abdominal pain and vaginal bleeding. She also complained of cough and weakness.

Physical examination

She was very sick. Pale and wasted.

Vital Signs: BP 100/60mmHg

- Pulse 112/minute
- Respiratory rate 30/minute
- Temperature 35.60C

She was in moderate respiratory distress. The chest had bilateral crepitations.

The cardiovascular system was normal except for tachycardia.

Abdominal examination

The abdomen was distended. A mass the uterus was palpable at about 14 weeks gestation and tender. The liver and spleen were not palpable

Pelvic examination

Bleeding was noted to come from a bluish lesion on the anterior vaginal wall and the cervix was noted. Masses were palpable on both adnexae on bimanual palpation.

Investigations

1. Hemogram: Hb. 4.5g/dl, WBC 13700, Platelets 439,000.
2. Pelvic ultrasound: Uterus was bulky measuring 14.2cm by 9.5cm, both ovaries were enlarged and cystic.
3. Chest X-ray; there were discrete opacities consistent with metastatic lesions.
4. Renal function tests: Na+ 144
   K+ 4.4
   Urea 6.1
   Creatinine 104

Management

She was transfused 4 units of blood on preparation for Chemotherapy and radiation therapy.

However the patient deteriorated rapidly. She developed hemoptysis and left-sided hemiplegia and eventually died on 2nd may 2004.

DISCUSSION

Gestational trophoblastic disease incorporates an important spectrum of disorders that may complicate pregnancy. These include hydatidiform mole (complete or partial), invasive mole, Placental site tumor (PSTT), and Choriocarcinoma.

They arise from fetal tissue within the maternal host and are composed of both syncitiotrophoblastic tissue and cytotrophoblastic cells, except placental site tumor which is derived from intermediate trophoblastic cells (1,2,3). Hydatidiform mole is the commonest trophoblastic neoplasm. Its incidence varies worldwide from 1 in 125 deliveries in Mexico and Taiwan to 1 in 1500 deliveries in .the USA.(1,2).A survey at KNH in 1984 found a rate of 1;1,118 deliveries(4).

Persistent or malignant transformation of the disease occurs in less than 10% of patients with antecedent molar pregnancy. Choriocarcinoma is a pure epithelial neoplasm, comprising both cytotrophoblastic and syncitiotrphoblastc elements without chorionic villi. Fifty percent follow hydatidiform mole, 25 % follow normal pregnancy and 25% follow abortion of ectopic pregnancy.

Postpartum Choriocarcinoma is an even more rare complication of pregnancy. The reported incidence of Choriocarcinoma following term pregnancy is , without a history of hydatidiform mole is approximately 1 in 50,000 live births worldwide and 1 in 11,000 in oriental countries.(5).

The diagnosis is usually delayed due to the failure to recognize the mode of presentation. (5). This was the situation in the case presented. In a study by Dobson and co-workers, 225 out of 4000 (5.6%) patients with gestational trophoblastic disease, had persistent disease of which only 9 (0.2%) presented with postpartum Choriocarcinoma. All of them presented with either primary or secondary postpartum hemorrhage, commencing at a median of 5 weeks after delivery.

The interval between the antecedent pregnancy and registration for treatment ranged from 5 to 25 weeks.(median 10weeks). By the time of referral, 7 had metastatic disease (6). There was significant delay in diagnosis for the case presented but worse still was the delay to present for treatment after diagnosis. By the time she presented for treatment the disease was very advanced and she died while being stabilized before definitive treatment could be commenced.

Metastatic Choriocarcinoma is a great mimic, often presenting with symptoms entirely unrelated to the genital tract. It must be considered in women of reproductive age who have any of the following presumptive diagnoses: Stroke, Intracerebral hemorrhage, brain or spinal cord tumor, hepatitis, gastrointestinal bleeding, hematuria, nodular or diffuse pulmonary disease and any malignancy of uncertain origin or histology (8.9). By the time of her death, the patient

presented had developed most of these symptoms and signs. It is good policy to screen all women with these conditions using a sensitive pregnancy test.

Patients with Choriocarcinoma may also have signs and symptoms of preeclampsia/eclampsia, hemoperitoneum, threatened or missed abortion, or ectopic pregnancy. Hemoperitoneum may be secondary to a ruptured liver, bleeding ovarian metastasis, ruptured theca lutein cyst or perforation of an artery by tumor (8). Understandably, these patients often undergo laparatomy with a presumed diagnosis of ruptured ectopic pregnancy.

The importance of HCG titres in the diagnosis of choriocarcinoma cannot be overemphasized. This test and the medical history are sufficient to make the diagnosis in virtually every case. Tissue diagnosis is almost always unnecessary, sometimes dangerous and misleading.(8).

On physical examination, special attention must be given to the genital tract as choriocarcinoma most often metastasizes to the cervix, vagina, urethra, and vulva. There may be parametrial extension and ovarian metastasis. Theca lutein cysts may be palpable in the adnexae.

In addition to B-HCG titres, Abdominal and pelvic Ultrasound studies, chest X-ray, CT-Scan of the brain and abdomen should be performed as part of the work up. If the chest X-ray in negative, CT-scan of the thorax is warranted in the presence of high B-HCG titres or other metastasis. A full blood count, renal function tests and liver function tests should be obtained in readiness for treatment. Once the results are obtained, the disease can be classified and treated according to the category or score as per the WHO prognostic scoring system.

Treatment for postpartum choriocarcinoma should be as good as that of choriocarcinoma occurring in the usual circumstances. Of concern is the time interval between onset of symptoms and diagnosis, referral and commencement of definitive treatment. This is, perhaps, the single most important determinant of the poor outcome in the patient presented. In the series reported by Dobson and Al' Sakka, the results of chemotherapy were excellent. All patients achieved remission and were alive and well at 10 years of follow up. (6,7). Three patients had successful pregnancies and delivery.(7).

Regimens

Drug/dosage:

Methotrexate 30-60mg/m2 IM once a week[1]

Methotrexate 0.4mg/kg/d IV or IM for 5 days, repeat every 14 days.

Methotrexate 1mg/kg IM on days 1,3,5, and 7and Folinic acid 0.1,mg/kg IM on days 2,4,6 and 8. Repeat every 15 to 18 days.

Dactinomycin 1.25mg/m^2 IV every 14 days

Dactinomycin 10-12ug/kg/d IV for 5 days, Repeat every 14 days

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GYNAECOLOGIC CASE 8

OVARIAN CANCER; TOTAL ABDOMINAL HYSTERECTOMY, BILATERAL SALPINGOOPHERECTOMY AND CHEMOTHERAPY

NAME: VW DOA.27TH February 2006
AGE: 50 YEARS IP.NO: 1076487
PARA 7+0

PRESENTING COMPLAINTS

She was a referral from Murang'a District Hospital with a histologic diagnosis of invasive papillary Cystadenocarcinoma of the Ovary.

History of presenting Illness

She had presented to the District hospital with history of abdominal distension for 66 months.

Laparatomy with bilateral salpingoopherectomy was done. Hysterectomy was not done due to adhesions between the uterus and the urinary bladder an tumor infiltration.

Her past medical, obstetric and gynecologic history was not significant.

Management

She was first seen at Kenyatta National hospital on 4th February 2006.

Physical examination

She was ill-looking and wasted. She was neither pale nor febrile.

The main findings were in the abdomen. The abdomen was massively distended with ascetic fluid. She had a healed midline scar. On palpation, no masses were palpated.

Investigations

1. Hemogram. Hb. 14.8g/dl; WBC $7.4x10^9$/L; platelets 525,000.
2. Chest X-ray was reported to be normal
3. Ca- 125 600iu/ml (0-30)
4. Abdominal U/S. Massive Ascitis. Liver and kidneys were reported to be normal. The uterus was also visualized and was of normal echopattern
5. Liver and renal function tests were normal.
6. Weight was 55kg, Height was 1.5m. Surface area= $4.475m^2$
7. blood group O positive

Treatment

1. Ascitic Tap was done to relieve associated respiratory discomfort
2. Chemotherapy; Cyclophosphamide 750mg and Cisplatin 100mg 3-weekly The first dose was given on 11th. March 2006.
3. 2nd course was on 29th April 2006
4. 3rd Dose was on 21st May 2006.
5. 4th course was differed.

TAH was done on 8th June 2006. By this time Ascitis had resolved completely. Postoperatively, the patient was discharged on hematinics to return for more chemotherapy in two weeks time. She did not return and I was not able to follow her up.

DISCUSSION

Ovarian Cancer is the 5th most common cancer in women and the most lethal of all Gynecologic malignancies (1,2). In the United States of America (USA), ovarian cancer accounts for 25% of all malignant neoplasms of the female genital tract and over 50% of the deaths ascribable to gynecologic cancer (2). Only, lung, breast and lymphoreticular cancers claim more lives.

The cause of ovarian cancer is unknown, although a number of predisposing factors have been identified. Repeated ovulation, dietary and genetic factors have been associated with increased risk of developing ovarian cancer. (3). The "incessant ovulation theory", suggests that the repeated trauma of germinal epithelium provides ample opportunity for somatic gene deletions and mutations to occur. This may, in turn, contribute to tumour initiation and progression.. Supporting this theory is the finding that chronic un-ovulation, multi-parity and history of breast feeding are protective (1). Similarly, use of oral contraceptive pills for more than 5years is associate with a 50% decrease in the risk of acquiring Ovarian Cancer.(5).

Pregnancy is associated with a risk reduction 13 – 19% per pregnancy. Infertility treatment (6) is associated with 2.8% increase in the risk of acquiring cancer of the Ovary. Rossing and colleagues described a relative risk of 11.1 % for clients treated with Clomid for more than 12 cycles compared to infertile couples who did not receive the drug.

Other studies have suggested that consumption of diets high in animal fats confer an increased risk by unknown mechanisms. Japanese women who move to USA have been found to have an increase risk of ovarian cancer than those in Japan.(1).

Over 90% 0f ovarian cancers develop sporadically. However, a growing body of evidence indicates that about 5% of patients with ovarian cancer demonstrate a familial inheritance pattern.(2). These are:- site-specific familial ovarian cancer, , breast ovarian cancer Syndrome(BOC), or the less common Lynch II Syndrome . BOC is most often associated with germ-line mutations of BRAC 1 gene located on Chromosome 17, and less commonly with BRAC 2 on Chromosome 13 (2). These genes are inherited in an autosomal dominant fashion. Women with BRAC 1 gene mutations from high risk families have a lifetime risk as high as 28 to 44%(1).

Ovarian Cancer may be divided into three major categories based on the cell type of origin.

Epithelial
Serous, mucinous, endometroid, clear cell, transitional cell(Brenner), undifferentiated.

Germ cell
Dysgerminoma, endometrial sinus, teratoma(mature, immature, specialized), embryonal carcinoma, gonadoblastomaetc

Sex cord and stromal
Granulose cell tumor, fibroma, thecoma sertolli-leydig cell, gynandroblastoma.

Secondary metastasis to ovary
Brest, colon, stomach, lymphoma, endometrium

Unlike carcinomas of the cervix and endometrium, precursor lesions of ovarian cancer have not been defined. Epithelial cancers are the most common (60%), and are derived from the ovarian surface mesothelium. Of these Serous cystadenomas are the most common accounting for 36 to 50% of them. They are bilateral in 40 to 60% of the cases and are 85% are associated with extra ovarian spread at the time of diagnosis.

Mucinous cystadenomas are the second most common accounting for 10 to 20 % of epithelial ovarian cancers. They are notable for their large size they may attain. They are bilateral in less than 10% of the cases. Both serous and mucinous tumours have invasive forms as well as forms of low malignant potential.

Pseudomyxoma peritonei is a condition where a large amount of Mucin leaking from a neoplasm accumulates in the peritoneal cavity. This is a protracted condition that can result in repeated bowel obstruction, with a mortality that approaches 50%.

Early diagnosis is difficult. Typically, it develops insidiously with no significant warning signs or symptoms. In a retrospective survey of 1,725 patients with ovarian cancer, 95% reported symptoms that were categorized as abdominal, 70% gastrointestinal, 58% pain, 50% constitutional, 34% urinary, and 26% pelvic (4). Sex cord tumours may present with signs of hyperandrogenism and menstrual disturbances. Change in bowel habits and abdominal distension are generally signs of advanced disease.

A patient presenting with an adnexal mass needs to be evaluated in a timely and cost-effective manner. That is tailored to a realistic list of possible diagnoses. The differential diagnoses are greatly influenced by the age of the patient and the characteristics of the mass on pelvic examination, and the radiologic appearance of the mass. In general, the prepubescent girl and the postmenopausal woman are at a greater risk of a malignant neoplasm. The reproductive age woman is more likely to have a functional ovarian cyst or endometrioma.

Ultrasonography is the most common radiographic test for evaluating adnexal masses. Solid, bilateral, large cyst with septations, are more likely to be malignant. Color flow Doppler studies that evaluate the vascular patterns improve their sensitivity and specificity for malignant and benign tumours.

A patient thus suspected to have ovarian cancer should have a chest X-ray to rule out metastatic disease and pleural effusion. A mammogram should also be done due the close relationship of ovarian cancer to breast and colon cancer.

Paracentesis in a patient with ascitis is not recommended since it has a very high false negative result and carries the risk of rupturing an encapsulated neoplasm. Thoracentesis, however, is recommended for pleural effusion. The presence of malignant effusion makes it a stage IV disease which has implications on the extent of surgery.

Surgery is the cornerstone of treatment regardless of the stage of the disease.(1). Regardless of the choice of postoperative therapy, appropriate surgical staging and cyto-reductive (debulking) surgery continues to form the cornerstone of therapy

(2). The goal of surgery is to remove all visible tumour. Pelvic and para- aortic lymph node biopsies, intra-colic omentectomy and ascitic or peritoneal washings should be undertaken in addition to Hysterectomy and bilateral Salpingoopherectomy. For germ cell tumours in young women, removal of the affected adnexa with the preservation of the uterus and the unaffected adnexa is advised in order to preserve future reproductive function.

Staging

Chemotherapy

Multi agent Platinum based Chemotherapy has resulted in improved response rates in patients with Ovarian cancer.(2). For epithelial tumours in stage 1a and grade I disease Surgery provides adequate therapy and Chemotherapy adds no benefit. All other patients should have Chemotherapy.

Currently, the most effective combination therapy utilizes Paclitaxel and Cisplatin or Carboplatin. A typical regimen is to administer Paclitaxel @ 175mg/m^2. And Cisplatin @ 75mg/m^2. for 6 cycles at three week intervals. An alternative is Cplatin@75mg/m2 and Cyclophosphamide @100mg/m^2. this is what the patient presented received due to the high cost of Paclitaxel.

Potential toxicities of these regimens include: nausea, vomiting, diarrhea, alopecia, nephro and ototoxicities, and myelosuppression. Cyclophsphamide is also known to cause hemorrhagic cystitis and pulmonary fibrosis.

Monitoring of response to Chemotherapy is based on physical examination, changes I the size of palpable or radiologically measurable lesions and Changes in CA-125 level. Although the preoperative CA-125 level does not relate to tumour burden, changes in response to chemotherapy, appears to be of some prognostic benefit. An elevated CA-125 (> 35) predicts persistent disease at second look in more than 97% of patients (1).

Dysgerminoma is known to be the most radio-sensitive tumour and has traditionally been treated by total abdominal radiation. However, Chemotherapy with Platinum based combination therapy has produced excellent results. A significant advantage of Chemotherapy is the ability to preserve future reproductive potential.

The prognosis of patients with Ovarian Cancer is primarily related to the stage of the disease. The 5-year survival rate for patients with I epithelial cancer is,

depending on grade, between 76 to 93 %; stage II disease is 60 to 74% and for stage III and IV, 24 to 41%. In this country the prognosis is perhaps much worse due to delays in initiating and maintaining therapy. And the advanced stage at which patients present to the relevant Health care personnel. The cost of drugs , laboratory support and availability of blood products has a direct impact in the total quality of care such patients receive. In addition, there is a clear shortage of personnel trained in Gynecologic Oncology. This means a heavy burden placed on one facility which results in a large number of patients losing valuable time as they await bed space in the only Oncology unit in Public hospitals.

For a disease as common and as lethal as Ovarian Cancer, it would be good f there was a way to prevent it or at least screen so that early detection and treatment can be instituted. Routine pelvic examinations, Ultrasonography as well as tumour marker CA-125 have some value but is limited for use in the general population due to poor sensitivity and specificity.(7). In postmenopausal women, CA- 125 measurements may have some application as a screening test for malignancy but not as routine screening tool. In a prospective Swedish study of 4, 290 volunteer women who were at least 50years of age, the specificity of CA-125 measurements for ovarian cancer was reported to be 97% and the positive predictive value was 4.6 % , using a CA-125 level greater than 30U/ml. (12).

Prophylactic Oophrectomy has been proposed at 35 years for patients with family history of familial ovarian cancer.

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GYNAECOLOGY CASE 9

ABNORMAL UTERINE BLEEDING: ENDOMETRIAL POLYP, RESSECTION

NAME: NN.
AGE: 36 YEARS
PARITY: 3+ 1

IP.NO: 9039
DOA: 9th February 2006
DOD: 10th February 2006

Presenting complaints
Prolonged heavy bleeding for almost 2 years

History of presenting illness
She complained that her periods had become progressively longer and heavy. There were also associated severe abdominal cramps. On the day she presented to hospital, she had experienced the heaviest bleeding which had been going on for three days without signs of remission. The abdominal cramps were also more severe and unremitting this time.

Past obstetric and gynecologic history
She was para 3 + 1. Her last pregnancy was seven years ago which ended as a spontaneous abortion at 4 months. All her previous deliveries were normal home deliveries.
Before the onset of the presenting complaints, her periods had been regular, lasting three days with 30 days cycles. There was no dysmenorrheal.
She had never used any modern methods of contraception.

Family and social history
She was the first of three wives. She lived in Narok with the rest of her family. She did not smoke or use alcohol.

Her past Medical and Surgical history was unremarkable.

Physical examination
She appeared anxious. She was slightly pale but otherwise hemodynamically stable.
Her respiratory and cardiovascular and nervous system examination was essentially normal.

On abdominal examination she was obese. There were no surgical scars, but therapeutic marks were observed in the suprapubic area. The lower abdomen was tender but there was no rebound tenderness.

Pelvic examination

There was blood on external genitalia. The vaginal canal had fresh blood clots. The picture was that of a woman having ongoing incomplete abortion.

Speculum examination

There was active bleeding from the cervical os and there were what appeared to be products of conception on the os. On digital examination, the mass was firm and spherical with a stalk extending into the uterine cavity.

Investigations

Pregnancy test was negative.
Blood for typing and cross-matching
Hemogram: Hb. 7.8mg/dl; WBC 10,800/mm^3

A diagnosis of severe menorrhagia due to a prolapsed endometrial polyp was made.

Management

The patient was taken to theatre after counseling and consent obtained.
Under spinal anesthesia, the patient was positioned in Lithotomy on stirrups. The bladder was drained using a straight catheter. Bimanual examination was done which revealed a normal size uterus which was freely mobile. There were no abnormal adnexal masses palpated.
The cervix was dilated with the polyp at the level of external os. The pedicle extended to the left lateral aspect of the uterine cavity.
The body of the polyp was grasped and twisted. The mass snapped at the base.
The endometrial cavity was curetted using a sharp curette with emphasis to the site of attachment of the polyp.
The rest of the uterine cavity was explored and felt free of any other masses.
Bleeding was controlled with oxytocin.

Postoperative care

She was put on Diclofenac 75mg I.M as needed
Oxytocin drip was continued for 4 hours after the operation

Pad count was done in order to monitor blood loss. Te patient was to report whenever she changed pads so that the nursing staff could record and call Doctors whenever bleeding was thought to be more than minimal.

There was no bleeding witnessed throughout the night of admission.
The following day Pelvic ultrasound was done. It showed that the myometrium was of normal thickness and echogenicity. The endometrial stripe was of normal thickness. There was some fluid in the endometrial cavity which was thought to be blood clots.

The patient was discharged home on hematinics for review in the gynecology clinic in two weeks time.

Follow up
She came to the clinic as planned. She reported no ongoing bleeding. Repeat ultrasound using vaginal probe found the endometrial cavity to be clear of masses.
She was advised to return to clinic in the event of recurrence of symptoms, other wise return in three months for further evaluation.

DISCUSSION
Reproductive capability of a woman begins at the point of Menarche, which is the beginning of cyclic uterine bleeding in the anatomically and physiologically normal female.(1). Many women, perhaps correctly, conclude that any departure from their personal menstrual experience is abnormal and they will seek treatment for such departures.

Menstruation has three clinical characteristics: the cycle length, duration of flow and duration of flow. The duration of a menstrual cycle is defined as the time between the first days of one menstrual cycle to the first day of bleeding for the next cycle. The normal cycle lasts about 28 days (plus or minus 7 days). Any deviation is considered abnormal. Polymenorrhea refers to abnormally shortened menstrual cycles, with bleeding occurring 21 days or sooner. Cycle duration of 35 days or more is referred to as Oligomenorrhea.

Women with normal menses bleed for a maximum of 7 days, losing a total of 60ml of blood. Menstruation that occurs at regular intervals and involves the loss of more than 80ml of blood per cycle is called menorrhagia. In contrast, women with decreased blood loss are said to have hypomenorrhea. Intermenstrual bleeding is bleeding that occurs in between regular menstrual cycles.

Metrorrhagia refers to bleeding that is frequent and irregular. When this pattern of bleeding becomes prolonged, it is called menometrorrhagia.
The patient presented had menorrhagia.

The differential diagnosis of abnormal uterine bleeding includes reproductive tract disorders, systemic diseases and iatrogenic causes. The diagnosis of dysfunctional uterine bleeding is can be established only after the exclusion of the above categories. Dysfunctional uterine bleeding is a symptom complex that includes any condition of abnormal uterine bleeding in the absence of pregnancy, neoplasm infection or other intrauterine lesion.

Organic disorders of the genital tract include complications of pregnancy, infections as well as benign and malignant lesions of the genital tract.
Systemic disease includes coagulation disorders, thyroid and liver diseases.
Drugs and intrauterine devices are some of the iatrogenic disorders.

Abnormal uterine bleeding occurs in at least one third of women with uterine fibroids. At KNH Wanjala found that 54 % of women with fibroids had abnormal bleeding.(3). Sub mucous fibroids bleed more than other types of fibroids and the associated pain is also more severe.(4).

The diagnosis of abnormal uterine bleeding is made by history, physical examination and targeted investigations. Investigations are done guided by the most likely differential diagnosis. A full blood count is necessary to estimate the degree of anemia and to look for signs of infection. A pregnancy test is indicated where pregnancy or trophoblastic disease is suspected. A Pap smear and endometrial biopsy may reveal evidence of infection or premalignant or malignant lesions.

Hysteroscopy provides an excellent opportunity for direct visualization of the endometrial cavity. It is a more reliable tool for the diagnosis of endometrial lesions, giving up to 20 -25% of lesions missed on curettage. Ultrasound is useful in diagnosis larger anatomic abnormalities. Using transvaginal and sonohysterography, it is possible to search for small intracavitary lesions. (11, 12). The hysteroscope can also be used therapeutically to ressect endometrial lesions.

Treatment of abnormal uterine bleeding depends on the specific etiology, the age of the patient and the severity of the symptoms. Polyps, sub mucous fibroids

may be removed or by hysterectomy. IUCDs need to be removed if they are thought to be responsible for the symptoms.

Since most dysfunctional uterine bleeding patients have an underlying problem of chronic unovulation and unopposed estrogen stimulation of the endometrium, medical treatment with progesterone compounds is the mainstay of therapy. Progestin stimulation decreases DNA synthesis and cell proliferation and depletes estrogen receptors, (4,13). It stops endometrial growth and stabilizes the endometrium. Withdrawal of the hormone allows for orderly sloughing of the endometrium.(13).

Medroxy progesterone 10mg or Norethesterone 5mg daily can be given for five to 10 days. High dose conjugated estrogen e.g. Premarin 25mg every 4 hours will control acute bleeding by proliferative repair of endometrium and by direct effects of on the coagulation system, which includes increased fibrinogen and platelet aggregation.(14). A progestin alone or oral conjugated estrogens in combination with a progestin can then be used to induce orderly bleeding.

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Non- steroidal anti-inflammatory drugs (NSAIDs) have been shown decrease menstrual blood loss by 30-40% in women with ovulatory menorrhagia, especially when used in conjunction with progestins or oral contraceptive pills. (15). Hysterectomy and endometrial laser ablation are alternative long term treatment.(16).

Since the differential diagnosis of diseases that cause abnormal uterine bleeding almost covers the entire field of gynecology, treatment must be individualized based on age, desire for pregnancy, and ovulatory status. A combination of modes of therapy may be required for optimum results.

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GYNAECOLOGY CASE 10

PELVIC ABSCESS-LAPARATOMY AND DRAINAGE

NAME; RK.
AGE: 30 YEARS
PARITY: 2+ 1

IP.NO: 125503
DOA:13th April 2006
DOD: 2oth April 2006

Presenting complaints
Abdominal pain, fever and vomiting for 1 week

History of presenting Illness
She gave a history of miscarriage 2 weeks in the past. She went to a private clinic where evacuation was done after which bleeding stopped. She went home and was fairly well for a few days. The abdominal pain did not resolve completely. In fact it became more severe after five days. She went back to the clinic where she was given oral medication which she used but the symptoms worsened. She also developed fever and vomiting.

Past Obstetric and gynecologic history
She was then para 2 + 0. Her last delivery was in 2002.

Family and social history
She was married and lived with husband in Kibera. She was a dealer in second hand clothes and her husband was a Jua Kali Artisan.

Past Medical and Surgical history
This was unremarkable.

Physical examination
She was sick looking, clinically febrile, not pale and not dehydrated.
Her respiratory and Cardiovascular and nervous system examination was normal.

Vital Signs: BP 110/70 mmHg
Temperature 37.6 ^{0}C
Pulse rate 104/minute

Abdominal examination

The abdomen was not distended and was moving with respiration. There were no scars or therapeutic marks. On palpation there was tenderness which was maximal in the lower abdomen. There was guarding and rebound tenderness in the suprapubic area.

Pelvic Examination

The external genitalia were normal. On digital examination, the cervix was 1cm dilated. There was severe tenderness on cervical motion. The adnexae and pouch of Douglas felt full and boggy. There was purulent discharge on examining finger. An impression of post-abortal pelvic abscess was made.

Investigations

1. Hemogram: WBC 29.0x 10^9/l; HB: 8.9G/dl
2. HIV Negative
3. Pelvic Ultrasound: Reported a complex mass in the Pouch of Douglas measuring 7cm x 4cm.
4. At laparatomy pus was taken for culture. Grew Bacteroides sensitive to Augmentin and Cefriaxone

Management

She was started on Intravenous Cefuroxime 750mg and Flagyl 500mg and taken to theatre for emergency laparatomy. Intraoperatively, the omentum and large bowel was matted together around the uterus with filmy adhesions. These were freed easily by blunt dissection with the fingers. There was a collection of pus posterior to the uterus. Loculations were broken and the pelvis irrigated with warm normal saline and Betadine solution. There were no signs of uterine perforation. The abdomen was closed in layers.

Postoperative care

She continued on the above antibiotics and analgesics till culture results were available. It showed that the organisms were resistant to Cefriaxone, so this was changed to Augmentin for which the organism was sensitive.

The patient was afebrile throughout the postoperative period but ileus persisted for 48hours. On the third day she was started on feeds and advanced as tolerated.

She completed 10 days of parenteral antibiotics. By this time the abdomen was soft and the surgical wound healed well. She was discharged on oral Augmentin 1gm twice daily to complete 14 days of treatment.

DISCUSSION

The case presented was a 30 year old female who developed pelvic abscess after evacuation for incomplete abortion. A pelvic abscess is a collection of pus confined to the pelvic structures. It may involve the tube (Pyosalpinx), tube and ovary (Tubo-Oavarian), or the cu-de-sac. An abscess formation may be in more than one anatomical position site in the same patient since infection is bilateral in most cases (1, 2).

Pelvic abscesses are common squeal of recurrent pelvic inflammatory disease, post abortion or postpartum sepsis. Abscess formation is often associated with organisms other than the gonococcus, commonly, anaerobic species, especially *Bacteroides*. This was isolated on culture on the pus obtained at laparatomy in the case presented. Occasionally, resistant gram-negative bacteria can be found.(1).

Tubo-ovarian abscess may occur following an initial episode of acute Salpingitis, but is usually seen with recurrent infection superimposed on chronically damaged adnexal tissue. Involvement of the ovary, usually at the ovulation site, may serve as a portal of entry for extension of infection and abscess formation. Rupture of the abscess may result in acute peritonitis. Slow leakage of the abscess may cause formation of a cul-de-sac abscess.

The incidence of pelvic abscesses is variable depending on the presence of risk factors and access to medical care. In Kenyatta National Hospital pelvic abscesses following abortion are common. Fomulu found that 18.2% of abortions were complicated by pelvic abscess formation. (3) On the other hand, Chebrot found that 13% of women with pelvic abscesses had attempted abortion with unsterile equipment.(4).

The diagnosis of a pelvic abscess is mainly by history and clinical examination but ultrasound has become a very useful tool. The clinical presentation is variable depending on whether complications have occurred or not. It may range from total absence of symptoms as in a woman who, on routine pelvic examination is found to have an adnexal mass to a moribund patient presenting with acute abdomen and septicemic shock. Abdominal guarding and tenderness are usually present and an adequate pelvic examination may be impossible because of pain.(1). The case presented was not toxic and may be as a result of previous antibiotic treatment

The management is determined by the definitive diagnosis. Unruptured asymptomatic tubo-ovarian abscess may be managed initially with antibiotics

and close follow up. If the mass does not subside within 15 to 21 days or enlarges, drainage is indicated. A ruptured tubo-ovarian abscess requires immediate medical therapy and drainage.(5) Laparascopy has now become useful for both diagnosis and treatment of tubo-ovarian abscesses. (6)

Medical therapy is recommended initially with fluid resuscitation and intensive monitoring including urine output. Parenteral triple antibiotics are given for 48-72 hours, if there poor response, surgical intervention is indicated. The reported incidence of surgery for clinically diagnosed unruptured tubo-ovarian abscess is about 43 %.(6). This shows that conservative therapy is acceptable.

The surgical options at laparatomy are: total abdominal hysterectomy, bilateral adnexectomy. In selected cases, unilateral salpingo-oopherectomy or linear salpingostomy with copious irrigation and suction drainage may be considered.(5,6). In some series, women with this operation have become pregnant and delivered after such surgery.(5).

The immediate complications of pelvic abscesses are septicemia and shock, renal failure and thrombo-embolism. Long term complications include , infertility, chronic pelvic pain, Ectopic pregnancy and intestinal obstruction.
Before antibiotic treatment and immediate surgical intervention was available, the mortality rate from ruptured pelvic abscess was 80-90%. With prompt and effective therapy the mortality can be less than 2%.(1).

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GYNAECOLOGY CASE 11

LOST IUCD: HYSTEROSCOPIC REMOVAL

NAME:AW FP.NO: 243/89
AGE: 54 YEARS PARA 4+O

Presenting complaints
She wanted the coil removed since she had attained menopause.

History of presenting complaint
She had IUCD inserted in 1989. She had never had any problems with it. But in 2000 she had reported not feeling the strings. An ultrasound done then had shown that the device was in place and there was no urgent need to remove it.

Past obstetric and gynecologic history
She was a Para 4 + 0; her last delivery was in 1989 after which the IUCD was inserted. She was 2 years postmenopausal.

Family and social history
She was a nurse. There was no family history of any chronic illness.

Past medical history
She had no significant illness in the past.

Physical examination
She was in good general condition. Examination of her systems was unremarkable.

Pelvic examination
The external genitalia were normal for age. On speculum examination, the vaginal walls and cervix appeared normal. No IUCD threads were visible. On bimanual examination the uterus was bulky with nodular masses. The adnexae were free.

Investigations

1. Pelvic ultrasound: Showed IUCD in the uterine cavity. The uterus was slightly bulky with small fibroids that were calcified.
2. Pap smear: Reported as normal.

Options of management were discussed with her and she opted for Hysteroscopic removal. She was scheduled for removal in theatre.

Management

On the day of the operation she came from home without taking breakfast. She gave consent and was taken to theatre after she emptied her bladder spontaneously.

In theatre she was placed in dorsal lithotomy position. Bimanual pelvic examination was done which reveled the uterus to be midline and freely mobile. No tenderness was elicited. Vulvar vaginal toilet was done. Exposure was achieved by use of a weighted speculum. The cervix was grasped with a tenaculum and pulled towards the introitus.

The hysteroscope was introduced into the uterine cavity without need for dilatation. The uterine cavity was distended by use of a special solution that allows good visibility.

The endocervical canal appeared normal. The IUCD was seen in the centre of the endometrial cavity. A grasper was introduced, grasped and pulled out without difficulty.

The patient was shown the device, cleaned and discharged home on Mefenamic acid analgesics to take as needed.

DISCUSSION

The ability to control fertility has had more wide ranging impact on society than almost any other aspect of medical practice, past and present. (1). Together with Oral contraceptives, Depo-Provera and Implants, the IUCD is one of the most effective reversible methods of contraception available today.

Many models have been designed and used clinically for many years. Their main mechanism of contraceptive action in the human is spermicidal, produced by a local sterile inflammatory reaction caused by the presence of the foreign body in the uterine cavity (2). Addition of copper increases the inflammatory reaction in proportion to the amount of copper. This also increases the effectiveness of the device.

Progesterone containing devices are also available. Progesterone reservoir is added to the vertical arm of the T-shaped device. This kind of device releases about 65ug of progesterone daily. This amount is sufficient to prevent pregnancy by its local action in the endometrial cavity but is not enough to enough to cause measurable changes in peripheral serum progesterone levels.(1).

The IUCD is one of the most popular contraceptive methods available. In Kenya surveys on user satisfaction showed that IUCD users had the lowest discontinuation rates (3). The main benefits include: a high level of effectiveness, a lack of systemic associated metabolic effects, non interference with coitus and a single act of motivation is required for long term use (1,2).

The insertion of IUCD is based done during a menstrual period because the cervix is open then and the patient is unlikely to be pregnant and the uterine cavity is a bit distended. However it can be done at any other time of the cycle provided the patient is confirmed not to be pregnant.(4).

The major contraindication to IUCD use include: a history of pelvic inflammatory disease or risk of it, abnormal or distorted uterine cavity, a history of ectopic pregnancy, undiagnosed genital bleeding and suspected uterine or cervical malignancy. No increase in infection has been noted in monogamous asymptomatic HIV- positive patients.(5).

Several long term studies show that IUCD is not associated with increased risk is of cervical or endometrial cancer.(6) The main causes of morbidity among IUCD users are complications of pregnancy, uterine perforation, and hemorrhage as well as pelvic infection.

In general the first year of use is associated with less than 1% pregnancy rates, 10% expulsion rate and 15% removal rate for medical reasons, mainly increased menstrual flow.(7). These risks diminish steadily in subsequent years. Perforation of the uterus is one of the potentially serious complications of use of IUCD. This may occur initially at insertion. This usually involves a small portion but contractions of the uterus in the following months may force it into the peritoneal cavity. The perforation rates have been reported as 1 in 3000insertins (6). Perforation should be suspected when the patient cannot feel the strings and did not notice passage f the device.

Complications of pregnancy include: ectopic pregnancy, spontaneous abortion, and prematurity.(6) If a patient conceives with an IUCD in place the risk of ectopic pregnancy is 3-9%. This is 10 times the rate of ectopic pregnancy in the same population.(8)

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GYNAECOLOGY CASE 12

PELVIC RELAXATION: VAGINAL HYSTERECTOMY AND ANTERIOR AND POSTERIOR COLPORARPHY.

NAME: BM
AGE: 47 YEARS
PARITY: 5+0

IP.NO: 1106067
DOA: 15TH SEPTEMBER 2006
DOD: 22ND SEPTEMBER 2006

Presenting complaints
Low back pain, pelvic pressure, and protrusion of something through the vagina on straining for a period of 14 months

Past obstetric history
She was para 5 + 0. Her last delivery was in 2000. All her deliveries were vaginal except the second last one in 1996. She was pregnant with twins who were delivered by cesarean section.

Past Gynecologic history
She was 4 years post menopausal. She attained menopause at 43 years.
Family and social history
She was married and her husband and she were Peasant farmers. There was no history of chronic cough or trauma.

Her past medical and surgical history was not significant.

Physical examination
She was in fair general condition. She looked older than 47 years. Her thigh muscles were lax.
Examination of her systems was normal.

Abdominal examination
The abdomen was scaphoid with a low midline scar. There was no organomegally.

Pelvic examination
The perineal area was inspected with patient in supine position. At rest, the anterior vaginal wall could be seen at the introitus. When she was asked to strain, it protruded through the introitus.

Digital examination was done while the patient was upright with her foot resting on a stool; the lowest end of the cervix was found to be above the level of Ischial spines.
The uterus was bulky and nodular. There was no tenderness elicited.
A diagnosis of 2nd degree Cystocele and uterine fibroids was made.

Investigations

1. Pelvic Ultrasound: Multiple uterine fibroids with signs of degeneration were noted. The adnexae and pouch of Douglas were free of pathology.
2. Pap smear: Reported as normal.
3. Hemogram: Hb. 13.0; WBC 4.7x109/L
4. Urea: 3.0; Creatinine 78.8

Management

The implications of the diagnosis and options of management were discussed with the patient. She opted for vaginal hysterectomy.

The patient was admitted on 15th September 2006. Consent for surgery was obtained. Two units of blood were cross-matched and kept ready.

Operation

In theatre, the patient was put under anesthesia and placed in the dorsal Lithotomy position in stirrups. The bladder was catheterized and clear urine was obtained. Pelvic examination was done under anesthesia which confirmed the diagnosis. In addition the posterior fornix was found to prolapse; hence a diagnosis of enterocele was added. The perineal body and lower third of posterior vaginal wall was intact. The patient was then prepped and draped in a sterile manner.

Exposure of the cervix was achieved by use of a weighted speculum and lateral speculums as need arose. Jungle juice was injected beneath the vaginal mucosa around the cervix to achieve hydrodissection. The cervix was held and pulled out using a Tenaculum. A semi-lunar incision was made on the vaginal mucosa of the anterior and posterior fornices. The mucosa was then dissected and bleeding controlled using diathermy. The peritoneal cavity was entered. No bowel was in the vicinity since the patient was in trendelenberg position.

The incision was then extended to the anterior cervix and dissection completed in the same version. The procedure was continued sequentially dissecting and tying the ligaments with excellent hemostasis. The delivery of the uterus was

achieved by, first, removing a posterior fibroid which was in the way then, uterus was delivered and the vaginal cuff closed. Anterior and upper posterior colporarphy was then done.

The Vaginal was packed with gauze soaked in Iodine solution to be removed the following day. The patient was reversed well. The specimen was submitted for pathologic examination.

Postoperative period

Postoperatively the patient had rapid recovery. The vaginal pack was removed the following morning. There was no bleeding or discharge noted vaginally. Bowel sounds were present and the patient was started on diet. She continued on analgesics. She was discharged on the second postoperative day in very good condition.

Follow up

She was seen in the clinic after two weeks. She still had mild pelvic pain but otherwise was doing well. There were no urinary or gastrointestinal symptoms. She was given analgesics and asked to return to clinic in two week's time for the pathology report and further review.

DISCUSSION

Genital prolapse refers to anatomic abnormalities involving the vaginal canal and surrounding structures that result from loss of normal support.(1). The normal position of the uterus, vagina, bladder and rectum are maintained by anatomic structures and systems that are interrelated and provide varying contributions to the support mechanisms.

The pelvic floor complex work together in concert to maintain continence, support pelvic and abdominal organs and control expulsive activities (2,3). Loss of normal muscular supports leads to sagging and widening of the urogenital hiatuses and results in genital organ prolapse.

Vaginal defects may be anterior or posterior. Anterior defects give rise to Cystocele and urethrocele. Posterior defects give rise to enterocele and rectocele. The incidence of prolapse increases with age and peaks after menopause. This is the time when ovarian steroidogenesis diminishes and the accumulated stresses of live have their effects. Clear racial incidences have also been noted (2). This may be explained by the different genetic and environmental factors among different races and cultures. At KNH, Mwalili found that pelvic organ prolapse

accounted for only 0.1% of elective gynecologic surgery and in Britain it accounted for 6.5% of those waiting for surgery.(5). The difference in life expectancy may also play a role in the differing incidences of genital prolapse. Some cultural practices that result in pelvic scarring have been associated with lower incidences of genital prolapse.(1,5). The etiology of genital prolapse may be congenital or acquired. (2). Multiple factors are usually involved to varying degrees. The most prominent of acquired factors is pregnancy, labor and delivery. (2). This results in various degrees of damage to the support structures.

Withdrawal of estrogen following menopause results in the weakening of estrogen dependent genital structures and so genital prolapse manifests frequently after menopause. At KNH, 76.6% of women presenting with genital prolapse were postmenopausal and had five or more vaginal deliveries. The patient presented had four vaginal deliveries and one cesarean section. She was also 4 years post menopause.

Genital prolapse may also be a result of inherent weakness or laxity in the connective tissue structures.(8). This has been seen among patients with Ehlers-Danlos syndrome and those with congenitally long cervix. Chronically increased intra abdominal pressure as in chronic cough and abdominal masses are also contributory factors in genital prolapse.(9). The symptoms of genital prolapse relate to the rate of development of the prolapse and the structure involved. Slowly progressing prolapse is likely to cause fewer symptoms compared to rapidly developing prolapse. This may also suggest the etiology and has prognostic importance.

Pelvic relaxation is best demonstrated by observing the vaginal area while having the patient strain. This may be done in either the lithotomy or standing positions. Examination of the perineal body should also be done. Because pelvic relaxation is a structural problem, the ultimate treatment is structural. The choice of the method of treatment depends on the patient's age, her desire fro pregnancy or vaginal function, the degree of prolapse, the structures involved and the severity of the symptoms. (1).

Other predisposing factors such as chronic cough, obesity, and chronic constipation should also be treated appropriately. The options range from provision of mechanical buttresses of the pelvic organs provided by peccaries. They are placed in the vagina in much the same way as the pelvic diaphragm. Complications include hygiene problem and pressure effects such fistula formation.

Surgical repair takes many forms depending on the specific defect. The relief of the patient's symptoms is the first goal. The second goal is the restoration of normal anatomy and where possible restoration of function.

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GYNAECOLOGY CASE 13

SEXUAL ASSAULT, PREGNANCY CARRIED TO TERM

NAME ; E.C.
AGE. 16 years OP.NO. 58143

Presenting complaints

History of being raped by a person known to her

A teenage girl was brought by her mother to the hospital as a referral from a District hospital with a history that she had been raped by someone known to her four days prior to presenting to hospital.

The story was that the man waylaid her while she was going to church for an evening service. This was someone she knew and had been seeking a relationship with her which she had refused. He dragged her off the road and raped her several times after threatening to kill her if she dared raise an alarm. She then submitted without resistance.

She did not report the event to anyone until her mother insisted that she needed to explain her whereabouts since she was not in church. It was after this that she was brought to the District Hospital where they were immediately referred to the mission hospital. She had taken bath and changed clothes several times. She reported that she was a virgin prior to the sexual assault.

Gynecologic history
Menarche was at fifteen years. She had irregular menses and could not remember with certainty her last menstrual period though she reporting having one the previous month.

Family and social history
She had completed class eight the previous year but had not proceeded to high school. She did not use tobacco or alcohol. There was no family history of any chronic illness.

Physical examination
She was a teenage girl in good general condition.
There were no bruises or scratches noted on her body.

Systemic exam was essentially normal.
On genital examination, she had normal external genitalia with Taner class 4 pattern of pubic hair distribution. The hymen was broken. There were no obvious tears / lacerations. There was no abnormal vaginal discharge.

An impression of Sexual assault was entertained.

Investigations

- Pregnancy test was Negative
- HIV test was also negative
- Hepatitis B surface antigens was negative
- A high vaginal swab was negative for T vaginalis and spermatozoa.

She was referred to counseling. After counseling she was scheduled to return for follow up in two weeks time.

Follow up

She returned after two weeks. A urine sample was taken for pregnancy test which turned out to be positive. She was sent for further counseling as planned before but the counseling this time round included the revelation of the pregnancy test findings.

One of the counselors that work with the community health department of the hospital was involved this time because she had the advantage of being able to follow her to her home and involve the rest of the family in the counseling process.

She was also informed that termination of pregnancy resulting from rape may be an option but would not be done in this particular hospital. Other options were to carry the pregnancy to term and give the baby up for adoption or keep the baby.

The hospital offered to take care of all her antenatal and delivery costs if she accepted to keep the pregnancy to term. After several sessions of counseling both at home and in the hospital, she accepted to keep the pregnancy and give the baby for adoption. The parents were of the idea of taking care of the baby.

As the pregnancy progressed she apparently began bonding with the baby and by the time she came to clinic at 34 weeks, she had decided to keep the baby.

Antenatal profile

Blood group O positive
HIV Negative
VDRL Negative
Urinalysis No proteinuria
The antenatal period was quite uneventful.

Delivery (reported)

She presented to hospital on 3rd June 2006 in labor.
On assessment the fundal height was term, with longitudinal lie and cephalic presentation. The fetal heart was reactive as per electronic fetal monitor. She was having 3/10 strong contractions.
The descent was 4/5.

On pelvic examination the cervix was 4 cm poorly applied to the presenting part. Membranes were bulging.
Artificial rupture of membranes was done. Meconium stained liquor grade two was noted.

Pelvic assessment found a borderline pelvis.
A decision to deliver by cesarean section because of CPD was made.
The outcome was a live female infant that scored 7/1; 10/5 was delivered. Birth weight was 3400gm. Postoperatively there were no complications. She was discharged in a stable condition on the third postoperative day.

Follow up

She was seen at the postnatal clinic on 13th June 2006. The wound had healed well. She had no complaints. She was discharged from clinic but was to continue having counseling sessions with the community counselor.

DISCUSSION

Sexual assault is the nonconsensual performance of acts, which in a consensual setting would be sexual, or which involve genital structures in such a manner that the victim perceives a sexual intrusion (1). It may result from force, the threat of force either on the victim or another person, or the victim's inability to give consent (2).

Sexual assault occurs in all socio-ethnic and socio-economic groups. In Kenya, reports show an increase in sexual assault cases against women and children. In 2003, there were 2,308 rape cases reported to the Police. Gang rape and sexual

assault during robbery and car jacking are reported (3). These estimates are much lower than the real figure because most cases go unreported. Due to the stigma associated with it and the stress encountered by victims among law enforcement Officers and care givers, only 30% of rapes are reported to the police and 505 of rape victims tell no one (2). In Kenya, the number of cases that go unreported is likely to be much higher due to ignorance and fear and misconceptions in our society on rape. Sexual assault cases constituted 35 of admissions to the acute gynecology ward at Kenyatta National Hospital in 2002.(4)

The very young, the elderly, the physically and developmentally disabled are particularly more vulnerable to sexual assault.

Several variants of sexual assault are recognized: Acquaintance rape refers to sexual assault by someone known to the victim. 75% of adolescence rapes are by an acquaintance of the victim.() This was true in the case presented. Date rape refers to forced or unwanted sexual activity in the context of a dating relationship. When the acquaintance is a member of the family or a parental figure living within the home, the sexual assault is referred to as Incest. Statutory rape refers to sexual intercourse with a person under an age specified by law. (14 to 18); the consent of an adolescent younger than this age is legally irrelevant because they are defined as incapable of consenting.

Marital rape is forced coitus or related sexual acts within a marital relationship. In Kenya this is not recognized as a crime. Child sexual abuse is defined as contact or interaction between an adult and a child when the child is being used for the sexual stimulation of that adult or another person.

Victims of sexual assault may react to the experience in various ways. One recognized aftermath is the Rape-Trauma Syndrome. This syndrome has three phases: the acute phase, the middle or readjustment phase and the late or reorganization phase. The acute phase begins with the assault, but may not be fully manifest until the time of initial disclosure, the time when the victim tells someone of the assault for the first time. This is an emotionally volatile time and the victim may appear calm, may be tearful or agitated or may move from one extreme to another. Some physical signs such as shaking and hypothermia may be present. There may be involuntary loss of cognition which may raise fears of being perceived by others as being crazy. The person presented was mute and hypothermic.

After the rape the victim may retreat to routine activities such as shopping or household cleaning. This retreat is an emotional attempt to regain control. Safety

and regaining control are the victim's main emotional needs during this time. Discussing the sexual assault within a supportive environment facilitates a sense of control (1).

In the middle or readjustment phase, the victim appears to resolve most issues about the assault. This involves rationalization that she could have prevented it, coupled with unrealistic plans to avoid another assault. This plans break down in the late or reorganization phase. .

The late phase may be quite lengthy and is a difficult and very painful time. It is characterized by chronic anxiety, feelings of vulnerability, loss of control and self- blame. Long term reactions may include flashbacks, feelings of alienation and isolation, catastrophic fantasies, sexual dysfunction, mistrust of others, phobias, depression and somatic symptoms.

Post Traumatic Stress Disorder (PTSD) is a common sequel of sexual assault. It is characterized by Psychic numbing, intrusive re-experiences of the trauma, avoidance of stimuli associated with the assault, and intense psychological distress. On-going counseling is important if the victim is to fully recover from the emotional trauma.

Up to 40% of sexual assault victims sustain physical injuries. (2). While most injuries are minor, about 1% requires hospitalization and 0.1% are fatal. (6). these injuries should be treated promptly.

Because of the complex problems caused by the sexual assault, treatment by multidisciplinary teams using prepared protocols is best. Rape/Sexual violence can result in serious injuries, profound psychological trauma, unwanted pregnancy, and infection with HIV and other STIs. (4).The health care team has three tasks:

a) Care for the victim's emotional needs,
b) Evaluation and Medical and or surgical treatment, and,
c) Collection of Forensic specimens.

In addition to documenting that sexual assault has taken place; an attempt should be made to identify the perpetrator (4). Though history taking about sexual assault is uncomfortable for both victim and health care giver alike, it is a necessary activity to gain medical and forensic information. It is also a therapeutic activity. The physician evaluating the victim should be aware of statutory requirements. Such requirements may involve the use of sexual assault

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kits, which list the steps necessary and the items to be obtained for forensic purposes.

The victim should be encouraged to state in her own words what happened and to identify or describe the attacker if possible. The history should include; the last menstrual period, contraceptive use, pre-existing pregnancy and illness, last consensual sexual activity before the assault. The victim's acts in the interval after the assault; whether she has taken bath, urinated, defecated, douched must be documented as this will affect findings.

Informed consent must be obtained before examining a sexual assault victim. A thorough physical exam should be done in the presence of a Chaperone or the victim's Advocate.

One should search for bruises, abrasions, or lacerations about the neck, back, buttocks and extremities. Bite marks should be noted, particularly around the breasts, and genitalia. This should be documented with drawings and pictures. Clothing intimately associated with area of assault should be collected, labeled and submitted to the legal authority. A pelvic examination should be performed. Injuries to the Vulva, Hymen, Vagina Urethra and Rectum should be noted. In children or when injuries are extensive, examination under anesthesia may be necessary. Specimens collected should include pubic hair combings, fingernail scrapings for blood and skin of attacker. Clothing should be investigated for presence of semen or blood.

The speculum should be moistened only with normal saline. Evidence of coitus is present in the vagina for as long as 48hrs. Motile sperms may be present in the vagina for up to 8 hrs after intercourse. , But may be present in cervical mucus for as long as 2 to 3 days. Non- motile sperms may be noted in vagina for up to 24 hrs and in the cervix for up to 17 days. (2). Rape and Physical assault are legal terms and should not appear on medical records. Instead, the physician should report findings as " consistent with the use of force".

The initial laboratory tests should include:

1. A wet prep or vaginal swab for *Trichomonas Vaginalis*
2. Cultures from Vagina and Anus and Pharynx for *Chlamydia* and *Gonorrhoea;*
3. Rapid Plasma Reagin (RPR) for Syphilis,
4. Test for Hepatitis B antigens and HIV and
5. A pregnancy test.

Prophylactic Medical treatment for sexually transmitted infections may be indicated. The recommended empirical treatment for Chlamydia, Gonorrhoea and trichomonal infections are: -

Cefriaxone 125 mg I.M Stat.

Metronidazole 2 gm PO stat,

Doxycycline 100 mg BD for 7 days

Sexual assault constitutes a high risk exposure to HIV. This is even higher where there are multiple persons involved as in gang rape. Post-Exposure Prophylaxis (PEP) given the health care workers exposed to HIV through needle injuries have been shown to reduce the risk of infection by 80 %.(4). The Ministry of Health recommends that post exposure prophylaxis should be offered to all survivors of sexual violence who present before 72 hours have expired in all clients deemed to have been exposed. (4).

The first dose is given immediately. Clients are then offered a three day dose since some patients may not be in such emotional status as to understand the counseling and have HIV test done. On review after three days the client is counseled and tested. If Negative for HIV the prophylaxis is continued for a total of 28 days.

In view of the psychological consequences of conceiving after being raped, every non-pregnant woman of reproductive age who is not covered by a reliable form of contraception should be given emergency contraception if they present before the expiry of 72 hours. This has been shown to reduce the risk of pregnancy by 85% compared to no treatment. (1). The risk of pregnancy following rape has been estimated as between 2 to 4 % in those without contraception.

The options are:

1. Postinor II. Two tablets stat
2. Eugynon or Neugynon, two tablets, repeated after 12 hours
3. Micrgynon or Nordette, two tablets stat then repeated after 12 hours.

In the case presented, the client came to hospital four days after the rape incident and so did not receive emergency contraception. The initial pregnancy test was negative but when repeated three weeks later it was positive. She was presumed

to have conceived after the rape incident as she gave the history of no prior sexual encounter.

Since most rape victims suffer significant psychological trauma, the physician taking care should provide access to counseling. A rape crisis center would be most appropriate if available. No patient should leave the facility without specific follow up plans, which have been agreed upon, by the physician, the counselor and the patient or responsible relative. A follow-up visit should be about two weeks. A physical exam and a repeat of some of the test, e.g. pregnancy test should be done.

Repeat serological tests for Hepatitis B, Syphilis and HIV should be done at an appropriate time during subsequent follow-ups.

It is important at each subsequent visit to emphasize to the patient that she was a victim and that she holds no blame. At each stage, she must be encouraged to ventilate her feelings and to discuss her current conceptions of the problem.

Rape is universally recognized as one of the worst forms of violence against Women (5).However, victims of rape often face insurmountable obstacles in trying to get help and to bring the perpetrators to justice. Many efforts have been devised to at least minimize it. In Kenya, the law provides a maximum of life imprisonment with hard labour and corporal punishment for rapists. The absence of minimum sentence has lead to very lenient convictions (4).

Women rights groups in Kenya have attributed the low conviction rates in sexual offense cases to lack of trained Police officers to carry out investigations, difficulties in preservation of forensic evidence in sexual assault, and shortage of lawyers with specialized training to prosecute such cases (6).

A lot of effort is currently being put in place to fight this crime. The Kenya government has set up a special unit in the office of the Director of Public Prosecutions to handle sexual offences. A women's only Police station has been created in Nairobi to deal exclusively with rape, domestic violence and child abuse cases. Recently the Sexual offenses Bill was passed into law.

It provides for severe punishments for sexual offenders and sets up minimum sentences whose lack has been blamed for very lenient sentences handed to sexual offenders in the past. It also expands the scope of what constitutes sexual

violence and so removes ambiguities that have made conviction of sexual offenders very difficult.

The Ministry of Health, through its division of Reproductive Health is currently carrying out pilot studies in three Provincial Hospitals and one district Hospitals as a fore runner for the establishment of comprehensive post rape care Units in all public hospitals in Kenya. The Nairobi women's Hospital, which has been receiving the majority of such cases in Nairobi, has recently set up a wing to deal exclusively with survivors of sexual violence.

The government is also setting up Forensic laboratories that will be extremely useful since conviction of sexual offenders relies heavily on corroborative medical evidence. These and other public awareness efforts are hoped to lead to a decrease in the number of Sexual assault cases.

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GYNAECOLOGY CASE 14

ELECTIVE REVERSAL OF FEMALE STERILIZATION

IP. NO. 8579
Age. 28.
DOA 17 Oct. 2005. DOD. 20th. Oct. 2005.

Case Presentation

A 28 year old female presented in the Gynecology Clinic with history of having had Bilateral Tubal ligation done in 2000 which she now wanted reversed. She had the procedure done during her second delivery by caesarean section. She had since separated from her previous partner and was preparing for a second marriage.
She was otherwise in good general condition and had no other medical, surgical or gynecologic problem.

Past Obstetric and Gynecologic history

She was para 2 + 0, both deliveries by Cesarean Section in 1998 and 2000 respectively.

She had regular 28 to 30 day cycles, normal flow and no dysmenorrhoea. The last menstrual period was 12 October 2005.

Family and social history

She had been separated from her husband for 4 years. The husband had taken custody of their son while she had taken the girl who was an infants at the time of the separation .She had recently been engaged to be married to another man who was willing to adopt her daughter.

She had not disclosed her sterility status with her prospective husband but realized that the success of their marriage would depend greatly on her ability to bear at least one child.

She had declined the marriage for a long, giving her experience in her previous relationship as reason for her objection. She eventually had given in since the man had been very persistent. She was currently running her own business. She did not smoke or take alcohol. There was no family history of any chronic illness.

Past Medical and Surgical history

Apart from the Cesarean sections, she had no significant medial or surgical illness in the past.

Physical Examination

On examination she was in very good general condition. Her vital signs were within normal limits and her systemic exam was unremarkable.
Her abdomen had an old sub-umbilical midline scar, no masses palpated and no areas of tenderness elicited.
On pelvic examination, she had normal external genitalia. Speculum exam showed normal looking cervix and vagina. Bimanual examination was normal too.

INVESTIGATIONS

CBC. Hb. 12.4
WBC 5,300
Platelets 254,000

Urinalysis: No abnormality detected

HIV was Negative

Ultrasound scan: Normal size uterus with thin endometrial stripe,
No fibroids or adnexal masses detected.

MANAGEMENT

Counseling

The client was informed that the procedure would involve a major operation and the prognosis discussed. Increased risk of Ectopic pregnancy was also discussed. On assessment the client was noted to have understood what she was going into and she was willing to have the procedure done since she had given much thought to it long before she came to hospital. She was booked for surgery and she showed up on the appointed date. She was admitted, starved from midnight.

In the morning an intravenous line was started, patient put on ringers lactate at a rate of 150cc/hr. A Foley's catheter was inserted and patient taken to theatre. One gram of Ampicillin was given for prophylaxis.

The patient was given spinal anesthesia prepped after being put on stirrups. The patient was draped. A speculum was place in her vagina to facilitate the placement of a uterine manipulator. U uterine manipulator with a balloon was place into the cervical canal and inflated.

The abdomen was opened by a midline incision with the scar being excised. On inspection, the pelvis was free of adhesions. Both tubal stumps were identified. Methylene Blue was introduced into the uterus using the uterine manipulator. It was noted that the dye would flow freely to the ends of the stumps. Both fimbriae were also identified.

It was noted that the tubes had been ligated at the level of Ampulla bilaterally. The ends were freshened. When dye was injected, there was free spill of dye bilaterally. Continuity was established by passing a ureteric stent from fimbrial end through to the proximal end of the tube.

Anastomosis was done around the catheter for both tubes using 6/0 nylon suture, all the time the tubes being bathed in normal saline containing heparin. It was seen that there was a large disparity between the diameters of the tubes at point of anastomosis and most of the ampulla had been damaged.

When Methylene blue was introduced into the uterus, there was free flow from both tubes. The abdomen was closed in layers. The patient had uneventful postoperative period and was discharged in stable condition for follow up in the clinic in two weeks.

Follow up

On return to the clinic, the patient had no complaints, the wound had healed well.
She was further informed of the surgical findings and what was expected.
She was reminded to report to hospital for ultrasound examination if she missed her period in order to rule out ectopic pregnancy.

DISCUSSION

The client presented was young, divorced and was engaged to be remarried. The reason for the divorce was domestic violence. She had been battered several times by her previous husband and had actually been beaten the night before she went to have her second delivery. The decision to have BTL was made by the husband since he incurred heavy costs for the deliveries and there was no chance she was going to have a normal delivery.

The decision of when or even whether to have children is a basic human right (1). Reproductive health care programmes should provide the widest range of services without any form of coercion. All couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children, and to have information, education and means do so (1).

Sterilization of women involves mechanically blocking the fallopian tubes to prevent sperm from reaching the egg (2). Tubal ligation should be presented as a permanent method of contraception. Over the past 20 years, the safety of the procedure has improved greatly due to improved anesthesia methods, better surgical techniques and asepsis, increased use of local anesthesia , training of personnel and better selection and monitoring of patients.(2).

In 1990, more than 170 million couples used Voluntary Surgical Contraception (VSC), making it the most widely used method of contraception in the world (3,4). Most women are satisfied with their decision to be sterilized. But a few women later request reversal surgery. About 0.1% to 0.3% of sterilized women in developing countries and 1% to 3% of sterilized women in developed countries ask for surgery to reverse their sterility (5). Requests for reversal of sterilization are increasing. The most common motivating factor are the so called three Ds:- Divorce, Death and Disaster(JM 2,3,4.). The major reason for regret is remarriage.

A fundamental goal for every family planning program is to have its clients make free and informed decisions about their fertility. Informed consent is the voluntary decision made by a person who has been fully informed about a procedure and its consequences. (2).

High risk candidates for regret have the following characteristics: Under 30 years of age, no living children, never married, or in unstable marriage, (emotional stress, and unresolved feelings about pregnancy related unpleasant experiences),

recent sudden decision, unrealistic expectations of the procedure and where the spouse is opposed to the procedure (jm2).

Great care and time are needed when counseling such clients. Younger women tend to change their minds more often and attitudes may be less fixed and they face a longer period of reproductive life during which divorce, re-marriage or death of children may occur (6). The client presented was high risk for regret because she was young. The decision for sterilization was imposed on her due to unpleasant experiences related to pregnancy, was divorced and was to be remarried.

Reversal surgery is a major abdominal operation that involves removing of the damaged parts of the tube, aligning the remaining segments, and suturing them together to create a secure seam. Reconnecting the tubes is difficult because they are small and slippery. Care must be taken to avoid putting sutures on the lumen. Microsurgical techniques', including magnification, minimal surgical trauma to tissue and careful alignment of the tube sections, allows trained surgeons to reconnect some tubes effectively. This is can only be achieved in large centers, often by private practitioners at great cost to the patient.

Not all patients who request reversal are good candidates for the procedure. The best candidates are sterilized women who:-

- Are in their 30s or younger,
- Are in good health
- Have a fertile partner
- Ovulate regularly and
- Have limited damage to their tubes.

In the case presented, the client was a good candidate for successful reversal on all the above accounts except that of tubal damage. The partner's fertility could not be assessed since he was not already informed of the condition.

The likelihood of successful reversal depends on the length of the tube after it is re-connected, the site of reconstruction, when one or both tubes can be reconnected and the skill and experience of the surgeon (7, 8), as well as the

health and fertility of the client. The length appears to be the most important. When reconstructed tubes are less than 4 cm long, pregnancy is much less likely than when the tubes are longer; especially with an ampulla of 1 cm.(9)

Successful reversal are usually defined as those that result in a live birth.(4). Isthmic-isthmic anastomosis with less than 1 cm of tubal damage have the highest success rates(80% to 90%) ; Ampulary- corneal anastomosis have the lowest rates of success and have the highest risk of ectopic pregnancies(8). In recent studies conducted in China, a live birth followed 30% to 90% of attempts at reversal (5).

Ectopic pregnancy is the most serious complication of the reversal procedure. Most ectopic pregnancies occur one year or more after the reversal surgery. They seem most likely to occur when the two ends of the reconstructed tubes are of different diameters as in the case presented. A patient who undergoes reversal surgery and becomes pregnant should be presumed to have an ectopic pregnancy until an intrauterine pregnancy has been established (9, 10). As such it is important that an ultrasound scan be done as soon as pregnancy is detected.

The interval between sterilization and reversal surgery seems to have an impact on the chances of success of reversal. If less than 5 years, the chances of success is over 60%, but if more it drops to about 30%(4).

Improving and adhering to a good practice of counseling would greatly minimize the need for reversal surgery. High risk clients should be offered longer term but highly effective reversible methods such as Norplant and IUCDs. This will allow adequate time to consider their situations yet be protected effectively from unintended pregnancy. Yet, in spite of the best efforts to this end, there will continue to be an increasing number of clients requiring reversal surgery. It is, therefore necessary that reversal surgery be made more feasible and available.

An important measure is the use of occlusion techniques that minimize damage to tubes. Pomeroy and Parkland methods have the least damage for ligation. Laparascopic techniques that use clips have least damage.

Reversal centers should be established with a good referral network established so that clients benefit from the best available expertise.

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GYNAECOLOGY CASE 15

RECURRENT EARLY PREGNANCY LOSS, PRESUMED LUTEAL PHASE DEFECT: PROGETERONE SUPPLEMENTATION-TERM PREGNANCY

NAME: SW
AGE: 28 YEARS
LMP: 4TH MARCH 2006

IP.NO: 1109742
PARA 0+ 3 G 4

Presenting complaints

Spotting for one day

History of presenting Illness

She presented with a history of spotting for one day. She had this kind of experience in the past which was followed by spontaneous abortion. She had done a pregnancy test one month earlier which was reported as positive

Past Gynecologic history

She had a history of three consecutive pregnancy losses at two months of pregnancy.
April 2004; Spontaneous abortion at 2 months
March 2005; Spontaneous abortion at 2 months
July 2005; Spontaneous abortion at 2 months

They all began with spotting which was later followed by abdominal cramps and vaginal bleeding. The first time no pregnancy test had been done and no evacuation was done. For the third and fourth pregnancy, a pregnancy test was done and found positive. MVA was done after both miscarriages.

Family and social history

She was married and worked as an accounts clerk. The husband was a businessman. None smoked or used alcohol. There was a family history of twinning. Her mother had a set of twins.

Her past medical and surgical history was unremarkable.

Physical examination

She was a young lady in good general condition. Her systemic examination was normal.

Investigations

1. Pelvic ultrasound: A single live intrauterine pregnancy at 8 weeks and 2 days. Signs of sub-chorial hemorrhage were noted.
2. HIV : Negative
3. VDRL: Negative
4. Brucella test: Negative
5. Random blood sugar : 4.2mmol/ L
6. Blood group: AB positive

A diagnosis of threatened abortion in a patient with recurrent first trimester pregnancy loss, with possible luteal phase defect was made.

Management

She was started on Dydrogesterone (Duphaston) 40mg stat, then 10mg twice daily until 16 weeks of gestation.

She was put on bed rest for two weeks. She was reviewed in the clinic one month later. Bleeding had stopped. The uterus was now palpable at about 12 weeks.

Another pelvic ultrasound was repeated at 18 weeks which showed a live fetus at 18 weeks. The placenta was fundo-posterior and not low-lying. Fetal morphology was normal. Duphaston was stopped and she was reviewed at 28 and 36 weeks and there was no problem detected. The fundal height was corresponding to dates. She was rescheduled for another follow up at 38 weeks. Danger signs were explained to her and advised to come to hospital in case of noticing or experiencing any such signs or if she developed labor pains.

DISCUSSION

Spontaneous abortion is the commonest complication of pregnancy.(1). It implies the delivery of any part or all of the products of conception before the 20th completed week of pregnancy (2). Recurrent pregnancy loss defined historically as three or more spontaneous abortions is being modified to mean two consecutive spontaneous abortions as the recurrence risks and subsequent outcomes is similar for two or three prior losses.(3).

Data derived from epidemiologic studies indicate that the risks of subsequent pregnancy loss is approximately 24% after two clinical pregnancy losses, 30% after three and 40% after four spontaneous abortions.(4,5,6).

The risks are higher if the embryo or fetus has normal karyotype suggesting that maternal factors are responsible for the higher recurrence risk. (1).

Chromosomal abnormalities and uterine anomalies have been shown to play a role in repetitive miscarriages. Other causes, including hormonal disturbances, infection, systemic disease, environmental agents and immunologic factors may also play a role.

Chromosomal aneuploidy has been reported in 60% of first trimester abortions. (4). Trilogies are the commonest chromosomal abnormalities. The precise mechanism by which chromosomal abnormalities give rise to embryo loss are not known, but the disordered timing of developmental gene regulation and hormaomal regulation are postulated.(5).

Inborn chromosomal aberrations may be inherited or may arise *de novo* by spontaneous mutations during embryo development. Chromosomal abnormalities occur in 3 -6% of couples experiencing recurrent pregnancy loss. Anatomic distortions of the intrauterine cavity occurs in 10-50% of women experiencing recurrent pregnancy losses.(6). The wide range in prevalence is most likely due to selection bias and diagnostic criteria. First trimester loss due to uterine anomalies may result from result from poor vascularization contributing to poor placental growth.(7). In second trimester, space limitation becomes a factor. Leiyomyomata, uterine adhesions and adenomyosis are other possible causes.(8).

Bacterial, viral, fungal, parasitic and zoonotic (esp TORCHES) have been implicated in recurrent pregnancy losses.(9). Recently HIV has been added to the list. The presence of lupus anticoagulant activity, as well as elevated levels of anti-cardiolipin antibodies have been associated an increased rate of spontaneous abortion and intrauterine fetal death. (10, 12). The incidence of anticardiolipin antibodies in women experiencing recurrent pregnancy loss is conservatively 5%.(4,13). He mechanism by which this causes pregnancy loss appears to involve increased platelet aggregation, decreased endogenous anticoagulant activity, increased thrombosis, and decreased fibrinolysis culminating in utero-placental thrombosis. (14)

The prevalence of an endocrine problem contributing to recurrent abortion has varied from 15 to 60% depending on the series.(15). Women with poorly controlled diabetes as evidenced by plasma glycosylated hemoglobin levels have

an increased incidence of fetal loss.(2). Abnormal maternal thyroid function has also been implicated.(16).

Virtually every aspect of the topic 'Luteal Phase Defect' remains controversial. The definition, incidence, pathophysiology, effects, methods of diagnosis, and modes of therapy; all have to be clarified completely. A luteal phase defect is defined as abnormal corpus luteum function associated with insufficient progesterone production. The defect may be in the duration of production or I the amount produced. This defect has been reported in women with infertility and those with recurrent abortion.

The diagnosis depends on a properly timed endometrial biopsy and serum progesterone measurements. An out of phase endometrium of 2 days on at least two cycles is required for diagnosis. An out of phase endometrium has been reported in 20% of women, but when two cycles are examined, the rate falls to 2 %(2). The endometrial biopsy is best obtained 12 days after the estimated day of ovulation. Which is day 26, in an idealized 28-day cycle? At this time the endometrium reflects most of the steroid production of that cycle (17).

The best test for production of low progesterone is single progesterone level from the mid luteal phase less than 10ng/ml (3.8mmol/l) or a sum of three random progesterone measurements less than 30ng/ml(95.4), obtained during the luteal phase.(2,17). The differential diagnosis is polycystic ovarian syndrome (PCOS)., especially if there is a history of oligomenorrhea.

Couples with recurrent pregnancy losses require careful, sympathetic management by the practitioner, because an abortion is an emotionally traumatic experience that can result in as much grief as an intrauterine fetal demise in late pregnancy or early neonatal death. With recurrent loss, this trauma is magnified.(2) .

The investigations performed should have predictive value for a potential etiology, the knowledge of which would affect clinical management. Tests should focus on identifying potential infections, genetic, anatomic, endocrinologic and immunologic abnormalities.

Where Luteal Phase defect is suspected as in the case presented, the following modalities for therapy are recommended:

- Progesterone supplementation
- HCG (human chorionic gonadotrpin)

- Clomephene Citrate
- hMG (human menopausal gonadotropin)
- Bromocrptine.

The patient presented received progesterone supplementation and it may be the reason the pregnancy was sustained beyond 8 weeks, the time of previous pregnancy losses. After 10 weeks, the placental should be able to produce all the progesterone required to maintain pregnancy. But it is always better to err in over treating that undertreatment.

Progesterone therapy may be started with 35 mg vaginal pessary twice a day beginning on the day of basal body temperature rise (BBT) and continuing until menses begin. If pregnancy occurs, therapy is continued until the 10th week of gestation.

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LONG COMMENTARY IN GYNAECOLOGY

TITLE

REPRODUCTIVE CHOICES OF WOMEN LIVING WITH HIV/AIDS

ABSTRACT

Background: Reproductive decision-making is a challenging issue. One has to balance between the desire for motherhood, an incurable illness, and uncertainties about interaction of the illness and pregnancy as well as the risk of mother-to-child transmission of the disease. The success of Anti-retroviral treatment and prevention of mother to child transmission is adding a new dimension to this scenario.

Objectives: To Explore the Reproductive choices of Women Living with HIV/AIDS regarding contraception and desire for fertility

Design: A descriptive cross - sectional survey

Setting: The Comprehensive Care Clinic (CCC), Tenwek Mission Hospital

Main measure of outcome: Level of awareness and utilization of modern methods of family planning, proportion desiring children and reasons, given their HIV status

Subjects: HIV positive women of reproductive age (15 to 49).

Results: Almost all (98.8%) respondents were aware of modern family planning methods. There was a great disparity between knowledge and utilization of contraception. Whereas the level of awareness was almost universal (98.8%), only 19(20%) were using a reliable method of contraception currently. Those who were married and living with spouse were six times more likely to be using family planning currently. *{OR 6.0 (2.0, 20.3)(95% CI) 11.0(1) p value 0.001}.* Those who had secondary school and higher level of education were seven times more likely to have been using contraception currently compared to those who had primary school level and below. *OR (95% CI) 0.3 (0.08, 0.73) 6.9(1) p value 0.009*

Twenty three percent (20) were planning to have a child in future. The number of children a woman had was the most important determinant of desire for future fertility *{X2 (df) 22.1(1) p <0.001}*

Conclusion:. There was a great disparity between knowledge and use of family planning methods. Women living with HIV/ AIDS who either had no children or had not achieved their desired family size were more likely to desire another pregnancy.

Recommendations:

1. The low level of utilization of reliable methods of contraception calls for concerted efforts to address it. Cotraception needs to be emphasized as part of the comprehensive care for persons living with HIV/ AIDS.
2. Women living with HIV who have no children or fewer than the desired family size may want to have children. Measures are needed to assist them assist deliver HIV uninfected infants.

Key words: Women living with HIV/AIDS, Contraception, Desire for Fertility.

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS Acquired Immune Deficiency Syndrome

ART Anti-Retroviral Therapy

ARV Anti-Retrovirals

BTL Bilateral Tubal Ligation

CCC Comprehensive Care Clinic

DCT Diagnostic Counsellind and Testing

FP Family Planning

HAART Highly Active Anti-Retroviral Therapy

HIV Human Immune-deficiency Virus

IUCD Intra-Uterine Contraceptive Device

MCH Maternal and Child Health

KDHS Kenya Demographic Health Survey

PMTCT Prevention of Mother-to-Child Transmission

UN United Nations

UNAIDS United Nations Programme on AIDS

VCT Voluntary Counseling and Testing

WHA Women Living With HIV/AIDS

WHO World Health Organization

INTRODUCTION

The advent of HIV/Aids pandemic has had profound implications in the practice of medicine. The greatest impact is, no doubt, being experienced in the field of reproductive health. UNAIDS estimates that, of the 200 million women who become pregnant each year, 2.5 million are HIV-positive.[1] In 2005, just over 14% of all new HIV infections occurred in children aged under 15 years, the vast majority through mother to child transmission.[2] Of the 14,000 new daily HIV infections globally, more than 1600 occur among children during pregnancy, childbirth and the postnatal period [3]

In Africa 4.2 million and in Asia 10.5 million unsafe abortions occur annually. The consequences of incomplete and unsafe abortions may adversely affect the health of women living with HIV/AIDS (WHA) even more than that of HIV-negative women. Given the high and still increasing rates of HIV prevalence among women of reproductive age in these regions, it may be assumed that WHA are among the women affected and the health consequences may be even more serious for them than for other women [4].

The World Health Organization and many UN agencies are now promoting a three-pronged strategy to address the intersection between HIV/AIDS and pregnancy:

1) Prevention of HIV infection in young people and women of childbearing age,

2) Prevention of unwanted pregnancy among women with HIV infection and,

3) Prevention of transmission of HIV from an infected mother to her infant [2].

Although contraceptive services for HIV-positive women are one of the four cornerstones for a comprehensive program for Prevention of Mother to Child Transmission of HIV (PMTCT), the implementation has not prioritized family planning. [3]

Data from the Kenya Demographic Health Survey (KDHS 2003) provide a cautionary tale of the unintended outcomes associated with the shift in attention of programs and resources from family planning to HIV/AIDS [4]. From a steady rise in contraceptive prevalence from 27% in 1989 to 39% in 1998, contraceptive prevalence stalled and remained 39% in 2003. Yet, the survey has consistently shown that many women report wanting to delay or limit future births but do not use any contraception. Unintended pregnancies often result from an unmet need for contraception.

In sub-Saharan Africa, where HIV prevalence is high, the unmet need for contraception ranges from 18% in Niger to 42% in Togo, with a regional average of 19.4%. [7, 8, 9] In Kenya, the average unmet need for family planning is 24%; being higher in the rural areas than in urban areas (KDHS 2003). Such unmet need and potential for unintended pregnancies are of particular concern given the high prevalence of HIV, since about one third of the babies born to HIV-infected mothers not given ARV prophylaxis are infected [10].

Compelling evidence was presented at The Glion Call Consultation, from both epidemiological modeling and country program experiences, which served to

illustrate the powerful role family planning, can play in preventing HIV in infants.[11] By preventing unwanted pregnancy its enormous potential to reduce mother to child transmission of HIV is beginning to be realized.

Reducing the number of unwanted pregnancies in HIV- infected women would also reduce the number of children potentially orphaned when parents die of HIV- related illnesses. It also reduces the HIV- positive women's vulnerability to morbidity and mortality related to pregnancy and lactation [12]

The most effective way to reduce the proportion of infants infected with HIV is by preventing primary infection in women, and by preventing unintended pregnancy among women infected with the Virus. These two measures have intrinsic benefits to women and can decrease the proportion of infants infected by HIV by 35% to 45% in some countries with a significant contribution coming from the provision of family planning information, services and counseling. [13, 14]

Several factors have been thought to influence contraceptive use by women. These include: comprehensive information on the contraceptive options, efficacy safety, acceptability and accessibility. Others include the attitudes of male partners and gender based biases that limit a woman's ability to decide and consistently use reliable contraceptive methods. For those infected with the HIV virus additional information on whether the disease affects safety and efficacy of the method and whether the method has effect in the progression of the disease is needed. Knowledge on how contraceptives may interact with Anti-retroviral drugs is also crucial.

The ability of a contraceptive method to provide some protection against sexually transmitted infections, have assumed even greater importance in the era of HIV/ AIDS. [1] The male and female condoms are currently known to be the only form of contraception that has this dual effect. Since no single method is 100% effective, utilization of more than one agent is prudent in order to reap their synergistic benefits. In fact, the World Health Organization, strongly recommends dual protection to persons at significant risk of HIV infection, either through simultaneous use of condoms with other methods, or through the consistent, correct use of condoms alone [16]. However, evidence suggests that that utilization of dual protection in the general population is very low.[17] Apart from preventing pregnancy and STIs / HIV, the use of the male condom can promote male involvement in family planning.

By and large, the benefits of the male condom equally apply to the female condom {Polyurethane (FC1)}. Use of the female condom either as a primary contraceptive method or as a substitute if a partner refuses to use the male condom would significantly enhance women's power to protect themselves from unwanted pregnancy and sexually transmitted infections, including HIV [18]. To this end the condom is emerging as the double-edged sword in the war against HIV/AIDS.

The diagnosis of HIV was associated with a desire not to continue child bearing. For example, before the onset of ART, a survey of 400 women attending a high-risk antenatal clinic at Kenyatta National Hospital in Nairobi, Kenya, revealed

that 64% would terminate the pregnancy if they tested HIV-positive while pregnant, and all would want to avoid further pregnancy.[38]

Similarly a study in France about the same time found that the discovery of HIV infection led to a significant decrease in the proportion of women who were sexually active, a decrease in the incidence of pregnancy and live births, and an increase in the proportion of pregnancies voluntarily aborted.[27] But, a study of pregnancy outcomes after introduction of ART showed that abortion rates fell among HIV-infected women in the U.S.A. [20] This may be a reflection of the hope that has arisen as a result of the use of ART to manage HIV and prevent perinatal transmission.

Rationale and Justification of the Study

The availability of Anti–retroviral therapy is changing the way communities view HIV/AIDS. Fatalism, inevitability, and stigma are giving way to hope and greater openness. An increasing number of women of childbearing age are living longer and positively with the virus. This has significant implications on their reproductive choices and behavior.

HIV-infected women may be less interested in limiting childbearing in response to their HIV-infected status if ARV treatment promises better health, quality of life, and survival [19]. For example, abortion rates among HIV-infected women fell after ARV drug therapy was introduced in a study of pregnancy outcomes among HIV-infected women in the U.S.A. [20].

Kenya is fast realizing these benefits and it is important that we know its implications so that the health system can plan and respond effectively in meeting the needs of this rapdly increasing population of clients. It is equally

important to understand the context in which women living with HIV/AIDS, make such choices.

Four areas are of particular interest here: The relationship between HIV/AIDS and pregnancy outcomes, available means to prevent peri-natal transmission, contraceptive use by women living with the HIV virus, and stigma and discrimination affecting them. [21]. This study sought to find out the impact of the diagnosis of HIV in the reproductive behavior of those living with this condition. It also attempts to explore the context in which such a woman makes these choices.

Hypothesis

The diagnosis of HIV has profound influence on the reproductive choices and behavior of a woman.

Broad Objective

To explore the reproductive choices of women living with HIV/AIDS

Specific Objectives

1. To assess their knowledge and use of contraception
2. To identify factors associated with contraceptive use.
3. To assess the desires of HIV-infected women to have children in the future
4. To identify factors predicting desire for future fertility.

MATERIALS AND METHODS

Study area. The study was carried out at the Comprehensive Care Clinic (CCC) of Tenwek Mission Hospital. This is a 300-bed Hospital in Bomet District, Rift Valley Province. It is located about 250km west of Nairobi. It occupies a watershed between the green Tea lands of Kericho, Bureti and Nyamira Districts and the semi arid areas of Bomet, Narok and Trans-Mara districts for which it serves as a referral center.

The Comprehensive Care Clinic (CCC) is designed specifically to offer care for persons living with HIV/AIDS. The scope of services includes, HAART, prevention, detection and treatment of Opportunistic infections, Nutritional assessment and Counseling. Clients are referred to this clinic from the outpatient, inpatient, MCH and Maternity departments. Patients are also referred to this clinic from other facilities in the region. Services are offered free of charge and covers all HIV-related problems.

Study design: This was a descriptive cross sectional study

Sample Size justification

The sample size was calculated using the formula below;

$n = \{Z^2_{\alpha/2} \times P\ (1-P)\}/D^2$

where;

n = minimum required sample size

$Z^2_{\alpha/2}$ = table value corresponding to 95% area Confidence Interval (1.96)

D = required precision (fixed at 10%)

P = Expected prevalence of the characteristic of interest (19%){ Nduati and co-workers found a pregnancy rate of 19% at 2 years of

follow up of breast feeding HIV positive women who ad been counseled contraception}

Subustitinng the above values in the formu we get;

n = 59.12. A sample size of 60 was taken as the minimum.

Sampling procedure

During the period of study, 196 women below 50years had been registered in the clinic. The goal was to recruit as many of them that met the inclusion criteria as possible, hence simple random sampling technique was adopted to get the required minimum sample size.

Data collection

The study was done between 4th September and 25th October 2006. A total of 87 women were interviewed using a pre-tested interview schedule. The instrument sought out their socio-demographic information, duration since diagnosis of HIV, their partner characteristics, their reproductive history and future plans, their contraceptive experience and current use as well as their experience and attitudes regarding condoms.

Data Analysis

The completed questionnaires were entered in a data base designed in MS Access and later exported to a statistical package for analysis (SPSS). Data cleaning and validation was done before the actual data analysis was done. Distriptive analysis was run to obtain means, frequencies, mode, and standard. Both parametric and non-parametric test were used to establish significant relationships i.e. Chi Square was done to compare significant association between depend and independent variables. P-value of less 0.05 (5%) was

considered significant and Odds Raatio (OR) was used get the likelihood of exposure variable at 95% CI.

Inclusion criteria

HIV positive women, ages 17 to 49, attending The Comprehensive Care Clinic at Tenwek Hospital, willing and able to participate in the study

Exclusion criteria

1. Those who were very ill, those with altered mental status and those not consenting to participate in the study for whatever reason.
2. Those 16 years and below

Ethical considerations

1. The study was undertaken after approval by Kenyatta National Hospital Research and Ethical Committee and Tenwek Hospital Management
2. The clients were offered the options of accepting, differing or declining to participate after being assured that it would not affect the care they received or their relationship with the staff in the clinic.

RESULTS

Table I: Socio-Demographic Characteristics of the Study Participants. (n = 86)

Characteristic (n = 86)	*Frequency*	*Percentage*
Age		
20 – 24	7	8.1
25 – 29	21	24.4
30 – 34	22	25.6
35 – 39	19	22.1
≥ 40	17	19.8
Parity		
Zero	10	11.6
1 – 2	29	33.7
3 – 4	26	30.2
≥ 5	21	24.4
Duration since last Delivery (in Years, n = 76)		
≤ 2	19	25.0
3 – 5	19	25.0
≥ 6	39	50.0
No. of Living Children		
≤ 1	26	30.2
2 – 3	34	39.5
4 – 5	18	20.9
≥ 6	8	9.3
Level of Education		
None	20	23.3
Primary	36	41.9
Secondary	21	24.4
College	9	10.5
Marital Status		
Single	18	20.9
Married	31	36.0
Widowed	27	31.4
Separated/devorced	10	11.6

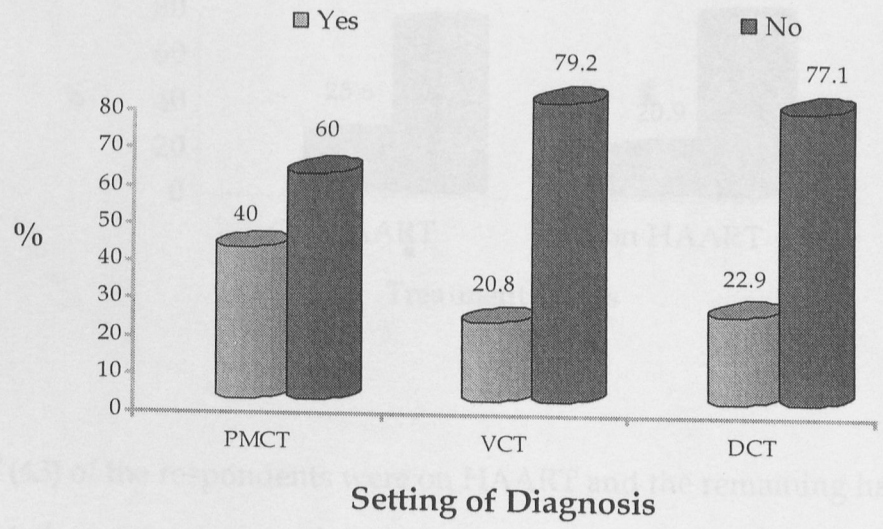
Fifty (58%) were between the age of 20 and 34 years. None was younger than 20 years and 19% were 40 years and above. The majority (65.2%) had only primary school education with 20 % having not gone beyond class 3. Twenty one (24%) had secondary school education while 10.5% had college education.

Eighteen (20.9%) had never been married, thirty one (36%) were currently married, twenty seven (31.4%) were widowed and 11.6% were separated.

Twelve (13.9%) had no living children and. The majority 22 (83.3%) of those who had no living child were aged 30 years and below, ten (45.4%) of whom were nulliparous. Nineteen (25%) had had a delivery in the past 24 months. Another 25 % had had a delivery in the past 2 to 5 years and 50% had never had a delivery for more than 5 years.

THE CIRCUMSTANCES OF DIAGNOSIS

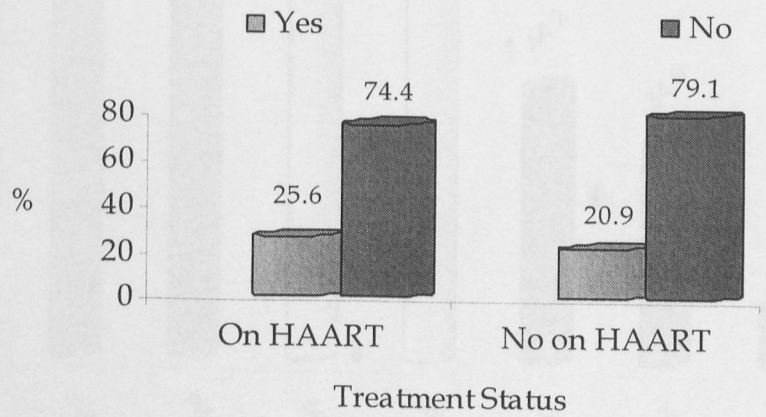
Figure I: Comparison between the Setting of Diagnosis and desire for child in future (n = 86).



Thirty five (40.7%) had learnt of their status for diagnostic purposes (DCT), twenty four (27.9%) through voluntary and counseling centers (VCT), ten (11.6%) had learnt during their antenatal clinic attendance (PMCT) and the remaining seventeen (19.8%) had learn through test required for other purposes: pre-marital, insurance or employment.

There was no relationship between the circumstances that lead to the diagnosis of HIV and desire for future fertility although those who were diagnosed at antenatal clinic were two times more likely to desire future fertility.

Figure II: Comparison between Treatment status and desire for children in future (n = 86)

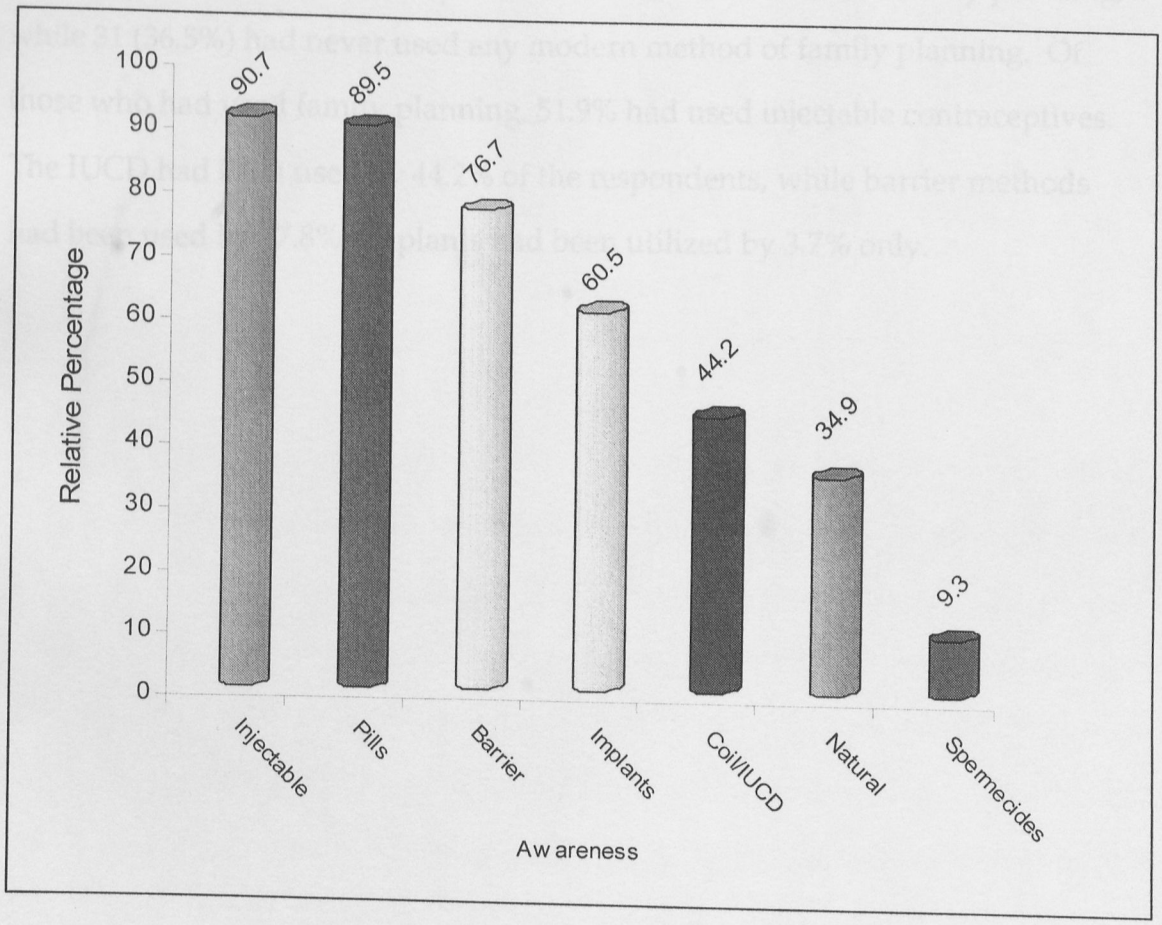


One half (43) of the respondents were on HAART and the remaining half had not been started on treatment, mainly because of their clinical stage of the disease. There was no difference in the desire for fertility between thos on highly active Anti-Retroviral therapy and those who were not.

PARTNER CHARACTERISTICS

Only 19 (22.1%) of the respondents had their partners tested for HIV. The majority (77.9%) were unknown or had not been tested. It is probable that the high number of untested partners is attributable to failure to disclose the results. Three (3.5%) were discordant (partners tested negative). Only five were aware that their partners were receiving Anti-Retroviral Therapy.

Figure III: Frequency of knowledge of Family Planning Methods (n = 86)



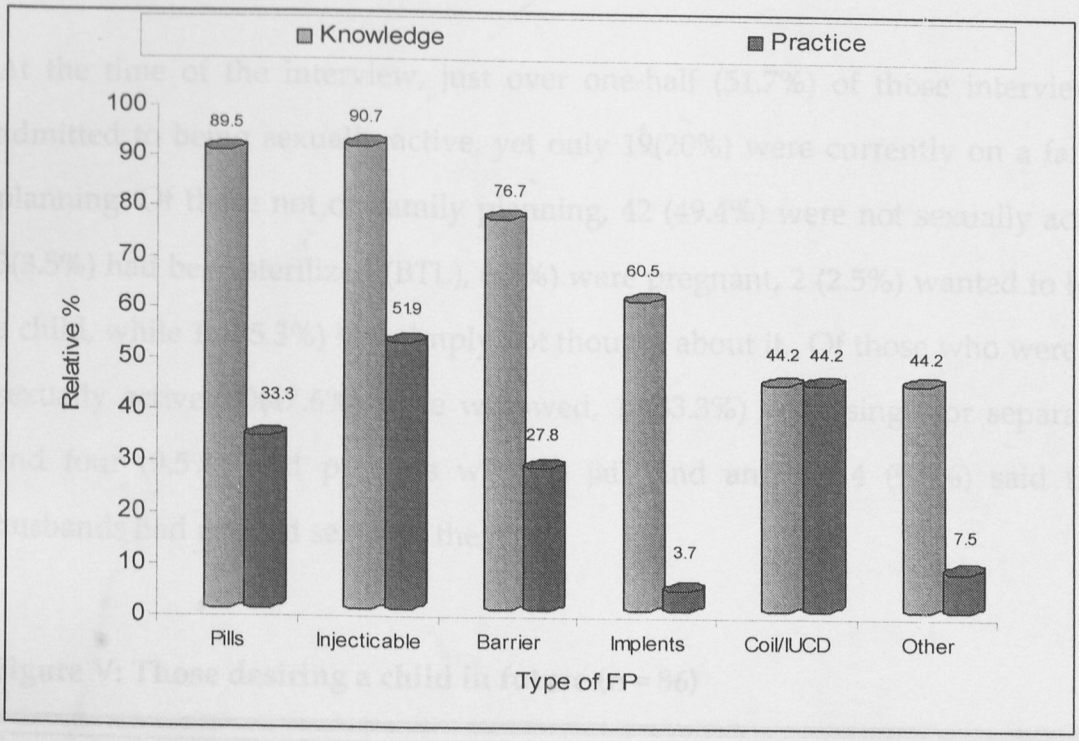
About 90% of the respondents were aware of injectable contraceptives and oral contraceptive pills as methods of family planning. 76.7%, mentioned barrier methods as family planning tools, while implants were mentioned by 60%.

The IUCD was mentioned by 44.2% of the respondents and Natural family planning was mentioned by 34.9%. Spermicides were mentioned by less than 10% of the respondents.

UTILIZATION OF MODERN FAMILY PLANNING METHODS

About two-thirds 54(63.5%) had ever used modern methods of family planning, while 31 (36.5%) had never used any modern method of family planning. Of those who had used family planning, 51.9% had used injectable contraceptives. The IUCD had been used by 44.2% of the respondents, while barrier methods had been used by 27.8%. Implants had been utilized by 3.7% only.

Figure IV: Comparison between Knowledge and the Utilization of Family Planning Methods (n = 86)



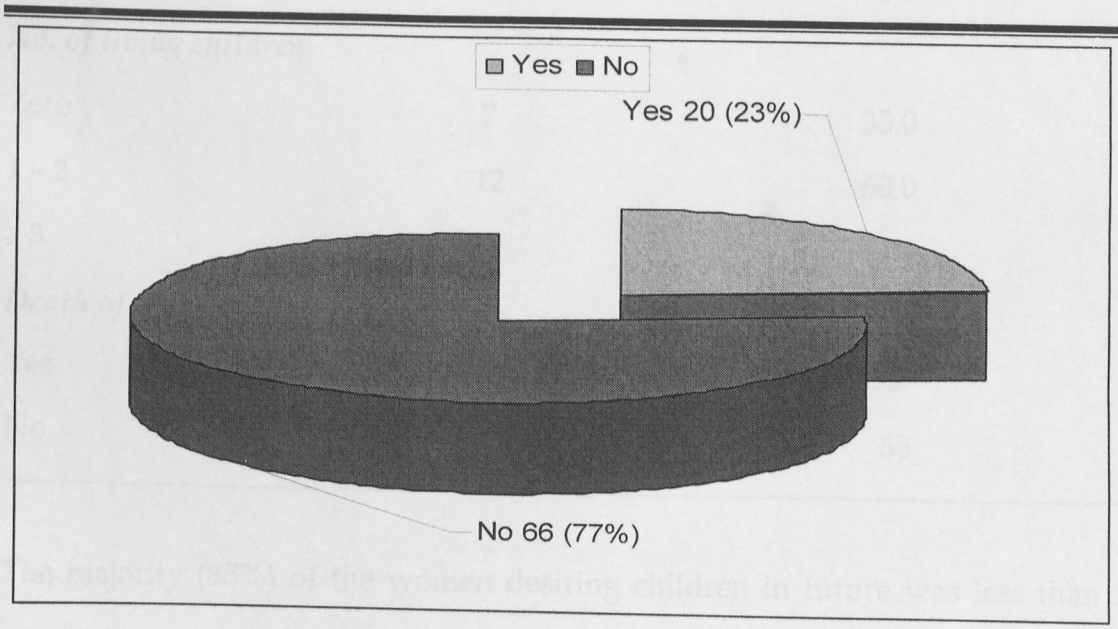
There was a great disparity between knowledge and utilization of family planning method among these clients. Although the level of awareness was 98.9%, about two-thirds 54(63.5%) of the respondents had ever used modern methods of family planning. More than ninety percent were aware of injectable contraceptives, but only 51.9% had ever used the method. About 90% were aware of oral contraceptive pills but only 33% had ever used them. Slightly over 60% knew of contraceptive implants but only 3.7% had ever used the method. There were an equal number of clients aware of the IUCD and those who had ever used the method.

NB. The apparent popularity of the IUCD in spite of low level of awareness may be explained by hospital policy. The IUCD is not offered in the hospital. The

clients who had used it must have received teaching and insertion in other health facilities. 'Other' methods of family planning were mainly condoms and Natural family planning.

At the time of the interview, just over one-half (51.7%) of those interviewed admitted to being sexually active, yet only 19(20%) were currently on a family planning. Of those not on family planning, 42 (49.4%) were not sexually active, 3(3.5%) had been sterilized (BTL), 6(7%) were pregnant, 2 (2.5%) wanted to have a child, while 13(15.3%) had simply not thought about it. Of those who were not sexually active, 20(47.6%) were widowed, 14(33.3%) were single or separated, and four (9.5%) said partners were in jail, and another 4 (9.5%) said their husbands had refused sex with them.

Figure V: Those desiring a child in future (n = 86)



Out of the 20 (23%) who desired to have children in future, 15 (75%) did not have the desired number of children. Five (25%) who wanted children did not state the reasons for wanting a child in future. Women who did not wish to have child in future had the following reasons:-

- Twenty (30.3%) had the desired number of children,
- 16 (24.2%) felt becoming pregnant was not good for their health,
- Ten (15.2%) did not what to deliver an infected child and the only 2 (3.0%) said they were too ill.

Table II: Characteristics of those desiring children (n = 20)

Characteristic	*Frequency*	*percentage*
Age distribution		
< 35	17	85.0
≥ 35	3	15.0
No. of living children		
Zero	7	35.0
1 – 2	12	60.0
≥ 3	1	5.0
Death of a child		
Yes	7	35
No	13	65

The majority (85%) of the women desiring children in future was less than 35 years of age and had just one or two children.

Thirty five percent of them reported at least one perinatal or infant death. Three – quarters of them had lost one child each and one woman had lost four infants.

Table III. Association between number of Living children and desire for future fertility

	Desire to have children in Future		*Statistical Calculations*
Characteristic	*Yes, n (%)*	*No, n (%))*	*P*
No. of Living Children			
0 – 3	20 (33)	40 (67%)	***<0.001***
> 3	0	26 (100)	

Having three or fewer number of children was significantly associated with desire for future fertility.

Table IV: Association between Socio- demographic characteristics and FP use

	Current FP use		*Statistical calculations*		
Characteristic	*Yes, n (%)*	*No, n (%)*	*OR (95% CI)*	*X2(df)*	*P*
Marital Status					
Married	12 (38.7)	19 (61.3)	6.0 (2.0, 20.3)	11.0(1)	0.001
Unmarried	5 (5.9)	50 (94.1)			
Level of Education					
Primary & below	7 (12.5)	49 (87.5)	0.3 (0.08, 0.73)	6.9(1)	0.009
Secondary & above	11 (36.7)	19 (63.3)			
	Past FP Use				
Marital Status					
Married	10 (32.3)	21 (67.7)	2.8 (0.98, 8.1)	3.8(1)	0.053
Unmarried	8 (14.5)	47 (85.5)			
Level of Education					
Primary & below	33 (58.9)	23 (41.1)	0.3 (0.08, 0.73)	6.9(1)	0.009
Secondary & above	21 (70.0)	9 (30.0)			

Age, Parity, Marital status, and level of education were not significantly associated with preferential use of any particular method of family planning.

Being married was significantly associated with current use of a family planning method {OR 6.0 (2.0, 20.3) 95% CI 11.0(1) p value 0.001}

Having secondary level of education and higher was significantly associated with past use of a family planning. {OR 0.3 (0.08, 0.73) 95% CI 6.9(1) p Value 0.009}

DISCUSSION

The results of this study show that there exist very few differences in reproductive behaviors of women living with HIV and those not infected. Studies in other parts of Africa and Asia show similar trends.[23, 24, 25, 26]

Knowledge of family planning was almost universal (98.8%). This is similar to the 96% found in the Kenya Demographic Health Survey of 2003. There was a great disparity between knowledge and utilization of family planning. Whereas the level of awareness was almost universal (98.8%), only 19(20%) were using a reliable method of contraception currently. Being married and a higher level of education were significantly associated with current use of a family planning method. Those who were married and living with spouse were six times more likely to be using family planning currently. {OR 6.0)(95% CI) (2.0, 20.3) 11.0(1) p value 0.001}. Those who had secondary school and higher level of education were seven times more likely to have been using contraception currently compared to those who had primary school level and below.

{OR (95% CI) 0.3 (0.08, 0.73) 6.9(1) p value 0.009}.

About two-thirds (64.3%) had ever used a modern family planning method and only More than half (51.7%) were sexually active. This low level of utilization of family planning is not different from that seen among non-infected population. In Kenya only 39% of married women are known to be on a modern method of family planning.[46]_At two sites (Homa Bay, Kenya, and Lusaka, Zambia), two thirds of HIV-infected and more than one third of HIV-uninfected women

reported that they had a regular sexual partner but were not using any family planning method.[27]

One reason that might explain the low use of contraception may be the fear of the potential adverse effects contraceptives may have on their health. In Rwanda, researchers found that HIV-infected women in particular were reluctant to use anything that might endanger their health.[29] In this study 24.2% of those wished to have children in future would not do so for fear of potential adverse effects on their health. Good counseling has been shown to result in high levels of utilization of contraceptives as was shown in a study by Mbori-Ngacha and co–workers who found the rate of utilization of reliable contraception by HIV positive women who were followed up postpartum was 86% at 2 years of follow up.[44]

Even when contraceptive information and methods are available, WHA are affected by gender biases and social norms that restrict their ability to avoid unplanned and unwanted pregnancies. For example, in many communities, women are supposed to use contraceptives only with their partners' permission and some partners may prevent them from using contraceptives at all.[32] Five percent of women interviewed in this study said they were not on any contraception because their husbands had refused.

Majority 67(77.9%) of the participants had not disclosed their HIV status to their partners. Only 19 (22.1%) had done so. This alone can explain the great disparity between knowledge, intentended behavior and actual practice. Non-disclosure

puts serious obstacles in the way of any effort to prevent re-infection, unwanted pregnancy, safe sexual practices and effective management of HIV in terms of drug adherence as well as infant feeding.

One other reason that some women did not use any form of contraception was a desire to have a child. Twent three percent (20) of the participants wanted to have a child in future and some of them were not using family planning in order to achieve a pregnancy in the immediate future. The major determinants for starting or continuing child-bearing were, being younger than 30 years, and having fewer than two children. The loss of a child was also a factor in whether one wished to have another child or not. Other studies have found the same factors to be responsible for continuing childbearing in spite of HIV infection.[37,44] In Yaoundé, Cameroon, a third of 40 HIV-infected men and women responding to a questionnaire said that they had unprotected sex primarily because they wished to have a child.[39,40]

About one-third (30.3%) of those who did not wish to have a child had had the desired number number of children. About 25% were concerned bout the effects of pregnancy on their health, 15.2% did not want to deliver a child who would die of HIV and only 3% felt they were too ill to consider a pregnancy.

Studies seem to suggest that WHA who choose to continue – but especially begin – childbearing seem to focus most on positive factors during their decision-making process; the relative influence of HIV infection is thereby diminished. These often younger women appear to be most motivated by a desire for

motherhood and the idea that having a child will give them more hope. Other factors that emerged from the literature as having a bearing on decisions to continue pregnancies were the pressure of gender-based norms regarding desired family size and the unacceptability of childlessness, seeing childbearing as a means of obtaining or ensuring economic support from partners.[32,37]

On the contrary, it appears that negative considerations seem to predominate in the decision-making of WHA who choose not to become pregnant or to terminate pregnancies; HIV infection then appears to play a greater role in that process. Such women may tend to be older, already have children, have lived for a longer period of time with the disease and have more advanced infection. They may also be experiencing difficulties of widowhood and spending considerable resources on themselves and the children. In this study only 3% did not wish to have more children due state of illness and another 15.2% would not have a child for fear of them suffering when they die. These are the kind of clients who may change their minds concerning continuing childbearing on the basis of the success of Anti-retroviral Therapy and PMTCT services.

Two other findings of this study are worth discussing. These are the place of long-term contraceptive methods and the positive role that religious bodies are now playing in the war against HIV.

The majority of women who were on contraception at the time of the interview were on IUCD. The discovery of HIV infection did not require any further decision on contraception. Such clients were protected from pregnancy much by

default and this must have contributed significantly to prevention of unintended pregnancy among women ling with HIV. No increases in infection complications have been noted for IUCD use by asymptomatic WHA. [43]

Almost 20% of the clients interviewed came to learn of their HIV status through premarital counseling and testing. More than 80% belonged to some religious organization and the majority indicated that they received support to live positively. This is an indication of the contribution religious organizations are making in the war against HIV/AIDS.

CONCLUSIONS

1. There was a high (98.8%) level of awaerenes of contraceptive methods but the level of utilization (23%) was very low.
2. The number of children a woman had was significantly associated with desire for fertility in future. Those who had no child or had three or less were six times more likely to want a child in future.
3. There was a high rate of non-disclosure of the HIV status to partners.This is very significant since it may have a bearing on the disparity between the level of knowledge and actual practice.

RECOMMENDATIONS

1. The low level of utilization of reliable methods of contraception calls for concerted efforts to address it. Cotraception needs to be emphasized as part of the comprehensive care for persons living with HIV/ AIDS.
2. Women living with HIV who have no children, or who have a smaller number of children may want children in future. Measures need to be put

in place so as to respond appropriately to the needs of this group of women.

3. To improve the rate of disclosure, couple counseling should be encouraged.

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APPENDIX

APPENDIX A: OBSTETRICS INFORMED CONSENT FORM

Study number_____

Purpose of the study

The purpose of the study is to assess the quality of care given to patients undergoing caesarean section in this hospital and to find out ways of improving on it.

Benefits of the study

This will help us improve the quality of service to these clients on a continuous basis.

Voluntary participation

I understand that I enter the study voluntarily. I also understand that if I decline to participate this will not affect the way I am treated by the staff or my relationship with my care givers.

Anticipated risks

I understand that by participating in the study I will not be required to undergo additional tests, examinations or procedures arising from the study.

I also understand that I will not incur any additional costs arising from this study.

Confidentiality

I have been promised that the information will be kept in strict confidence and only used for the declared purpose.

I, the undersigned having fully understood about this research and all that it entails, do, on my own volition, consent to participate in the study.

Signature/thumb print of client_____
Date_____

Signature of Witness _____ Date_____

APPENDIX B: OBSTETRIC QUESTIONNAIRE

I.P #_____Family #_____ Date of surgery_____

Surgeon code_____

1. Age____ Parity._____ Gestation_____ Marital status M [] S [] SP [ ]
2. Previous scar? Yes [ ] No [ ]
3. Antenatal profile a)(i)Hb.____ Weight (kgs) _____

   b)HIV. i) –ve [ ] ii)+ve [ ] iii) not done [ ]
4. ART. i) yes [ ] ii) No [ ] iii)PMCT only [ ]
5. Concurrent medical condition _____
6. Level of Education. None [ ] primary [ ] secondary [ ] College [ ]
7. Referring facility. i) Antenatal ward[ ] ii) home[ ]

   iii)dispensary/ h/ c[ ] iv)private clinic[ ] v) TBA [ ] vi) hospital [ ]
8. Pelvic exam prior to Admission? Yes [ ] No [ ]
9. State of membranes. Intact[] Ruptured []
10. Times since rupture. _____(hrs.)
11. Type of procedure. Elective [ ] Emergency [ ]
12. Indication for Emergency Surgery

    i) protraction/arrest disorders [ ]

    ii) Fetal distress (from causes other than above) [] _____

    iii) Others. (Eclampsia, APH etc) specify _____
13. Preoperative measures.

    i) bath [] ii) shaving []iii) prophylactic antibiotics[]

14. Significant intraoperative findings/events.

a)Time started_____time ended_____ b)

Incision. Pfannenstiel[ ] SUMI [ ] SUMI extended[ ]

c) Condition of liquor. Clear [] meconium [ ] foul smell[ ]

d) 5th. Minute APGAR_____ Blood loss _____ccs.

e) Problem with hemostasis? Yes[ ] No[ ]

15. Prophylactic antibiotics given.

I)Amp. [ ] Dose_____ ii)Gentamycin[ ] dose_____.

iii)Flagyl []dose_____ iv) Others(specify)_____dose_____

16. Timing of first dose. Pre-op[ ] intra-op [ ] post-op [ ]

17. Total number of doses given. I)Amp_____ ii)Gent._____

iii)Flagyl._____ iv)other_____

18. a)Date of diagnosis of wound infection _____

b)Duration since surgery_____ (days)

19. Findings. Temperature

a))< 38^0C ii) > 38^0 C .

b))Wound discharge. i) none [ ] ii) serous [ ] iii) purulent [ ]

c) Lochia i) normal [ ] foul smell [ ] purulent [ ]

d)Fascia. I) intact [ ] dehisced [ ] d) pus in pelvis /abdomen i) yes [ ]

No [ ]

e)Culture results

i)wound._____ii)Lochia._____

20. Management. In-patient [ ] Outpatient [ ] DOA._____DOD._____

APPENDIX C: GYNAECOLOGY INFORMED CONSENT FORM

APPENDIX D: GYNAECOLOGY QUESTIONNAIRE

I am Dr. Caleb Maina. a Doctor working in this Hospital, but currently undertaking further studies at Nairobi University. This is a questionnaire for a research I am undertaking and would greatly appreciate your voluntary participation in it. Before you accept the interview, please read and understand the consent form, or ask sister to explain to you. If you understand and agree, give your consent by signing the form given.

Thank you.

Section I. Biodemographic information

1. Age_____parity_____Last.delivery_____No. of living children_____
2. Marital status
3. Education._____

Single [ ] Married [ ] widowed [ ] separated [ ]

4. Date of diagnosis_____
5. Setting of diagnosis

PMTCT [ ] ii) VCT [ ] iii) DIAGNOSTIC [ ] iv) OTHER (Marriage, insurance, employment) [ ]

6. On ART. I) Yes [ ] ii) No [ ]
7. Partner

tested	**status**	**health**	ART
yes	+ve	good	yes
no	-ve	sick	No

Section II. Knowledge

8. Have you heard of family planning? yes [] no [] which ones do you know?

a) Pills (i) yes [ ] ii) No [ ]
b) Coils (I UCD) (i) yes [ ] (ii)No [ ]
c) Injections (i) yes [ ] (ii) No [ ]
Spermicides (i) yes [ ] (ii) No [ ]
e) implants (Norplant) (i) yes [ ] (ii) No [ ]
f) barrier (Condoms)(i) yes [ ] (ii) No [ ]
g) Natural family planning.(i) yes [ ] (ii) No [ ]

9. Have you used any family planning methods in the past?. (i) Yes [ ] (ii) No [ ]

Which one(s)?

a). Pills [ ]
b). Injections [ ]
d).Implants (Norplant) [ ]
e). IUCD [ ]

c). Barrier (condoms) [ ] f).Other. _____ [ ]

10. Did you use any method the last time you had sex? Yes [ ] No, [ ]

11. If yes, which one?

i). Pills [ ] iv). Implants (Norplant) [ ]

ii). Injections [ ] v). IUCD [ ]

iii). Barrier (condoms) [ ] vi). Other. _____ [ ]

12. a) Are you using any method currently.(I)Yes [ ] (ii) No [ ]

b). which one(s)? _____

c) If no, why?

i) Not sexually active [ ] iii) Not thought about it [ ]

ii) Want to have a baby [ ] iv) Other (e.g.BTL) _____ [ ]

13.a) Do you know that an infected mother can pass the HIV virus to her baby? Yes [ ] No [ ]

b) In what ways?

(i) Blood while in womb. Yes [ ] No [ ] (iii) breast milk. Yes [ ] No [ ]

(ii) Blood during delivery. Yes [ ] No [ ]

14. . a) Do you know any way by which a mother can minimize the risk passing the virus to her baby? Yes [ ] No [ ]

b) Which one(s)

(i) Taking Medicine. Yes [ ] No [ ] (iii) Not breastfeeding. Yes [ ] No [ ]

(ii) C/Section before labour. Yes [ ] No.[ ](iv) Other _____ [ ]

Attitude and desire for future fertility

15. a) Do you intend to have children in future? Yes [ ]No. [ ]

b) If yes,

why?_____

___

c) If no,

why?_____

___

16. a) How soon would you like to have another child?

_____

b) Why?

_____

17. How would you describe your feeling about family planning before and after you learnt about your status?

(a) It has not changed [ ] (ii). It has changed [ ]

(b). If it has changed, in what way? (i) I think it is more important [ ] (ii) I think it is less important. [ ]

18. What method would you recommend to someone who has HIV infection?

(i) None [ ] (ii) Condoms alone [ ] (iii) Condoms plus another method [ ].

Section III. Barriers and attitudes to condom use

19. When both partners are HIV positive do you thing there is need for use of protection (condoms)?Yes [ ] No [ ]

20. Do you discuss use of condoms with your partner? Yes [ ] No [ ].

21. How would you describe his response?

_____

22. How effective are condoms in protecting against HIV and other STDs?

100% effective [ ]

Not 100 % but highly effective when used correctly [ ]

Not effective [ ]

23. Have you heard of or seen a female condom? Only heard [ ] Seen [ ] Not aware []

24. Ever used the male condom? Yes [ ] No [ ]

25. Ever used the female condom? Yes [ ] No [ ]

26. Have you ever bought condoms? Yes [ ] No [ ]

27. Have you collected them from Family planning or other clinic? Yes [ ] No [ ]

28. Have you ever collected Condoms from a public condom dispenser? Yes [ ] No [ ]

29. Who should be obtaining condoms?

a) Wife/ female partner [ ] c) Both the male and female partners [ ]

b) Husband/male partner [ ]

30. How would you feel carrying sanitary pads in your hand bag?

a) Embarrassed [ ] c) other_____ [ ]

b) I feel ok and secure [ ]

31. How would you feel carrying condoms in your hand bag?

a) Embarrassed [ ] c) Other _____ [ ]

b) I feel ok and secure [ ]

32. What method of contraception would you recommend to a woman who has HIV?

(i) None. [ ] (ii) Condoms alone [ ] (iii). Condoms plus another method [ ] (iv) Other (specify) _____

APPROVAL ETHIC LETTERS

KENYATTA NATIONAL HOSPITAL
Hospital Rd. along, Ngong Rd.
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Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP", Nairobi.
Email: KNHplan@Ken.Healthnet.org

Ref: KNH-ERC/ 01/ 3729

Date: 31st August 2006

Dr. Caleb Maina
Dept. of Obs/Gynae
Faculty of Medicine
University of Nairobi

Dear Dr. Maina

RESEARCH PROPOSAL: 'SURGICAL WOUND INFECTIONS FOLLOWNG CAESAREAN SECTION IN A MISSION HOSPITAL IN RURAL KENYA" (P75/4/2006)

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** revised version of your above cited research proposal for the period 31st August 2006 – 30th August 2007.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

PROF A N GUANTAI
SECRETARY, KNH-ERC

c.c. Prof. K.M.Bhatt, Chairperson, KNH-ERC
The Deputy Director CS, KNH
The Dean, Faculty of Medicine, UON
The Chairman, Dept. of Obs/Gynae, UON
The Head, Medical Records, KNH
Supervisors: Dr. Wasike C.S.G, Dr. Kiragu J.M, Obs/Gynae, UON
Assisting Supervisor: Dr. J. Mbogo, Tenwek M.Hospital

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APPROVAL ETHIC LETTERS

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A ministry of Africa Gospel Church

Postal Address:
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Tenwek@tenwek.com

28 February 2007

To Whom It May Concern:

Re: Research for Dr. Caleb Maina

I am writing this letter to state that Dr. Caleb Maina had approval from the Tenwek Hospital Institutional Research Board to conduct research at Tenwek hospital.

Sincerely,

Mark R. Freije
Medical Superintendent

MEDICAL SUPERINTENDENT
TENWEK HOSPITAL
P. O. Box 39
BOMET - 20400

CONSENT FORM FOR WOUND INFECTION FOLLOWING CAESAREAN SECTION

Study number_____

Purpose of the study

The purpose of the study is to assess the quality of care given to patients undergoing caesarean section in this hospital and to find out ways of improving on it.

Benefits of the study

This will help us improve the quality of service to these clients on a continuous basis.

Voluntary participation

I understand that I enter the study Voluntarily. I also understand that if I decline to participate this will not affect the way I am treated by the staff or my relationship with my care givers.

Anticipated risks

I understand that by participating in the study I will not be required to undergo additional tests, examinations or procedures arising from the study.

I also understand that I will not incur any additional costs arising from this study.

Confidentiality

I have been promised that the information will be kept in strict confidence and only used for the declared purpose.

I, the undersigned having fully understood about this research and all that it entails, do, on my own volition, consent to participate in the study.

Signature/thumb print of client_____ Date_____

Signature of Witness _____ Date_____

CONSENT FORM FOR "FERTILITY AND CONTRACEPTION; THE PERSPECTIVE OF WOMEN LIVING WITH HIV/AIDS"

Study number_____

Purpose of the study

I am Dr. Caleb Maina . I am carrying a study to determine the family planning needs and practices of persons living with HIV/ AIDS and to evaluate their desires for future fertility.

Benefits of the study

The information obtained from this study will be utilized in the provision of better services for clients in our clinics.

Voluntary participation

I understand that I enter this study voluntarily. I also understand that if I decline to participate in the study, it will not affect the quality of service I receive or my relationship with the staff in the clinic.

Anticipated risks

I understand that by participating in the study I will not be exposed to any kind of risk

Confidentiality

I have been promised that this information will be kept in strict confidence and that it will only be utilized for the stated purpose.

I, the undersigned having fully understood about the study and its purposes, do, on my own volition, consent to participate in the study.

Signature/thumbprint of the client _____ Date_____

Signature of witness _____ Date _____

KENYATTA NATIONAL HOSPITAL
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Ref: KNH-ERC/ 01/ 3707

Date: 28th August 2006

Dr. Caleb K.S. Maina
Dept. of Obs/Gynae
Faculty of Medicine
University of Nairobi

Dear Dr. Maina

RESEARCH PROPOSAL: "CONTRACEPTION AND DESIRE FOR FERTILITY: THE PERSPECTIVE OF WOMEN LIVING WITH HIV/AIDS" (P76/4/2006)

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** revised version of your above cited research proposal for the period 28th August 2006 – 27th August 2007.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

PROF A N GUANTAI
SECRETARY, KNH-ERC

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The Chairman, Dept. of Obs/Gynae, UON
The Head, Medical Records, KNH
Supervisors: Dr. Wasike C.S.G. Dept. of Obs/Gynae, UON
Dr. Kiragu J.M. Obs/Gynae, KNH