Case Records and Commentaries

In

Obstetrics and Gynaecology

Submitted by

Major Dr. Silvanus Kibiego Rotich

For the Examination of Masters of Medicine

In

Obstetrics and Gynaecology

Of the

University of Nairobi

July 2002

TABLE OF CONTENTS

DEDICATION

This book is dedicated to my dear wife, Zilpha and our children Nicky and Abigail. They truly stood by my side at times of difficulties. They were my driving force and were readily available when my spirits were low. I sincerely appreciate their patience and understanding during the entire course duration.

ACKNOWLEDGEMENT

I am grateful to the Department of Defense (DOD) for granting me the opportunity to undertake th Masters Programme. I also thank them for sponsoring the programme and meeting the cost of my researcl as well as my general up keep during the course

My sincere gratitude also go to all consultants, lecturers and Senior Registrars of the department o Obstetrics and Gynaecology for their dedication and commitment to see that I achieved the necessary skill and knowledge during my training at the University of Nairobi.

I am greatly indebted to Dr. P. M. Ndavi and Dr. R.K Rukaria for supervising my proposal and write up o my long commentaries. Their advice, comments and academic encouragement enabled me to complete th course successfully.

My special thanks go to Mr. Joshua Tanui, the Chief Administrator and Dr. V. Munala, the Medica Superintendent if A.I.C Litein Hospital for allowing me to carry out the study on Norplant clients and us their hospital for my elective period experience. I would like to thank Dr. Ayumba for surgical supervisio during my elective term.

I would also like to thank Mr. Muniu of KEMRI for assisting me in data analysis.

Finally, my special regards got to Mrs. Ndungo together with Miss Judy Ngigi for devoting their valuabl time to type and organize the write up.

DECLARATION

This is to certify that the case records and commentaries presented in this book are my original work and were managed by me under the supervision of Senior members of the Department of Obstetrics and Gynaecology, Kenyatta National Hospital.

Dr. SILVANUS K. ROTICH
MBCHB
UNIVERSITY OF NAIROBI

Signature.....

Date 26/6/02

CERTIFICATE OF SUPERVISION

This is to certify that the long commentaries in this book submitted by Dr. Silvanus K. Rotich we researched upon under our guidance and supervision, and that this book is submitted with our approval.

1. DR. P. MUIA NDAVI
   SENIOR LECTURER AND CONSULTANT
   OBSTETRIC AND GYNAECOLOGIST
   DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY
   UNIVERSITY OF NAIROBI.

Signature .....

Date 26/6/02

2. DR. RACHAEL K. RUKARIA
   LECTURER AND SPECIALIST
   OBSTETRIC AND GYNAECOLOGIST
   DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY
   UNIVERSITY OF NAIROBI.

Signature .....

Date 26.6.02.

CERTIFICATION

This is to certify that Obstetric cases Nos. 2 & 7 and Gynaecology cases Nos 3, 9 & 10 were managed b

Dr. Silvanus K. Rotich under my supervision

Signature .....

Date .....

PROF. S. B. O. OJWANG
MBCHB, M MED OBSTETRICS AND GYNAECOLOGY. DIP. ONCOLOGY
PROFESSOR DEPARTMENT OF OBSTRETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI.

CERTIFICATION

This is to certify that Obstetric cases Nos. 3, 5, 10 & 11 and Gynaecology cases Nos 4, 11, 13 & 15 were managed by Dr. Silvanus K. Rotich under my supervision.

Signature .....

Date .....

DR. J. B. O. OYIEKE
MBCHB, M MED OBSTETRICS AND GYNAECOLOGY
CHAIRMAN DEPARTMENT OF OBSTRETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI.

CERTIFICATION

This is to certify that Gynaecology cases Nos 1 & 2 were managed by

Dr. Silvanus K. Rotich under my supervision

Signature .....

Date 28th. June 2002

DR. OMONDI OGUTU
MBCHB, M MED OBSTETRICS AND GYNAECOLOGY
CHIEF MEDICAL SPECIALIST AND HEAD DEPARTMENT OF
OBSTRETRICS AND GYNAECOLOGY
KENYATTA NATIONAL HOSPITAL
SENIOR LECTURER DEPARTMENT OF OBSTRETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify that Obstetric cases Nos. 6, 12 & 15 and Gynaecology case No. 12 were managed by D
Silvanus K. Rotich under my supervision

Signature .....

Date 26/6/07

DR. MUIA P. NDAVI
MBCHB, M MED OBSTETRICS AND GYNAECOLOGY
MSC EPID, FHBR, DLSHTM
SENIOR LECTURER DEPARTMENT OF
OBSTRETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify that Obstetric cases Nos. 4, 8, 13 & 14 and Gynaecology cases Nos. 6 & 14 were ma
by Dr. Silvanus K. Rotich under my supervision

Signature .....

Date 28/06/02

DR. KOIGI KAMAU
MBCHB, M MED OBSTETRICS AND GYNAECOLOGY
SENIOR LECTURER DEPARTMENT OF
OBSTRETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI

CERTIFICATION

This is to certify that Obstetric cases Nos. 1 & 9 and Gynaecology cases Nos. 5, 7 & 8 were managed by Dr. Silvanus K. Rotich under my supervision.

Signature .....

Date 27/6/02.

BRIG. DR. WAWERU MATHU J. M. (M.B.S.)
MB.Ch.B, M MED OBS. GYN., UROLOGY
CHIEF MEDICAL SPECIALIST, KNH
HONORARY LECTURER
OBSTETRICS AND GYNAECOLOGY
UNIVERSITY OF NAIROBI

INTRODUCTION

KENYATTA NATIONAL HOSPITAL

Kenyatta National Hospital (KNH) is situated in the capital city of Kenya, Nairobi, about 3.5 kilometers from the city centre. It was started in 1901 as the Native Civil Hospital. It serves as a national referral centre as well as serving the population within and around the neighbouring countries of East and Central Africa as well as from parts of the Horn of Africa.

It is currently administered as a state corporation by a parastatal board established in 1986 by an Act of parliament. It is a training center for undergraduate and post-graduate students from the College of Health Science of the University of Nairobi. It is also a training center for Clinical officers, Nurses and other paramedical staff from the Kenya Medical Training College. The hospital is housed in a 10 storey-building complex with extensions or wings that serve as out-patient clinics, casualty unit, theatres and laboratories.

OBSTETRIC AND GYNAECOLOGIC UNIT

Obstetric Services

The Obstetric unit of Kenyatta National Hospital was commissioned in 1965. Initially it catered for about 1,500 deliveries per year but currently it caters for about 8,000 deliveries annually. Outpatient services are provided at clinic number 18 which include antenatal screening and follow-up, adolescent clinic, Gynaecology outpatient clinic, and fertility clinic, as well as family welfare clinic (clinic 66) and casualty department. The in-patient department is comprised of labour ward, lying-in wards, a neonatal unit and mothers hostel.

This is divided into three Firms; each headed by a senior consultant Obstetrician and Gynaecologist, with a team of senior Registrars, Registrars, Interns, Nurses and Paramedical staff. The consultants and senior Registrars are from both the University of Nairobi and Kenyatta National Hospital. The department utilizes the Kenyatta National Hospital laboratories and a departmental laboratory, which also serves other University departments and whose facilities include Radioimmunoassay, Cytology, Seminalysis, surfactant bubble test, glucose tolerance test, Bilirubin spectro-photometry and chromosomal analysis.

The casualty Department

This section has a receiving area for all Obstetrical and Gynaecologic emergencies. A Medical officer under the supervision of senior members of staff screens all patients and admits those requiring emergency admission. Others are treated and discharged home, while those who require specialized consultation are referred to the relevant clinics.

Antenatal Care (ANC)

Selection of patients with high risk factors in pregnancy and booking of mothers who wish to be followed up at Kenyatta national Hospital is done at the Monday morning Antenatal care booking clinic by each of the three Firms alternately. The patients are first interviewed by midwives who record personal history, obstetric history and medical or surgical history. Height measurements, weight, blood pressure and urinalysis are carried out on every patient. A senior Registrar reviews all the patients and makes selection of high-risk patients for closer follow-up in the ANC. The high-risk mothers are selected according to the following criteria.

1. Primigravidae, especially those who are teenagers, elderly, short or have pelvic deformity.
2. Grand multiparity (Para 5 and above)
3. Bad obstetric history (BOH). These include recurrent abortions, previous stillbirth and neonatal deaths.
4. Previous obstetric complications. These comprise post partum haemorrhage, uterine rupture, and obstetric fistulae.
5. Medical conditions complicating pregnancy: Anaemia, Diabetes Mellitus, Thyroid diseases, Renal disease, Cardiac disease and Deep venous thrombosis (DVT)
6. Previous operative delivery: caesarian section, vacuum extraction.
7. Others: Rhesus incompatibility, multiple gestation and prolonged relative infertility period.

The patients are required to pay a deposit for them to be followed up in this clinic. Booked patients get investigation forms completed for antenatal blood profile, which includes haemoglobin concentration, serology tests for syphilis and Human Immune deficiency (HIV) and blood grouping. The blood specimens are taken by the phlebotomist at the routine laboratory. They are clerked by the senior house officers, who record medical, Gynaecologic, Obstetric and family history.

Antenatal follow-up

The patients are seen four weekly up to 28 weeks gestation, two weekly up to 36 weeks then weekly until delivery. Each patient is treated on her own merit, and may be seen more often where necessary. Health education lectures are given to the patients in the antenatal clinic by medical personnel in appropriate clinical discipline. This is done the first thing in the morning when the patients report to the antenatal clinic. Emphasis on better nutrition, the importance of regular clinic attendance, psychological and factual preparation for labour and delivery, post natal care and the need to make family planning decisions in the antenatal period.

At each visit the following items are carried out:

1. The patient is weighed and the weight gain since the last visit is calculated.
2. Blood pressure is taken, recorded and compared with previous readings.
3. Urine specimen is examined for proteins, sugar and leucocytes.

The mothers are then ushered into examination rooms where the Senior House Officers question the patient regarding symptoms and changes related to previous treatment. The abdomen is examined at each visit together with general physical examination. The fundal height is noted and the rate at which the uterus is enlarging is assessed. The foetal heart can be heard with the Pinnard's fetoscope after 24 weeks of gestation and the foetal lie and presentation can be determined with reasonable accuracy after 30 weeks of gestation.

The breasts are examined at least once during the third trimester of pregnancy. Those with inverted nipples are taught how to evert them in preparation for breastfeeding. This provides a good opportunity to discuss the importance of breast-feeding after child- birth.

Patients with severe medical complications such as Diabetes mellitus, pre-eclampsia, deep venous thrombosis (DVT), Cardiac disease and severe anaemia during pregnancy are admitted to the various maternity wards for closer observation, investigations and management.

At 36 weeks clinical pelvimetry (pelvic assessment) is done on all primigravidae and patients with one previous scar. Radiological pelvimetry is performed on patients with one previous caesarian section with cephalic presentation, and those with breech presentation who have been assessed and found favorable for vaginal delivery. At 38 weeks Amniocentesis for foetal lung maturity is performed for proteins planned for induction of labour or delivery by elective caesarian section. This procedure may be performed earlier than 38 weeks gestation if there is an indication for it.

MATERNITY UNIT

The maternity unit is made up of labour ward, three antenatal wards and the newborn unit. Over 7,000 deliveries are conducted in labour ward annually. The labour ward has the first stage cubicles each with one bed, and two delivery suites with two couches each. In addition there is an acute room for close monitoring of very sick patients. A Cardiotocogram used for foeto- maternal monitoring during labour for the foetus at risk is available in one room, which also acts as the room for giving oxygen by mask to the mothers with foetal distress. There are two incubators, one in each delivery suite for transfer of preterm babies to nursery. There is an ultrasound machine used for inpatients. There are two operating theatres used for both emergency and elective obstetric surgery, but only one is functional.

Each antenatal ward has 32-bed capacity and there is usually no distinction between how many are allocated for antenatal patients and how many are for postnatal patients. Registrars review patients and do daily ward rounds, while major ward rounds are conducted once a week by the consultant in-charge of each Firm.

The newborn unit is managed by the Paediatrics department. It has five nursery cubicles one of which is an isolation area for infected babies and those born before arrival to hospital. There are 30 incubators and 10 cots in the newborn unit. All newborn babies with problems or whose mothers are very sick are taken to the newborn unit for management. The obstetrics team works in close co-operation with the paediatricians and a weekly combined postnatal mortality meetings are held.

Patients admitted to the maternity unit are booked or referred. The booked patients present to the labour ward directly for admission. Those unbooked or referred are admitted through casualty. Patients who are not in labour or not requiring emergency care are transferred to the various antenatal wards for observation and management.

Labour ward is managed by the Firm on call each week. The team is composed of nurses, midwives, intern-doctors, registrars, and consultants. On admission the intern-doctors and registrar respectively take full history and conduct a thorough examination of the patient. The antenatal care card is also reviewed.

Aseptic digital examination is performed on all patients in labour except where history of antepartum haemorrhage or premature rupture of membranes is present. Instead, a sterile gentle speculum examination is carried out in these cases. Pelvic capacity is also noted.

First stage of labour

Patients in active labour are admitted into the first stage where a partogram is started at once. The partogram used in KNH labour ward has the alert and action lines already drawn and consists of the following:

1. Particulars identifying the patient, parity and time of admission.
2. Date and time of onset of labour.
3. Date, time and mode of rupture of membranes as well as colour of liqour.
4. Half-hourly foetal heart rate monitoring.
5. Progress on descent of the foetal head into the pelvis.
6. Progress of cervical dilation recorded four-hourly.
7. Uterine contractions each 10 minutes, their frequency and duration.
8. Use of Oxytocin, its concentration and rate of infusion.
9. Other drugs used, dosage and time administered.
10. Maternal vital signs (Blood pressure, pulse rate, respiratory rate and her body temperature) are taken with pulse rate every half-hour, pulse rate and respiratory rates two hourly and blood pressure and body temperature four hourly.

Cervical dilatation is recorded at the time of admission then four hourly thereafter, while other parameters are charted every thirty minutes.

The patient is nursed in left lateral position and is reviewed at regular intervals by the registrar, during which appropriate interventions are effected if the progress is poor. Amniotomy is performed as soon as active phase of labour has been diagnosed by cervical dilatation, uterine contractions and descent of the presenting part. Analgesia is provided by parenteral Pethidine or Tramadol. Patients with meconeum staining of liqour but regular foetal heart rates are maintained on Oxygen by mask, 5% dextrose infusion and nursed in left lateral position. Those with poor progress of labour are augmented with Oxytocin infusion. Patients known to be Sero-positive for HIV are not routinely given Amniotomy, instead they are allowed spontaneous rupture of membranes.

Induction of labour is routinely performed in the morning, usually by Amniotomy and Oxytocin drip. Where indicated, Prostaglandin vaginal pesseries may be inserted the night before to ripen the cervix. Extra – amniotic Prostaglandin induction is used for cases with intrauterine foetal death.

Second stage of labour

Once confirmation of full dilatation of the cervix is done in the first stage section, the patient is then taken to second stage (delivery room) where normal delivery is conducted in the dorsal position. Asepsis is observed throughout the conduct of this stage of labour. The vulva and perineum are prepared by performing a vulvo-vaginal toilet, and the perineum draped with sterile towels. The patient is then instructed to bear down with each uterine contraction.

The perineum is supported by the right hand with a sterile pad, while the left hand keeps the head in flexion to prevent sudden expulsion. This prevents sudden trauma of the perineum and to the foetal head in preterm babies. Once delivery of the head has occurred, the mouth and nares are wiped with a sterile gauze to prevent aspiration of blood or amniotic fluid. A finger is passed around the neck to check for the umbilical cord. When found and if loose the cord is slipped over the head. If it is tight, it is double clamped and divided. After restitution and external rotation has occurred, the anterior shoulder is delivered by downward traction of the baby, then the posterior shoulder is delivered by upward traction. The rest of the body easily follows. The cord is clamped and divided. The mother is shown the baby briefly before the baby is handed over to another midwife who will carry out oral-pharyngeal suction as required. In high-risk cases, a paediatrician is usually in attendance.

Third stage of labour

At delivery of the anterior shoulder, 0.5mg of Ergometrine is given intramuscularly to effect contraction of the uterus. For patients with history of post partum hemorrhage and grand multiparity Ergometrine is given intravenously for a more rapid action. For cardiac and hypertensive patients Oxytocin 5 international units are given intravenously if uterine contraction does not occur spontaneously.

The placenta and membranes are delivered by controlled cord traction. The birth canal is inspected for any tears and episiotomy repaired. The patient is encouraged to empty her bladder. Post delivery blood pressure, pulse rate, uterine contraction and lochia loss are observed and recorded. The patient is further observed for 1 hour and then she is transferred to the lying-in wards for further overnight

observation. Patients with normal delivery are discharged after 24 hours due to pressure of bed space. They are nursed together with their babies to establish good lactation and bonding. The patient is advised on perineal hygiene and frequent saline sit baths until good healing of episiotomy is achieved.

OPERATIVE PROCEDURES

Episiotomy

A mid-line or medio-lateral episiotomy is performed at crowning of the foetal head at the perineum in all cases where the perineum is tight and for some of operative vaginal deliveries and pre-term delivery. A medio-lateral episiotomy is commonly used in this unit because it has less risk of extension to the anal sphincter and rectum. During repair a gauze pack is inserted into the vagina. The apex at the vaginal mucosa is identified. From the apex, repair of the vaginal epithelium is carried on with continuous chronic catgut number 2/0. The perineal muscles are then approximated by deep interrupted sutures. The skin edge is then apposed using interrupted or continuous catgut number 2 /0 burying the knots and starting from the lateral edge. The patient is advised on perineal hygiene and frequent saline sit baths until healing occurs.

Vacuum Extraction

The common indications for assisted vacuum delivery are poor maternal effort, foetal distress or cord prolapse with a fully dilated cervix, and in patients with cardiac diseases, hypertension and severe anaemia complicated by congestive cardiac failure. The patient is placed in lithotomy position and a digital examination is performed to confirm a fully dilated cervix and cephalic presentation. The largest ventouse cap that fits into the vagina is applied to the foetal scalp close to the occiput. The index finger of the right hand is passed around the perineum to ensure that the maternal tissue (cervix and vaginal) is trapped within the cup. The vacuum suction pressure is gradually increased at a rate of $0.2kg/cm^2$ to between 0.5 and 0.8 kg/cm^2. This allows for the formation of an artificial caput or "Chignon". A medio-lateral episiotomy is made under local anaesthesia, if required at the time the head is crowning.

The traction pressure or pull is applied along the midline of the pelvis and simultaneously with the uterine contractions. Once the baby's head is delivered the ventouse cup is released immediately and the second and third stages of labour conducted as usual.

CAESARIAN SECTION DELIVERIES

The lower segment caesarian is the commonest major obstetric operation performed either electively or as an emergency. Classical caesarian section is rarely performed except for cases of transverse lie with ruptured membranes.

Pre-Operative Management

The haemoblobin estimation and blood grouping plus cross matching are carried out. Those undergoing operation electively are starved for 6 hours prior to the operation. Informed consent for the operation and for general anaesthesia is obtained. Two units of compatible blood are obtained. The abdominal wall, vulva and perineum are shaved clean. Pre-medication is given in the form of Atropine Sulphate 0.6mg intramuscularly half an hour before going to theatre. In cardiac patients 0.4mg of Hyoscine is used instead.

Surgical procedure

In theatre, the patient is placed in a supine position and an intravenous infusion is started through a large bore needle. In semi-lithotomy position, the vulva and perineum are cleaned with 1% Savlon solution.

Aseptic catheterization is carried out and all the urine drained and the catheter is retained to provide continuous bladder drainage during the operation. The patient is repositioned to supine position. The anterior abdominal wall is cleaned with antiseptic solution and an iodine/spirit solution (Betadine). Then draping with sterile drapes is done exposing only an area bounded by the mons pubis below to about 4 centimeters above the umbilicus and 2cm on each side of the midline if sub-umbilical midline incision is to be used. If Pfannasteil incision is to be used the upper draped border need not be placed above the umbilicus. 100% pre-oxygenation is given to the patient for five minutes then general anaesthesia is induced using intravenous Thiopentone sodium 250 to 500 mg depending on the patient's weight. A short neuromuscular blocking agent Suxamathoneum 100mg is used to provide muscle relaxation. Anaesthesia is maintained with Nitrous oxide and Oxygen in the ratio of 1:1 before the baby is delivered then a ratio of 2:1 is given. A total of 6 to 8 litres per minute is used depending on the circuit used. Throughout the operation, Halothane 0.5% or Trilene 0.35% is used to maintain unawareness. When the effect of Suxamethoneum has worn off Pancuronium or ∂-Tubocurare a long acting muscle relaxant is used. The abdomen is opened in layers through either a Pfannesteil incision or a mid-line sub umbilical incision or rarely a Para median incision. With a clean knife the incision is deepened, the rectus sheath is divided and elevated with two long artery

forceps and the muscles are separated from their attachment to it by blunt dissection, and then drawn to one side to expose the peritoneum. The later is held with two straight artery forceps and opened taking care not to injure the gut. The incision limits are extended with index and middle fingers of the left hand placed intraperitoneal guiding the scissors, avoiding injury to the bladder and bowels.

The uterus is then identified, wet sterile warm abdominal packs are placed on either side of the uterus to prevent spillage of blood and liquor into the peritoneal cavity and to protect the gut. A Doyen's retractor is then used to reflect the bladder downwards as well as to expose the uterovesical fold of peritoneum. Using a non-toothed dissecting forceps the loose peritoneum over the lower uterine segment is picked up and incised with curved scissors in an elliptical manner. The peritoneum is then stripped off the lower uterine segment with a mounted swab. The Doyen's retractor is shifted to include the lower part of the peritoneal fold in retracting the bladder away from the lower uterine segment. The lower uterine segment is then incised in the midline about two centimeters below the uterine attachment of the uterovesical peritoneal fold. Once the membranes are reached the incision is extended laterally on either side in an elliptical manner using curved scissors directed by two fingers of the left hand and the incision is enlarged enough to allow delivery of the head and trunk. The retractor is removed and the membranes are ruptured allowing some liquor to escape. The hand is slipped into the uterus between the foetal head and the symphysis pubis, and the head is lifted gently with the fingers and palm through the incision while a modest fundal pressure is applied. After delivery of the head, the nostrils and the mouth are wiped. The shoulders are then delivered using, gentle traction. The trunk delivery follows readily. Intravenous Ergometrine 0.5mg is given by the anaesthetist at delivery of the shoulders. The cord is then clamped and divided and the baby is handed over to a midwife or assistant for resuscitation.

The placenta and membranes are delivered manually or by controlled cord traction. Green Armytage uterine clamps are used to hold the cut edges of the uterus to control bleeding and the inside of the uterus is wiped of clots and membranes. If the cervix was not dilated in labour it is dilated at this juncture with a mounted swab to allow postpartum lochia drainage. The uterus is then repaired with or without lifting it out through the incision. The uterus is closed with a number 2 chronic catgut in two layers, as a continuous stitch for both layers, the second layer burying the first and extending beyond its lateral edges. The visceral peritoneum is then closed with number one chronic catgut continuous stitch.

The abdominal pucks are removed, the abdomen is mopped and the pelvic viscera are inspected for any abnormality. Instruments and swabs are counted, if reported correct with the initial count, the abdomen is closed in three or four layers. Number one chronic catgut is used on the peritoneum, while number two chronic catgut is used as a continuous stitch on the rectus sheath. The skin is closed with interrupted Ethylon or silk suture. The wound is cleaned with Hibitane solution then painted with iodine solution if it is available and covered with gauze and light strapping applied to hold the dressing in place. The catheter is removed and the colour of urine is noted. The uterus is massaged and any blood clots expelled and evacuated from the vagina. A clean vulval pad is applied.

General anaesthesia is reversed with 1.2mg Atropine Sulphate and 2.5mg of Neostigmine. Extubation is done and oro-pharyngeal suction carried out. Blood loss is estimated and recorded and the patient is transferred to recovery room, then later to labour ward as the anaesthesia wanes.

Post Caesarian Section Care

The pulse, blood pressure, temperature and respiratory rate are observed and recorded half hourly until the patient is fully awake then four hourly. Intramuscular Pethidine 50 to 100 mg is given four to eight hourly for 48 hours for pain relief depending on the patient's weight. When the patient is allowed oral intake, further anaesthesia is given as oral Paracetamol 1000mg 8 hourly. Prophylactic antibiotics are administered routinely to all patients. Initially the patient is observed in labour ward and if her general condition remains stable and satisfactory, she is transferred to the lying-in wards. Early ambulation is encouraged. Haemoglobin and urine bacteriological examination are done on the third postoperative day. Two to three litres of intravenous fluids are given in the first 24 hours (with at least 500 mls of normal saline).

Normal diet is gradually introduced after free fluids and light diet. All stitches are removed on 7th postoperative day and the patient is discharged home with a case summary. She is advised to attend the child welfare clinic and postnatal clinic in two and six weeks, respectively.

Care Of The Newborn

All the newborn babies who are normal join their mothers after delivery unless the mother is moribund. The babies with problems or where complications are anticipated together with babies delivered by operative vaginal delivery or by caesarian section are all reviewed by a Paediatric registrar. Those having problems or who are expected to develop some problems are transferred to nursery in a warm incubator. The premature babies are managed in nursery until their weight is about

2000 grams when they are discharged. All Babies are immunized with BCG before discharge. The normal mothers who have babies in nursery are lodged in a mother`s hostel.

Post Natal follow-up

The clinic is held on every Friday. Only those patients who had a complicated or operative delivery are seen. The rest are followed up in their nearest health facility. In this clinic the blood pressure and weight are taken, urinalysis performed, history of puerperium, lactation and immunization of the baby is taken. The patient is then examined and any problems managed. Family planning advise is given and the patient is referred to the family planning clinic for appropriate method.

Family Planning Clinic

The clinic is at family welfare center-clinic 66. Oral and injectable contraceptives, Norplant implants, intrauterine contraceptive devices and barrier methods are offered. Patients requiring postpartum sterilization are prepared for operation in the wards then taken to BTL and Laparoscopy theatre in clinic 66 with informed consent dully signed. Patients requiring interval sterilization are counseled and referred to clinic 66 for the procedure through mini- Laparotomy or Laparoscopy.

THE GYNAECOLOGY UNIT

This is comprised of an outpatient consultant clinic and wards 1B and 1D on the first floor of the tower block. In ward 1D, emergency services are provided throughout the 24 hours and is manned by the Acute Gynaecology team.

The Gynaecology Clinics

There are three outpatient clinics per week; Firm I on Tuesday, Firm III on Wednesday and Firm II on Thursday. At any time, there are one or two consultants, several senior registrars, registrars, medical students and nurses. There is an additional oncology clinic on Friday mornings for oncology patients who are on follow up.

A Colposcopy clinic is held every Friday morning for further evaluation of patients with abnormal cervical cytology. A fertility clinic is held every Monday afternoons. The majority of patients attending the gynaecology clinic are refereed from other specialist clinics of Kenyatta National Hospital, other hospitals in and around Nairobi as well as from district and provincial hospitals. Infertility cases constitute two thirds of the gynaecology consultations, followed by uterine fibroid.

abnormal uterine bleeding and adnexal masses. In the clinic, history is taken, thorough physical examination is conducted and most of the investigations are carried out while the patient attends the clinic to reduce the hospital stay. These investigations include Haemogram, semen analysis, Pap smear and pregnancy test among others.

Cold Gynaecology Admission (Ward 1B)

This is the non-emergency ward to which patients are usually admitted from the clinic or are transferred from the acute Gynaecology ward for further management. The ward has 32 beds divided among the three Firms. Commonly, the patients admitted here have uterine fibroids, genito-urinary fistulae, gynaecological malignancies and infertility among others.

Acute Gynaecology –Ward 1D

The emergency gynaecology ward is ward 1D on the first floor of the main block. It has 32 beds, with each room having 8 beds. On average 20 to 30 patients are admitted per day majority of whom are cases of abortion admitted through casualty department. They are checked by the houseman and reviewed by the registrar who undertakes the management in consultation with senior members of the Firm. Other common cases include ectopic pregnancies, acute pelvic inflammatory disease (PID) and pelvic abscess.

Uncomplicated cases of incomplete abortion have uterine evacuation performed using Kerman's canulla and syringe. They are discharged home on the same day if stable, or the next day after overnight observation and treatment in the ward. These patients are also counseled for contraception and those willing are put on a method of contraception before discharge. Patients who have undergone emergency Laparotomy for ectopic pregnancy, pelvic mass or abscess have a minimum stay of four days postoperative.

Patients with suspected carcinoma of the cervix who require emergency admission are admitted to this ward. They receive emergency care; blood transfusion, antibiotic and analgesic treatment. Routine checking and laboratory investigations are carried out. Thereafter the patients are prepared for examination under anaesthesia (EUA) in Cesium theatre for staging and biopsy. They are then transferred to oncology ward for definitive management on receiving the Histology report.

Laparoscopy Theatre

Besides being used for interval sterilization by mini-Laparotomy or Laparoscopy. Clinic 66 theatre is also used for diagnostic Laparoscopy. Dye Laparoscopy is performed on patients from the outpatient Gynaecology clinics with infertility. Before dye Laparoscopy the patient should have a seminalysis result and a Hystorosalpingogram.

GYNAECOLOGIC OPERATIONS

A theatre is always available for emergency gynaecologic operations. Laparotomies for ectopic pregnancies, ovarian cysts, tubo-ovarian masses, pelvic abscesses and other minor operations such as Marsupialization, removal of misplaced intra-uterine devices, diagnostic and suction curettage of the uterus are performed.

Each of the Firms has a day for elective operations from 8 am. to 5 am every week. The operations are done under general anaesthesia in which intravenous Sodium Thiopentone and Succinyl Choline are used for induction of anaesthesia. Nitrous oxide, Oxygen and Halothane are used for maintenance of anaesthesia. Curare is given intermittently for muscle relaxation and Atropine plus Neostigmine are used for reversal.

Preoperative Management

Patients for emergency Laparotomy are prepared for theatre immediately. Pre-medication is given as Atropine 0.6 mg intramuscularly half an hour before operation. Blood is cross-matched and intravenous drip started. For elective operations, routine or baseline and specific relevant investigations are carried out and the date for surgery determined. The patient is starved from midnight on the evening prior to the operation. A soap enema is given in the morning and the abdomen plus pubic hair is shaved. Pre-medication is given in form of Atropine Sulphate 0.6mg and *Pethidine 50mg intramuscularly half an hour before theatre.*

Postoperative Management

Vital signs are observed half hourly until the patient fully recovers from anaesthesia and then 4 hourly thereafter. Antibiotics, usually Crystalline Penicillin 2 mega units six hourly and Gentamycin 80mg eight hourly for the first two days then oral Amoxycillin 500mg eight hourly for five days are given. The patient is maintained on intravenous fluids about 2.5 to 3.5 per day until she is able to take orally. Pethidine 50 to 100mg is given every 6 or 8 hours for analgesia during the first 48 hours then

oral analgesics are given. Oral feeds are re-started after ascertaining the presence of good bowel sounds. Early ambulation is encouraged to decrease the incidence of deep venous thrombosis (DVT).

Postoperative haemoglobin level is checked on the third postoperative day. The wound is inspected on the fourth postoperative day and if healing well the patient is allowed home for removal of non-absorbable sutures on the 7th postoperative day at the nearest health facility. The patient is discharged home with a "discharge summary" and is booked gynecology outpatient clinic for review after six weeks.

COMMON GYNAECOLOGIC OPERATIONS

1. Uterine evacuation

This procedure is performed on emergency basis for incomplete abortion to empty the uterus of products of conception. A Kerman's Canula and syringe is used often under no anaesthesia or sedation. The patient is placed in lithotomy position and the vulva and perineum cleaned with antiseptic solution. The patient is then draped with sterile linen. The bladder is catheterized to drain urine. A pelvic examination is carried out to determine the size of the uterus and cervical dilatation. A speculum is introduced gently into the vagina and the cervix is grasped with a Tenaculum forceps (Volsellum) and the appropriate size of cannular gently inserted into the uterus. Negative pressure is applied to the syringe, which is then connected to the canulla and the valve opened. The contents of the uterus are sucked into the syringe as the canulla is moved up to the fundus of the uterus and rotated through the four quadrants. Completeness is noted when there is a gritty sensation in all the four quadrants of the uterine cavity.

The patient is discharged home on oral antibiotics and analgesics. If the products of conception are found to be septic the patient is started on parenteral broad-spectrum antibiotics.

2. Total Abdominal Hysterectomy

General anaesthesia is induced as described abve. Vulvo-vaginal toilet is performed with Hibitane solution and the bladder catheterized aseptically. The catheter is left in situ to provide continuous bladder drainage during the operation. Pelvic examination under anaesthesia is performed and findings noted. The vagina is painted with Methylene blue dye. The abdomen in the cleaned with Hibitane and painted with iodine solution followed by draping with sterile towels.

The abdomen is opened in layers as described for caesarian section. The bowels are packed away from the pelvis using warm moist packs after general inspection of the abdominal viscera. The round ligaments on either side are identified clamped using straight long artery forceps and divided between the two forceps. The lateral lumps are each ligated with number 2 chronic catgut.

The anterior leaf of the broad ligament is parched forwards and incised with scissors. The next step depends on whether the fallopian tubes and ovaries are to be conserved or removed. If they are conserved, 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 with a transfixing chronic catgut number 2 suture. The same is done on the opposite side. If the tube and ovaries are to be removed with the uterus, the infundibulopelvic portion of the broad ligament is doubly clamped with long curved artery forceps with the tips reaching the open window in the broad ligament. The ligament together with the ovarian vessels are divided between the clamps and ligated using chronic catgut number 2. The same is repeated on 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 vaginal vault by careful blunt and sharp 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.

The posterior leaf of the broad ligament on either side is cut parallel with the side of uterus to better demonstrate and skeletonize the uterine vessels between the leaves of the broad ligament for clamping. The uterine vessels are doubly 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 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 cross 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 chronic catgut number 2.

The uterus is retracted forwards 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. Each uterosacrol ligament is double clamped, cut and ligated with number 2 chronic catgut sutures. Here, particular care is exercised to avoid the pelvic portion of the ureter as it causes along the base of the broad ligament. The cardinal ligaments of either side of the uterus are then clamped, cut and ligated.

The anterior vaginal fornix is opened and the vagina is circumcised by sharp knife or dissection by scissors round the cervix. The uterus together with its cervix is delivered as the anterior, posterior and lateral angles of the vagina are secured with long straight artery forceps. The vaginal margins are then closed using a series of figure of 8 interrupted sutures. Particular care is taken when tying the lateral angles to ensure that the descending vaginal branches of uterine vessels are securely ligated. Haemostasis is ensured.

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 a continuous number 1 chronic catgut sutures that first pierces the vaginal walls close near the midline and passes through the posterior leaf of the broad ligament, the free margin of the uterosacral ligament, then through the infundibulopelvic ligament, the free margin round ligament and the anterior bladder peritoneum. The suture is tied at the center. The same is repeated on the opposite side with the suture being tied at the midline.

The abdominal viscera are inspected. If haemostasis has been achieved and instrument and swab counts are normal, the abdomen is closed in anatomical layers. General anaesthesia is reversed and the patient is then managed as described in postoperative care above.

Case No. 1

CORD PROLAPSE – EMERGENCY CAESARIAN SECTION – LIVE BABY

NAME : M.W.K	PARITY : 2 + 1
AGE : 33 YEARS	D.O.A : 17/6/99
IP NO. : 0582857	D.O.D : 21/6/99

PRESENTING COMPLAINTS

The patient was admitted from home with complains of abdominal pains for five hours.

HISTORY OF PRESENTING COMPLAINTS

She had abdominal pains, which were intermittent and radiated to the back. The pain had gradually increased in intensity and frequency. She had also noticed a tenacious mucous vaginal discharged. However, there was no history of drainage of liquor, no dysuria and no frequency of micturition.

HISTORY OF CURRENT PREGNANCY

Her last menstrual period was on 15/9/98 and thus her expected date of delivery was on 22/6/99. Her gestational age by dates was 39 weeks. She attended her antenatal care at Kenyatta National Hospital starting at 18 weeks gestation, and she had made six visits. Her antenatal profile was normal: Haemoglobin concentration was 10.7 g/dl, blood group A Rhesus positive and VDRL was negative. She got two doses of Anti-tetanus toxoid and was put on haematinics. Her antenatal period was uneventful. She was planned for trial of scar when she went into labour and was instructed to ensure she delivered in hospital preferably Kenyatta National Hospital.

OBSTETRIC AND GYNAECOLOGIC HISTORY

She was a Para 2 + 1 with her last delivery in 1999 through caesarian section due to Antepartum haemorrhage. The outcome was a life male infant who weighed 2.8 kg and is alive and well. The first delivery in 1992 was through spontaneous vaginal delivery and she delivered a life female infant who weighed 3.2 kg and is alive and well. The first pregnancy in 1991 ended with spontaneous abortion at about four months gestation. Between last delivery and current pregnancy she used oral contraceptives for contraception.

Her menarche was at age 14 years and her menstrual cycles were regular occurring after every 21 days. The periods lasted five days and there was no associated dysmenorrhea.

PAST MEDICAL AND SURGICAL HISTORY

A part from admission for Obstetric reasons she had no previous history of medical and surgical problems.

FAMILY AND SOCIAL HISTORY

She was a married housewife, who occasionally did some tailoring. Her husband was a driver at a private company. She neither smoked cigarettes nor drunk alcohol. Her mother was a known Asthmatic who frequently suffered from Bronchial Asthma.

PHYSICAL EXAMINATION

General Examination

She was in good general condition and good nutritional status. She was not febrile, not pale and had no pedal oedema. Her blood pressure was 110/70 mmHg, pulse rate was 84 beats per minute and were regular. Her respiratory rate was 20 per minute and temperature was 36.6° C

ABDOMINAL EXAMINATION

The abdomen was uniformly distended and moved with respiration. There was a sub-umbilical midline surgical scar and stria gravidarum. The fundal height was term, the lie was longitudinal and presentation was cephalic. The foetal head was palpable about three-fifths above the pelvic brim. The foetal heart rate was 148 beats per minute and was regular. She had three moderately strong uterine contractions each lasting about 40 to 45 seconds.

VAGINAL EXAMINATION

Her external genitalia were normal. The cervix was about 6 to 7 centimeters dilated and fully effaced. The membranes were intact and bulging with every uterine contraction. Artificial rupture of membranes was performed. The umbilical cord prolapsed and the liquor was lightly meconeum stained (MSL grade 1). The cord was confirmed to be pulsating and was replaced within the vagina and covered with a warm gauze pack.

OTHER SYSTEMS

The breasts, respiratory system, cardiovascular and central nervous system were essentially normal.

DIAGNOSIS

A diagnosis of umbilical cord prolapse was made.

MANAGEMENT

The patient was immediately placed in knee chest position and theatre staff were promptly alerted about the patient. A warm pack was placed to maintain the cord loops in the vagina. She was given oxygen by mask and intravenous 10% dextrose drip. She was informed about the nature of the diagnosis and the planned mode of management to which she gave informed consent for emergency caesarian section. Blood was drawn for group and cross – match, and two units of whole blood were requested. She was quickly wheeled to theatre where the surgeon and the scrub nurse had already scrubbed, gowned and were ready for immediate caesarian section.

OPERATION

In theatre, foetal heart rate was noted to be irregular, as she was placed supine with the foot of operation table elevated and a pillow placed below her gluteal region to ease the pressure on the prolapsed cord. Vaginal examination confirmed cervical dilatation of 7 cm and a pulsating loop of umbilical cord. Emergency caesarian section was performed as described in the introduction. Moderate adhesions were encountered with omentum covering anterior surface of the uterus. After careful dissection lower uterine segment caesarian section was performed. A live male infant who weighed 3450 grams and scored 9 at one minute and 10 at five minutes was delivered. The placenta was delivered by controlled cord traction and uterus repaired in layers. Haemostasis was achieved and abdomen was closed in layers after instrument and swab count was confirmed correct. Vulvo-vaginal toilet was performed and catheter, which was draining clear urine, was removed. Estimated blood loss was approximately 1000 mls. The blood loss is on the higher side for some one who was in labour because the pelvic adhesions from the previous caesarian section hampered the access of the lower uterine segment and control of bleeding.

POST OPERATIVE CARE.

She was observed in recovery room where vital signs were taken quarter hourly until she was fully awake then four hourly thereafter. She was transfused two units of whole blood under cover of

intravenous Frusemide 40 mg for each unit. Intravenous fluids were also given as normal saline to alternate with 10% dextrose 500 ml 6 hourly. Antibiotics Crystalline Penicillin 2 mega units 6 hourly and Gentamycin 80 mg 8 hourly were given intravenously. Intramuscular Pethidine 100 mg 8 hourly was given for 48 hours then she was put on Ibuprofen 400 mg 8 hourly. A check haemoglobin concentration on the third postoperative day was 9.7 g/dl and she was started on the haematinic Ferro-B one tablet twelve hourly. The operation wound was exposed after 3 days post operative and was found to be healing well. On the fourth post operative day the fundus corresponded to 18 weeks gestation and lochia was not foul smelling. There was no calf tenderness and the breasts were not engorged. She was discharged home on same haematinics to have the stitches removed at the nearest facility to her home. She was also booked post –natal clinic to be seen after six weeks.

FOLLOW UP

She was seen in the post-natal clinic on 30/7/99. She had no complaints and the baby was suckling well. She had not yet resumed her menses. She was in good nutritional status and not pale. The operation site had healed well and the uterus was not palpable above pelvic brim. Check haemoglobin concentration was 10.8 g/dl. She was referred to the family planning clinic (clinic 66) for contraception and she was put on haematinics for two more weeks. Since she had two caesarian section scars she was informed that her subsequent deliveries would be via elective caesarian section.

DISCUSSION

The patient presented here was a 33 years old Para 2 + 1 gravida 4 with one previous scar, who presented to labour ward in established labour. Artificial rupture of membranes was performed and a pulsating loop of umbilical cord prolapsed into the vagina through a cervix that was about 7 cm dilated. The foetus was in cephalic presentation. Emergency measurers to relieve cord compression were instituted and she was given Oxygen by mask. She underwent emergency caesarian section, which a life male infant who scored well was delivered. The mother's postpartum recovery was uneventful.

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]. In overt cord prolapse the cord may be visualized protruding from the introitus or by palpating loops of the cord in the vaginal canal. Cord presentation or funic presentation is diagnosed when loops of umbilical cord are palpated through the intact membranes and would lead to overt cord prolapse if membranes were ruptured [1,3,4]. The patient presented here had overt cord prolapse.

Prolapsed cord is exposed to intermittent compression between the presenting part and the pelvic inlet, cervix or vaginal canal. Compression of umbilical cord compromises foetal circulation and depending on the duration and intensity of compression may lead to foetal hypoxia, brain damage and death. In overt cord prolapse exposure of the umbilical cord to air cause irritation and cooling of the cord leading to further vasospasm of the cord vessels [1,3,4]. In the patient presented measures to minimize cord compression were immediately instituted by postural treatment and the cord was retained within the vagina using warm moist packs to avoid vasospasm.

The incidence of cord prolapse is low, occurring in less than 1: 200 deliveries. The incidence of overt cord prolapse in cephalic presentation is 0.5%, Frank breech 0.5%, complete breech 5%, footing breech 15% and transverse lie 20%. The incidence of occult prolapse is unknown because it can be detected only by foetal heart rate changes characteristic of umbilical cord compression [1,3,5,6]. The patient presented here had overt cord prolapse with cephalic presentation.

Conditions, which result in poor fit of the foetus in the maternal pelvis or cervix during labour, increase the risk of cord prolapse. These include abnormal foetal presentations such as breech presentation and transverse lie, multiple gestation, contracted pelvis, prematurity, polyhydramnios, minor degrees of placenta previa and iatrogenic such as high presenting head with uncontrolled rapid release of liquor during artificial rupture of membranes [1,2,3,5]. In the patient presented the cause may have been iatrogenic as described above or a cord presentation was not noticed before artificial rupture of membranes.

The diagnosis of cord prolapse is made by having a high index of suspension especially if cord loops are not protruding into the vagina. Patients who have risk factors for umbilical cord prolapse should be meticulously monitored during labour. Features of cord compression like variable foetal heart rate decelerations should alert the Obstetrician on possibility of overt or occult cord prolapse and therefore carry out pelvic examination or do urgent Doppler ultra sound to diagnose occult cord prolapse or carry out continuous Cardiotocographic monitoring. Nevertheless a diagnosis of occult cord prolapse may be made if the pattern of foetal heart rate decelerations are relieved by having the patient lie on her side[1,3,4,5]. On vaginal examination the examiner feels a soft, usually pulsatile loop of umbilical cord or visualize a protruding cord. It is important to bear in mind that a foetus may be alive even in the absences of cord pulsations, therefore foetal heart sounds should be auscultated before intrauterine foetal death is declared. However a non-pulsating prolapsed cord is a poor prognostic indicator [1,3,5]. In the case presented the diagnosis was made when a pulsating cord was palpated in the vagina after artificial rupture of membranes.

The management of cord prolapse is guided by the following factors: whether the baby is alive or dead, gestational maturity of the foetus, associated Obstetric complications, degree of cervical dilatation and station of the foetal head among other factors [1,3,5]. As neonatal care has improved, there has been a steady decline in the perinatal mortality associated with cord prolapse irrespective of the mode of delivery, many authors have emphasized the danger of a prolonged prolapse to delivery interval and have urged prompt caesarian section unless the cervix is fully dilated and the presenting part is at or below the ischial spines so that the baby is immediately delivered by assisted vacuum delivery [1,2,3,5].

When the foetus is viable and the cervical dilatation does not allow immediate vaginal delivery, or when obstetric factors present contraindicate vaginal delivery, immediate measures to prevent or

minimize cord compression must be instituted. This may be achieved by manually displacing the presenting part away from the cord and protecting the cord between two gloved fingers until definitive treatment is instituted. Postural treatment is offered in the form of placing the patient is knee chest position or high Trendelenburg position. The patient may also be placed in exaggerated Sim's position with placement of pillows below the hips. Nevertheless knee chest position is very tiring, inelegant and irksome to the patients, hence she should not be kept in that position for too long. The protruding prolapsed cord must be replaced into the vagina to minimize vasospasm and desiccation but where this is not possible warm packs are gently wrapped around it. Other methods which have been use to displace the presenting part away from compressing the cord include rapid filling of the urinary bladder with 500 to 700 mls of normal saline and concomitant intravenous administration of tocolytics such as Ritodrine to relax the uterus. These measures are important especially if delay in delivery is inevitable as when the patient is to be transported to another center for delivery. The patient should also be put in Oxygen by mask [1,2,3,5]. The patient presented was placed in knee chest position, given intravenous 10% dextrose solution, Oxygen by mask and was immediately delivered by emergency caesarian section with good outcome.

Manual replacement of the prolapsed cord loops (also known as funic reduction) has been employed by some clinicians with variable success. However, manipulation of the prolapsed cord predisposes it to vasospasm, physical trauma or intravascular thromboses, which further comprises foeto-placental circulation. As such this practice is not popular [1,3,4].

If the cervix is fully dilated and the foetus is viable and there is no other Obstetric complication assisted vaginal delivery should be allowed. Studies have shown no difference in the foetal outcome by performing caesarian section in such patients [3,6]. Vaginal delivery should also be allowed when there is already foetal demise or non-pulsating umbilical cord vessels [1,3,5,6]. The patient presented underwent emergency caesarian mode delivery because the foetus was viable, the cord was pulsating with strong pulses, cervical dilatation was 7 cm and she had two other Obstetric complications namely meconeum staining of liquor and previous caesarian section.

Cord prolapse poses risks to both the mothers and the foetus. Maternal complications include those related to general anaesthesia, blood loss, and infection following caesarian section or operative vaginal delivery. Foetal mortality and morbidity rates are high and the prognosis depends on the degree and duration of umbilical cord compression occurring before delivery and neonatal

resuscitation began. Complete cord compression results in the development of profound metabolic acidosis within 10 to 20 minutes, which may lead to asphyxia and death. The perinatal mortality of cases of cord prolapse is 30 to 50%, but when delivery is achieved within 30 minutes after detection the foetal mortality is reduced to only 10% [1,3,5,6]. The patient presented was delivered by emergency caesarian section and the baby was delivered within about 20 minutes after diagnosis, hence the good outcome. The prolapse had also occurred within a hospital setting and measures to decrease cord compression were instituted immediately.

In the developing countries, where facilities are often over stretched and under staffed, anticipation and prevention remain the hallmark of adequate management. Artificial rupture of foetal membranes after ascertaining there is no cord presentation should be performed with controlled release of amniotic fluid by slight pressure of the presenting part onto the pelvic brim. After completing the procedure a careful search for the cord is done by palpating all round the inferior pole of the presenting part. Foetal heart rate must be checked after any rupture of membranes be it spontaneous or artificial.

REFERENCES

1. Collen J.V.

   Malpresentation and Cord Prolapse.

   In current Obstetric and Gynaecologic diagnosis and treatment. 7th edition.

   Appleton and Lange publications USA page 416: 1991

2. Koongs P.P., Paula R.H, Campell K.

   Umbilical cord prolapse – A contemporary outlook.

   Journal of Reproductive Medicine: 35 690 – 92: 1990

3. Chamberlain G.

   Management and monitoring of labour

   In Turnbull's Obstetrics. 2nd edition.

   Lippincot Raven publishers. Edinburg England page 569 – 590: 1997

4. Cunningham F.G, MacDonald P.C, Leveno K.J et al

   Amniotomy: In William's Obstetric 19th edition

   Appleton and Lange publication. Stanford Connecticut page 487: 1993

5. Dutta D.C.

   Malposition, Malpresentation and Cord prolapse. 3rd edition.

   New Central Book Agency. India page 411- 141: 1997

6. Critchlow C.W, Terry U., Thomas J.B.

   Risk factors and infant outcomes associated with umbilical cord prolapse. A population based controlled study among births in Washington State.

   Am.J Obstet. Gynecol. Vol 170 (2) 13 – 18 1994

Case No. 2

CERVICAL INCOMPETENCE: MACDONALD STITCH – LIVE BABY

NAME	:	L.W	L.M.P	:	27/11/00
AGE	:	34 YEARS	D.D.D.	:	04/9/01
IP NO.	:	0721685	D.O.A	:	14/3/01
PARITY	:	0 + 4	D.O.D	:	18/3/01

PRESENTING COMPLAINT

The patient was admitted through antenatal care clinic with complains of four consecutive mid trimester abortions.

HISTORY OF PRESENTING COMPLAINT

L.W first conceived in 1992, but the pregnancy ended with spontaneous abortion at 3 months gestation. Subsequent pregnancies in 1998, 1999 and the year 2000 ended similarly with abortions at 4, 6 and 3 months respectively. The pattern initial increase in gestation followed by a decrease. Suction curettage was performed after each of these abortions. The second and third abortions started with drainage of liquor, followed by slight vaginal bleeding then labour pains, which culminated with expulsion of the products of conception. There was no preceding febrile illness or trauma and she had no previous history of cervical circlage. She had no dysuria, no vaginal or bleeding and no abdominal pains.

OBSTETRIC AND GYNAECOLOGIC HISTORY

She was a para 0 + 4 who started antenatal clinic as soon as she realised she was pregnant. Her last menstrual period was on 27/11/00, thus her expected date of delivery was on 4/9/01. Her gestational maturity by dates was 15 weeks. Her antenatal profile was normal and the first 15 weeks of her pregnancy were un-eventful. She attained her menarche at age 16 years and her menstrual cycles were regular, occurring after every 28 days. The periods lasted 3 to 4 days and there was no associated dysmenorrhea. She used intrauterine contraceptive device between 1993 and 1996.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant

FAMILY AND SOCIAL HISTORY

She was a married businesswoman dealing with sweaters and she lived with her husband who was a Tour Guide driver at Githurai. She neither smoked cigarettes nor drunk alcohol. There was no history of twins or chronic illness in the family

PHYSICAL EXAMINATION

She was in good general condition, well nourished, afebrile, not pale, not jaundiced and had no pedal oedema. Her blood pressure was 120/70 mmHg, pulse rate was 78 beats minute and was regular. Her respiratory rate was 20 per minute and temperature was 36.7° C

ABDOMINAL EXAMINATION

The abdomen was normally full and moved with respiration. The fundal height was 14 weeks and there was no tenderness or hepatosplenomegally.

VAGINAL EXAMINATION

Speculum Examination:

She had normal external genitalia and normal vaginal mucosa. The cervix was short, but there were no anatomical defects and no cervicitis. There was no abnormal discharge or bleeding.

Digital Examination:

The cervix was 1 cm long and the internal Os admitted one finger. There were no palpable defects and there was normal vaginal discharge on examining fingers.

OTHER SYSTEMS

The breast, respiratory system, cardiovascular system and central nervous system were essentially normal.

DIAGNOSIS

A diagnosis of bad obstetric history (BOH) secondary to cervical incompetence was made.

MANAGEMENT

She was admitted for MacDonald stitch insertion and the following investigations were performed.

1. **Haemogram:** Haemoglobin 14.8 g/dl, total WBC 8.4 x 10^3 /mm ^{3}, platelets 333 x 10^3/mm ^{3}.
2. **Urea and Electrolytes:** Na^+ 139 mmol/l, K^+ 3.8 mmol/l, Urea 2.9 mmol/l

3. **Ultrasound:** Viable intrauterine pregnancy at 16 weeks. No morphological abnormality seen
4. **VDRL:** Negative
5. **Testing blood sugar:** 3.0 mmol/l
6. **Brucella Test:** Both Brucella abortus and Brucella melitensis were negative
7. **Urinalysis:** pH 6.2, specific gravity 1.010, Protein, Sugar and Leucocytes = nil
8. **Blood Group:** O Rhesus Positive

She was counselled on the nature of diagnosis and management to which she gave informed consent. She was starved from midnight and pubic hair shaved on the morning of operation. She was pre-medicated with 0.6 mg of Atropine Sulphate given intramuscularly half an hour before theatre.

OPERATION: (MACDONALD STITCH INSERTION)

In theatre, general anaesthesia was administered and the patient placed in lithotomy position. Vulvo-vaginal toilet was performed and the operation area draped. Aseptic catheterization was done obtaining clear urine. Examination under anaesthesia confirmed the earlier findings in the ward. The cervix was only 1 cm long and the cervix Os admitted one finger. There were no anatomical defects, no cervicitis and she was not draining liquor. The uterine size was 16 weeks.

An Auvard speculum was inserted to expose the cervix and both anterior and posterior lips were grasped with sponge holding forceps. Gentle traction was applied and number 2 Mersilk suture on round body needle was used to insert a purse string at the level of internal Os, identified as the point where the smooth cervical epithelium joins the ruggaed vaginal mucosa. The needle was directed into the cervical stroma to avoid the endocervical canal. Four bites were taken at 4 o'clock coming out at 2 o'clock, 1 o'clock through 11 o'clock, 10 o'clock through 8 o'clock and 7 o'clock though 5 o'clock. The knot was tied at 6 o'clock, leaving about 1 cm of the string with the knot. The internal Os was made to allow only the tip of the little finger. Haemostasis was achieved and anaesthesia reversed.

POST OPERATIVE CARE.

Vital signs were observed half hourly until she was fully awake then six hourly there after. She was to observe bed rest and she was given Amoxyl 500 mg 8 hourly, Ventolin 4 mg 8 hourly, Phenobabitone 30 mg 8 hourly and Ibuprofen 400 mg 8 hourly. She remained stable on third postoperative day and she was discharged home on above stated medications and booked antenatal

clinic to come after 2 weeks. She was advised to have a lot of bed rest at home, avoid sexual intercourse for at least one week and avoid any strenuous activity. She was instructed to immediately go to the hospital if she experienced lower abdominal pains, drained liquor, vaginal bleeding or vaginal discharge.

The patient came for antenatal care visits as appointed and she made eight visits before she was admitted at 37 completed weeks. The antenatal period was uneventful except for persistent breech presentation until term when she was admitted for removal of the stitch and elective caesarian section. An ultrasound done at 37th week confirmed breech presentation. The stitch was removed after 37 weeks of gestation and she was admitted to be worked up for elective caesarian section.

Pre-Operative Investigations

1. **Haemogram:** Haemoglobin 15.1 g/dl, WBC 10.4 x 10^3 /mm^3, RBC 4.47 x 10^6 /mm^3
   Platelets 330 x 10^3 /mm^3.
2. **Urea and Electrolytes:** Na^+ 141mmol/l, K^+ 4.7 mmol/l, Urea 2.7 mmol/l and
   Createnine 79 µmol/l.

She was counselled on the nature of diagnosis and she gave consent for caesarian section. Blood was taken for group and cross match and two units of whole blood were requested. She was starved from midnight and 5% dextrose drip was put up in the morning. Operation area was shaved and she was pre-medicated with Atropine Sulphate 0.6-mg stat given intramuscularly half an hour before theatre. She was wheeled to theatre with two units of cross-matched blood.

CAESARIAN SECTION

In theatre, the patient was placed supine on the operation table and abdominal examination performed. The fundal height was term, the lie was longitudinal and breech presentation. The foetal head was in the right hypochondrium. Foetal heart rate was 144 beats per minute and was regular. She had no uterine contractions. She was then placed in semilithotomy position and vulvo-vaginal toilet performed. The perineum was draped with sterile towel and aseptic catheterization done obtaining about 150 mls of clear urine. The catheter was retained in situ to provide continuous bladder drainage during the operation. She was then replaced supine abdomen cleaned and draped.

General anaesthesia was administered and abdomen was opened through a Pfannestel incision in layers. The sides of uterus were packed with sterile gauze roll packs. The visceral peritoneum

reflection between the uterus and the bladder was lifted with tissue forceps, incised and the bladder was displaced deep into the pelvis by blunt dissection with a mounted swab. An elliptical incision was made in the lower uterine segment, bulging membranes punctured and some clear amniotic fluid allowed to escape. A live male infant who weighed 2800 grams was delivered by breech extraction. It had umbilical cord loosely round the neck once and the Apgar score was 7 at one minute, 8 at five minutes and 10 at ten minutes. The placenta, which was located fundo-posterior, was delivered complete by controlled cord traction. The uterine cavity was cleaned and uterine wall edges held with green Armitage clamps was sutured in three layers achieving haemostasis. The packs were removed and peritoneal cavity wiped clean of blood clots and liquor.

The pelvic organs were inspected and the uterus was noted to have several small fibroids measuring about 1.0 to 2.0 centimetres in diameter scattered throughout the corpus uteri. The fallopian tubes, ovaries and cul-de-sac were grossly normal. Instrument and swab count was reported correct and the abdomen was closed in layers. Vulvo-vaginal toilet was done with gentle massage of the uterine fundus to expel blood clots. The urine was found clear postoperative and catheter was removed. Anaesthesia was reversed successfully. Estimated blood loss was 700 mls.

POST OPERATIVE CARE

Vital signs were observed quarter hourly until she was fully awake then four hourly there after. Intravenous fluids; normal saline and 10% dextrose were given 500 mls four hourly until bowel sounds were oscultated. Intramuscular Pethidine 100 mg was given 8 hourly for 48 hours followed by oral Ponstan 500 mg 8 hourly for pain relive. Antibiotics Crystalline Penicillin 2 mega units 6 hourly Gentamycin 80 mg 8 hourly were given for 3 days then she was changed to oral Amoxycillin 500 mg 8 hourly. On the third postoperative day check haemoglobin concentration was found to be 11.6 g/dl. Postoperative recovery was uneventful and all stitches were removed on the 7th post operative day. Both the mother and baby were discharged home to be followed up at postnatal clinic after six weeks. She was advised to similarly start antenatal care during the first trimester in subsequent pregnancies, as she will require similar insertion of MacDonald stitch.

FOLLOW UP

The patient never turned up for review on the appointed date and she was lost to follow up.

DISCUSSION

The patient presented here was a 34 years para 0 + 4 with bad obstetric history secondary cervical incompetence. She had four consecutive pregnancy losses during mid trimester, with two of them starting with drainage of liquor followed by labour, which culminated with expulsion of products of conception. Clinically she was found to have a very short cervix and the cervical Os was open, but there were no anatomical defects. She was successfully managed with circlage using MacDonald technique. The stitch was removed after 37 weeks gestation and she was delivered to a live male infant through elective caesarian section due to breech presentation.

Cervical incompetence is a clinical condition characterized by repeated second trimester or early third trimester pregnancy losses due to cervical inability to maintain the pregnancy until term due to its weakness [1,2,3]. Some authors also define it as cervical effacement and dilatation in mid trimester or early third trimester of pregnancy with singleton live normal foetus in the absence of uterine contractions and uterine body abnormalities [2,3]. The condition was first described by Palmar and Laconne in 1948 and similar descriptions were also made by Lash and Lash in 1950 and Shirodkar in 1983 [13]. Cervical incompetence is characterized by relatively painless dilatation of the cervix in second and early third trimester with prolapse and ballooning of membranes into the vagina followed by rupture of membranes and rapid expulsion of an immature foetus [1,3]. Unless effective treatment is given this sequence of events tend to repeat in each pregnancy and repeated pregnancy loss is a terrible traumatic experience for any woman. The patient presented had four consecutive pregnancy losses at gestation ranging from 3 to 6 months which started with drainage of liquor followed by labour and expulsion of immature foetuses.

The incidence of cervical incompetence globally ranges from 0.05 to 1% of all pregnancies and it accounts for about 16% of all mid trimester abortions [1,2]. Locally Njagi found an incidence of 1.1% at Kenyatta National Hospital[4]. The higher figure of our hospital may be explained by the fact that it is a referral hospital catering for high-risk pregnancies.

The actual cause of cervical incompetence is still obscure and only circumstantial evidence has been used to establish the aetiology. Previous cervical trauma sustained during previous deliveries or from dilatation and curettage, conization, cauterization and amputation has been found to be the main aetiologic factor in many cases. The occurrence of the condition in pramigravidas suggests congenital weakness and some investigations have found a state affecting collagen distribution in the cervix.

There is abundance of muscle tissue with sparse connective tissue, the opposite of the distribution in a normal cervix. In this congenital type, physical examination reveals normal cervix, but sudden pregnancy loss occurs at 18 to 20 weeks gestation. A physiological dysfunctional disorder has also been demonstrated in some cases. Prenatal exposure of Diethyl Stilbestrol (DES) as been associated with associated with increased incidence of cervical incompetence in their daughters [1,3,6,8]. In the Kagia series, one third of the patients studied had previous history of abortion followed by evacuation [7]. Our patient was found to have a short cervix with no anatomical defects but no clear predisposing factors could be ascribed. A careful history alone can lead to a presumptive diagnosis of cervical incompetence. There may be a previous history of recurrent mid trimester abortion or early third trimester pregnancy loss. The classical picture of sudden spontaneous rupture of membranes preceded by sensation of a mass herniating into the vagina, followed by relatively painless often rapid labour may be elicited in many cases. A history of decreasing gestational age of the lost pregnancies is collaborative. There may be previous history of birth cervical tears, dilatation and curettage or cone biopsy. Physical examination by direct visualization using speculum may reveal progressive dilatation and effacement of the cervix during pregnancy. A short cervix less than 2.5 cm in length with dilatation or bulging membranes may be observed. Anatomical defects from previous trauma may be noted [1,2,3,6]. The patient presented had four previous mid trimester abortions with relatively rapid painless labour preceded by spontaneous rupture of membranes. Physical examination revealed cervical effacement demonstrated by a short cervix, which was only 1 cm in length and dilatation of 2 cm at internal Os. At caesarian section, several small fibroids were noticed. They were missed by the ultra sound performed at 16 weeks probably because of their small size. Larger fibroids will also contribute to abortion and pre-term labour.

The history and physical examination may be obscure so that confirmation of the diagnosis cannot be reliably made. Several diagnostic techniques have been employed. In pregnancy, Trans-vaginal ultrasound performed at 14 to 30 weeks may demonstrate a short cervix with funneling of internal Os with protrusion of chorioamniotic membranes into endocervical canal. Outside pregnancy, the following tests may be used to collaborate the history and physical findings. An incompetent cervix will easily allow the passage of size number 8 (8 mm diameter) Heger's dilator. Traction test of Bergman and Svenerund may be performed. A ballooned catheter placed inside the uterine cavity with external traction using a weight 600 grams is positive if the balloon falls out. A hysterosalpingogram at antero-posterior view with cervix pulled down may demonstrate funneling

and shortened endocervical canal[1,2,3,8]. The patient presented was not subjected to these confirmatory tests.

Baden and Baden in 1960 suggested a grading system in which the severity of cervical incompetence can be shown [5].

Baden and Baden Grading 1960 [5].

Grade I (mildest form): Premature delivery occurs at 30 to 36 weeks.

Grade II (moderate): Abortion occurs between 24 and 30 weeks

Grade III (severe) : Abortion occurs between 18 and 24 weeks

Grade IV (very severe): Abortion occurs before 18 weeks gestation

They found 100% term pregnancy rates outcome with cerclage of grade I and II compared to 25% in grades III and IV. In our patient, pregnancy losses occurred at gestation age up to 6 months, thus she can be placed in grade III. She attained a term pregnancy.

The treatment of cervical incompetence in pregnancy involves mechanical strengthening of the weak uterocervical junction achieved by various cerclage techniques. The commonest cervical cerclage method is the MacDonald stitch technique, which involves application of a non-absorbable purse-string suture at the level of internal Os. This procedure is popular because it is technically simple and less traumatic than both conventional and modified Shirodkar method in application and removal. It does not require mucosal dissection unlike the Shirodkar. However, both have similar success rates of 85 – 90% of foetal survival [1,6]. The placement of Shirodkar suture may be done by using a strip of Fascia Lata or Mersiline tape tied submuscularly around the isthmus of the cervix after vaginal mucosa and bladder have been reflected. The suture is difficult to remove often leading to caesarian mode of delivery, which if the suture is less in situ, may be complicated by lochia outflow obstruction. The conventional Shirodkar technique requires laparotomy while the modified techniques uses Trans-vaginal route with double needle ligature instead of Mersiline tape allowing it to be performed even during pregnancy [1,3,6].

Best results of the cerclage are achieved when it is placed at 14th to 19th week of gestation by dates, and before cervical dilatation of 3 cm is reached. After 19th week cerclage is technically difficult due to cervical effacement and is associated with increased complication rates especially preterm labour, rupture of membranes and chorioamnionitis. The 14th week lower limit has been chosen by consensus

because at this gestational age ultrasound can be performed to confirm viability and rule out major congenital anomalies. It also allows the first trimester causes of abortion to elapse especially chromosomal abnormalities [1,2,4,6]. It has also been established that before 15 weeks of gestation the amniotic fluid pressure and the weight of the products of conception exerted on the cervix are not able to cause abortion by mechanical causes [1,3]. Contraindications for cerclage include uterine bleeding, uterine contractions, drainage of liquor, polyhydramnios, intrauterine foetal death, cervicitis and obvious congenital abnormalities such as hydrocephalus and anencephalus [1,3,6]. The patient presented had MacDonald stitch inserted at 16th week of gestation by date.

Before the cerclage is performed, viability of the foetus should be confirmed by ultrasound, which will also rule out obvious congenital anomalies, multiple pregnancy and polyhydramnios. It is also important to rule out other common causes of abortion as was done in our patient. Tests are performed to rule our diabetes mellitus, Rhesus incompatibility, thyroid disease, uterine fibroids and infections such as Syphilis, Brucellosis, HIV and Toxoplasmosis. Where possible a pap smear and investigations to rule out Auto-immune disease may be carried out [1,3,6].

The MacDonald stitch is removed after completing 37 weeks or at any time before this if the patient goes into labour, has got ruptured membranes, has uterine bleeding or intrauterine foetal demise. It may also be removed in case of chorioamnionitis. Removal of the stitch would permit vaginal delivery. It can also be left in situ if delivery is by elective caesarian section, although this may interfere with flow of lochia, thus increasing the chances of infection [1,3]. For this reason the MacDonald of our patient was removed after 37 weeks completed weeks, despite her being worked up for elective caesarian section.

The main complications of cerclage include haemorrhage, rupture of membranes, chorioamnionitis, abscess formation from haematomas and infections including septicemia. The fibrosis of the cervix from cerclage wound may cause cervical dystocia. If labour ensures when the stitch is in situ cervical amputation, cervical tears, vesico-vaginal fistula and uterine rupture may occur. Inflammatory process in the cervix following stitch insertion may induce preterm labour. Intrauterine foetal death may follow any of the above stated complications [1,3,6]. The patient presented did not develop any of the complications.

Other methods that have been used to strengthen the cervix include the Lash procedure, Trachelorrhaphy and Tracheloplasty. Lash procedure requires laparotomy to perform and often require caesarian delivery like conventional Shirodkar technique. Trachelorrhaphy and Tracheloplasly have been associated with increased incidence of complications including cervical scarring and stenosis, which interfere with sperm transport to cause infertility. These three methods have fallen out of favour in preference to MacDonald stitch and modified Shirodkar, which is used for cases which MacDonald stitch has failed[1,3,6].

The results of cervical cerclage are difficult to assess because the diagnosis of cervical incompetence may not be with certainty in every case. Current worldwide reports indicate success rates of 85 to 90% in respect of foetal survival [1,3,6]. MacDonald himself reported term pregnancy rates of 85.5% while Shirodkar reported 70 to 85% success rates [2]. Locally Njagi reported 64.2% foetal survival rates and 53% term pregnancy rates in 1978 [4]. Ruminjo reported 69.5% term pregnancy rate and 78.1% foetal survival rate in 1991 [7]. When these procedures are performed at the right time to carefully selected patients, the pregnancy is prolonged long enough to allow foetal salvage, thus preventing the physical emotional and economic trauma of mid trimester pregnancy loss to the mother and family members.

Block and Rahhal 1976 [9] proposed a scoring system which was based on clinical and historical data of the patient to ascertain the diagnosis and the likely prognosis. Each of the five parameters considered is scored one point if present and thus a maximum of five points and minimum of zero. The parameters considered include the following:

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

A score of 3 or more points has statistically more successful outcome with cerclage.

Prevention of cervical incompetence may be achieved by preventing some of the causative factors. Obstetric injuries may be avoided by good obstetric practices such as avoiding bearing down before full cervical dilatation and immediate repair of cervical tear. Dilatation and curettage for inducing abortion be avoided by using contraception to prevent unwanted pregnancy.

REFERENCE

1. Cunningham F.G., MacDonald P.C., Gant N.F et al

   Abortion: Incompetence Cervix. In Williams Obstetrics 19th edition.

   Appleton and Lange publications. Stanford Connecticut page 673: 1997

2. MacDonald J.R.

   Cervical incompetence.

   Clinical Obstet. Gynecol: 7; 461: 1980

3. Rock J.A, Thompson J.D

   Management of abortion. In Te Linde's Operative Gynaecology.

   Lippincot – Raven Publications. Philadelphia USA page 477: 1997

4. Njagi P.E.M.

   Cervical cerclage for management of cervical incompetence at Kenyatta National Hospital.

   Mmed Thesis University of Nairobi 1978

5. Baden W.F, Baden E.E

   Cervical incompetence: Current therapy

   Am. J Obstet. Gynecol: 79; 545: 1960

6. Angeria A.H., Reynods R.A.

   A review of cervical incompetence.

   Journal of Reproductive Medicine. vol. 32: 161: 1998

7. Ruminjo J.K, Nuwengubu E.

   Experience with MacDonald's Cervical Cerclage in a rural setting.

   East African Medical Journal vol. 68 No. 8: August 1991

8. Okitsu O., Mimura T., Nakayama T.

   Early prediction of preterm delivery by Trans-vaginal ultrasound.

   Obstet. Gynecol Survey 48 (8): 519; 1994

9. Block R.A, Rahhal P.

   Cervical incompetence: A diagnosis and prognostic scoring system.

   Obstet. Gynecol 48:504; 1976.

Case No. 3

OBLIQUE BREECH PRESENTATION - CAESARIAN SECTION WITH LIVE BABY

NAME	:	A.W	D.O.A	:	21/10/01
AGE	:	28 YEARS	D.O.D	:	28/10/01
IP NO.	:	0768338	D.O. OP	:	24/10/01
PARITY	:	2+0			

PRESENTING COMPLAINTS

She was admitted to prenatal ward through labour ward with complaints of lower abdominal pains and lower back pains for one day.

HISTORY OF PRESENTING COMPLAINTS

The patient was well until the afternoon of the admission date when she developed slight lower abdominal pains radiating to her lower back. The pain did not increase in intensity or frequency and it gradually subsided with bed rest. There was no associated per vaginal bleeding or discharge, dysuria or frequency of micturition and she had not drained liquor. During her last antenatal clinic visit she had been advised to go to labour ward if labour pains or drainage of liquor commences before admission date.

HISTORY OF PRESENT PREGNANCY

The first day of her last menstrual period was on 12/01/01. The expected date of delivery was on 19/10/01 giving gestational maturity of dates to be 40 weeks and two days. She attended antenatal clinic seven times at Kenyatta National Hospital starting at 26 weeks gestational age. Her haemoglobin concentration was 10.4 g/dl, VDRL was negative, blood group was A and Rhesus group positive. She was put on hematinics, which successfully raised her haemoglobin concentration to 12.2 g/dl at 40 weeks. Otherwise, the antenatal period was uneventful. As from 36 weeks gestation the presentation and lie of the foetus alternated between transverse lie and oblique breech presentation. She had been planned for elective caesarian section at 38 weeks but she did not turn up for admission opting to come in labour.

PAST OBSTETRIC AND GYNAECOLOGICAL HISTORY

She attained her menarche at age 15 years. Her menses came regularly every 28 days and the flow lasted 4 to 5 days. There was no associated dysmenorrhea. She was para 2 + 0 with last delivery in 1996. Her first delivery in 1994 was spontaneous vaginal delivery at home, while the second delivery was also spontaneous vaginal delivery at a private health institution. The baby weighed 3.5 kg at birth and both children are alive and well. She used oral combined pills for contraception between 1998 and December 2000 when she stopped to conceive.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant

FAMILY AND SOCIAL HISTORY

She was a married housewife who lived with her husband at Kayole where they operated a hair saloon. She consumed moderate amounts of alcohol but she stopped when she realized she was pregnant. She did not smoke cigarettes. There was no history of twins or chronic illness in her family.

PHYSICAL EXAMINATION

General Examination

She as in good general condition, well nourished, afebrile, not pale, not jaundiced and no oedema.

The blood pressure was 100/60 mmHg, pulse rate was 78 beats per minute, respiratory rate was 20 per minute and temperature was 36.4° C.

ABDOMINAL EXAMINATION

The abdomen was uniformly distended by gravid uterus with a fundal height corresponding to a term gestation. The single foetus was in transverse lie. The foetal head was felt on the left size adjacent to the lumber region and the foetal heart rate was 134 regular. There were no palpable contractions and no hepatosplenomegaly.

VAGINAL EXAMINATION

External genitalia were grossly normal. The cervix was soft, closed, centrally located and about 2 cm long. The sacral promontry was not easily reached, the sacrum was smooth and concave, ischial spines not prominent and inter-tuberous space accommodated four knuckles. There was normal vaginal lischarge on the gloved examining fingers.

OTHER SYSTEMS.

The breast, cardiovascular, respiratory and central nervous systems were essentially normal.

OBSTETRIC ULTRASOUND

An obstetric ultrasound done two days prior to admission (on 18/10/01) revealed a single viable intrauterine pregnancy at term in breech presentation. The foetal heart rate was 146 beats per minute. The feet were noted to be presenting at the lower uterine segment adjacent to the cervix. There were no gross foetal abnormalities. The placenta was fundo-posterior and amniotic fluid volume was adequate.

DIAGNOSIS

A diagnosis of unstable breech presentation at term was made. She was not in labour.

MANAGEMENT

She was planned for elective caesarian section and she was send to the pre-natal ward for work up. The diagnosis was explained to her together with the planned mode of delivery. She gave informed consent for elective caesarian section.

Further Pre-Operative Investigations

1. Haemogram: Haemoglobin concentration was 12.2 g/dl,
   Red blood morphology reported as normocytic normochromic.
   Total WBC count = 9.2 x 10≥/ mm≥
   Platelets = 271 x 10≥/ mm≥
2. Urea & electrolytes = Na^+: 142 mmol/l, K^+ : 3.9 mmol/l
   BUN= 2.1 mmol/l, createnine 85 ∝ mmol/l
3. Blood for group and cross match: Blood group was A, Rhesus group was positive and two units of cross-matched blood were requested.

On the morning of operation the patient was starved from midnight and an intravenous drip with 5% Dextrose set up. The operation area on the abdomen was shaved and she was pre-medicated with 0.6 mg of Atropine sulphate given intramuscularly. She was taken to labour ward theatre with two units of cross-matched blood.

CAESAREAN SECTION

In theatre, the patient was placed supine on the operation table and abdominal examination performed. The foetus was found to be in oblique lie with head at the left lower rib cage border around the left hypochondrium. The breech was in the right pelvic region. Foetal heart rate was 136 beats per minute

and there were no uterine contractions. She was placed in semilithotomy position and vulvo-vaginal toilet done. The perineum was draped with a sterile towel and aseptic cathetarization done obtaining about 100mls of clear urine. Vaginal examination revealed a closed soft and long cervix. The catheter was left in situ to provide continuous bladder drainage of urine during the operation. She was replaced supine, abdomen cleaned and draped. General anaesthesia was induced and abdomen opened via a lower sub-umbilical midline incision. The sides of uterus were packed with gauze roll packs. The visceral peritoneum reflection between the uterus and bladder was lifted, incised and the bladder was displaced deep into the pelvis by blunt dissection with mounted swab. Lower uterine segment caesarian section was done and a life male infant with birth weight 3550 grams, who scored 8 in one minute and 10 in 5 minutes with respect to Apgar scores, was delivered. The delivery was achieved by breech extraction. The foetus was noted to be complete breech type. The placenta, which was located fundo posterior, was delivered whole by controlled cord traction. The uterine cavity was wiped and uterine wall as sutured in 3 layers achieving haemostasis. The packs were removed and peritoneal cavity wiped to clear blood clots and liquor. Instrument and swab count correct the abdomen was closed in 4 layers. Vulvo-vaginal toilet was done with gentle massage of the uterus to expel clots. The catheter was removed and urine was found to be clear post operatively. Anaesthesia was reversed successfully. Estimated blood loss was 450 mls.

POST OPERATIVE CARE

The patient's vital signs were observed half hourly until she was fully awake then four hourly there after. Intravenous fluids normal saline and 10% Dextrose were given 500 mls four hourly until bowel sounds were osculated. Intramuscular Pethidine 100mg was given every 8 hours for 48 hours to relieve pain followed by oral Mefenamic acid 500 mg three times a day. Antibiotics Crystalline Penicillin 2 mega units 6 hourly and Gentamycin 80 mg 8 hourly were given for 72 hours then she was changed to oral Amoxycilin 500 mg 8 hourly. On the third postoperative day a check haemoglobin concentration was found to be 10.6 g/dl. On the fourth postoperative day the wound was exposed and was found to be healing well. She was discharged home on 28th October 2001 for removal of stitches at health facility nearest to her home. She was also booked postnatal clinic to be seen after six weeks.

FOLLOW UP

The patient was seen at postnatal clinic on 7th December 2001 together with the baby and both were found to be healthy. She was not pale, the breasts were not engorged and the operation area had healed well. She had not resumed her menses. She was counseled on family planning and referred to clinic 66 to get appropriate contraception.

DISCUSSION

The patient presented here is a 28 years old para 2 + 0 with unstable breech presentation at term, who was delivered by elective caesarian section. She delivered a live baby with birth weight 3550 grams who got a good Apgar score.

Breech presentation occurs when foetal pelvis or lower extremity engaged in the maternal pelvic inlet [1]. There are 3 types of breech presentation distinguished by the foetal attitude. The most frequent type is **frank breech** (65%) in which both legs are extended over the foetal chest. The **complete breech**, which occurs in about 10% of cases, has both thighs flexed on the abdomen but both knees are flexed. **Footling or incomplete breech** has one or both legs extended below the level of the foetal buttocks accounts for approximately 25% of all breeches [1,2]. This patient presented with a complete breech type.

The global incidence of breech presentation is 3 to 5% at term [1,2]. Njuki found the incidence of breech presentation at Kenyatta National Hospital to be 3.5%[3]. The incidence of singleton breech presentation is more frequent with prematurity. The incidence of singleton breech presentations by gestational age was found to be about 3 to 4% at term, 8 to 10% at 34 weeks 25% at 30 weeks and 30-35% at less than 28 weeks gestation [1].

In over 50% of cases, the aetiology of breech presentation is unknown. Among the known causes prematurity is the commonest cause for breech presentation. During second and early third trimester, the foetus size in relation to the uterine volume allows almost free movement with change in position and lie. As term approaches the uterine volume becomes limited and the breech tends to occupy the move roomy fundal region. Other foetal causes include, multiple gestation, congenital abnormalities especially hydrocephalus and anencephalus, congenital dislocation of the hip, spina bifida, meningomyelocele, congenital skeletal deformities and chromosomal anomalies. Foeto maternal factors include polyhydramnios, oligohydramnios, placenta previa and multiparity. Uterine abnormalities such as bicornuate uterus, presence of septa, presence of uterine fibroids especially in the lower segment and other pelvic tumours. A contacted pelvis also predisposes to breech presentation. Most of these listed factors either prevent spontaneous version to cephalic as term approaches or cause delivery to occur prematurely before the spontaneous version occurs [1,2]. Some authors [5] found that cornual- fundal implantation had occurred in 75% of breech presentation compared to 5% in cephalic presentation. Njuki [3] found congenital malformations in 4% of patients with breech presentation at Kenyatta National Hospital and 82.7% of all women with breech presentation were multiparous. The

patient presented here did not have any obvious predisposing factors except multiparity (she was para 2 + 0 gravida 3)

The diagnosis of breech presentation is mainly clinical. Performance of Leopold's first maneuver and ballotment at the fundus encounters the hard and rounded fetal head. The softer ill-defined breech is located in the lower segment of the uterus. The foetal heart sounds are best heard above the umbilicus in breech presentation. Per vagina, the sacrum with soft tissues are palpated in comparison with the firm rounded head in cephalic presentation. In established labour with ruptured membranes, the leg or foot of footling breech may be found prolapsing through the cervix[1,2]. In the patient presented here, the foetal head was palpated at left hypochondrial region and foetal heart tones were best heard above the umbilicus.

The most useful investigation is obstetric ultrasound to confirm the diagnosis and most importantly to document the foetal size, attitude, estimate foetal weight, foetal abnormalities such as hydrocephalus or anencephalous, placenta location, rule out multiple gestation and the quality of liqour[2,4,6]. Clinically the foetal weight may be estimated by multiplying the symphysial-fundal height with the widest abdominal girth in centimeters and subtracting 450 [8]. In the patient presented obstetric ultrasound done at about 40 weeks confirmed the breech presentation with baby's feet noted in the lower segment of the uterus. There were no congenital abnormalities no abnormal placenta location and no polyhydramnios. However, no foetal weight estimation or baby's attitude was done both sonographycally or clinically. If this patient went into labour with rupture of membranes there was likelihood of footling breech presentation. Footling breech is commonly associated with cord prolapse, trapped head when one of the femurs is extended and is also associated with increased foetal mortality and morbidity therefore it is an indication for caesarian delivery [2,9,10].

If vaginal delivery is planned, clinical and radiological pelvimetry must be done to rule out those with borderline pelvis. The location of the foetal skeletal parts in relation to maternal pelvis can also confirm breech presentation. The foetal head will be high up in the abdomen while the foetal pelvis will be closely related to the maternal pelvis. With availabily of ultrasound abdomino–pelvic X-ray is not routinely performed for diagnosis to avoid unnecessary exposure of the foetus and mother to radiation [8,9].

The management of breech presentation before and during labour is controversial but the modes of management can be external cephalic version, vaginal breech delivery and caesarian section. During antenatal care period the first consideration is for external cephalic version (ECV)[6,7]. However, it is not considered before 34 weeks gestation as the foetus often reconverts to breech presentation due to the excessive room and liquor in the uterus. The procedure may be performed with or without tocolytic, and repeat procedures may be done under spinal anaesthesia. It is preferably performed at term to

avoid preterm delivery if complications arose during the procedure. External cephalic version should only be performed in a facility equipped for emergency caesarian section. The procedure involves external rotation of the foetus from a breech presentation to cephalic presentation. It has a success rate of approximately 65% and it is quite safe. E.C.V. is contraindicated in presence of Rhesus-issoimunization because it increases the risk of foeto maternal haemorrhage and sensitization. It is also contra indicated during labour, when membrane have ruptured, in oligohydramnios, pregnancy induced hypertension, placenta abruptio, multiple gestation and in previous caesarian section scars. The complications of external cephalic version include placenta abruptio, cord entanglement resulting in foetal distress or demise, rupture of membranes with drainage of liquor and rarely rupture of uterus [1,6,7].

Vaginal delivery of breech presentation is an option but it is not a common practice due to the increased morbidity and mortality associated with it, especially when conducted by inexperienced or unskilled personnel. But, there is also a controversy that caesarian delivery increases maternal morbidity and mortality above that of vaginal delivery [8]. With primigravidas, the obstetrically untested pelvis, the tight perineum together with the anticipated poor co-operation from the mother during second stage of labour has made most clinicians to opt for caesarian delivery [8,9]. At Kenyatta National Hospital, all primigravidas with breech presentation are delivered by caesarian section, unless they present in second stage when caesarian section is not feasible.

Vaginal delivery of breech presentation needs strict guidelines to avoid morbidity and mortality. The criteria varies from place to place. The prognostic Zatachni and Andros index used to assess the possibility of vaginal breech delivery takes into consideration the following factors:- parity, previous history of vaginal breech delivery, gestational age in weeks, estimated foetal weight, foetal attitude in utero and adequate pelvis. The parity should be one or more and the mother should have delivered successfully a breech of average weight vaginally before. The estimated foetal weight to between 2500 and 3500 grams and the gestational age be 34 weeks or above. The foetal attitude should be well-flexed foetus with flexed head. A score of one is awarded when the factor is favorable for vaginal breech delivery and zero given when not favorable. A total score of 0 to 3 is considered unfavorable for vaginal breech delivery and should be delivered via caesarian section. Frank breech presentation is more favorable for vaginal breech delivery than complete breech presentation. The delivery should be conducted by an obstetrician experienced in vaginal breech delivery assisted by experienced midwives [2,3,8].

At Kenyatta National Hospital vaginal delivery is only allowed if true conjugate on erect lateral pelvimetry is 11.5 cm or more and other pelvic dimensions adequate. Foetal weight estimate should be between 2500 grams and 3500 grams. Other criteria for vaginal breech delivery include advanced labour, documented lethal fatal abnormalities, pre-viable foetus less than 28 weeks gestational age, flexed foetal head and gestation age between 34 and 40 weeks.

The main hazards of vaginal breech delivery are the increased neonatal morbidity and mortality due to birth trauma and asphyxia, which are related to cord compression and the difficulty of delivering the after coming head. Hyperextension of the neck is associated with a high incidence of spinal cord transection if delivered vaginally. Other complications associated with breech presentation include: cord prolapse, cord compression, tears of Tentorium carebellae, intra cranial haemorrhage, hip joint dislocations, cervical nerve plexus injuries, fracture of foetal humerus, femur clavicle and maternal cervical tears including vesico-vaginal fistulae [2,4,10].

There is no firm evidence to recommend elective caserean section in all cases of breech presentation. However, the presence of other obstetric risk factors such as primigravidity, contracted pelvis or borderline pelvis, large foetus, footling breech, extended foetal head and congenital malformations such as hydrocephalus and conjoint twins make both elective and emergency caserean sections necessary. All patients who do not meet the requirements of trial of vaginal breech delivery are delivered by elective caserean section [2,9,10]. The patient presented was delivered by elective by caserean section as she was considered high risk. She had not previously delivered a breech vaginally, the lie of the foetus was unstable, and the attitude of the foetus had not been adequately determined.

Koo [10] found that even after strict selection of patients vaginal delivery of breech presentation was associated with increased neonatal morbidity compared to elective caserean section. In Kenyatta National Hospital Njuki [3] found perinatal mortality of breech deliveries as 516 per 1000 live births. Babies with birth weight less than 2500 grams had mortality rate of 439.1 per 1000 live births and those with birth weight less than 1500 grams had mortality rate of 100% irrespective of the mode of delivery.

It is the practice of many obstetricians to deliver all patients presenting in breech presentation by elective caserean section. This may be supported by the substantial excess risk of neonatal morbidity in vaginal delivery compared to caserean section.

REFERENCE

1. Collea J.V

   Mal-presentation and cord prolapse.

   Current Obstetric and Gynaecological diagnosis and treatment. 7th edition.

   Appleton and Lange publications. USA page 401:1991

2. Malvern J.

   Abnormal foetal presentations: Breech presentation

   Turnbull's Obstetrics. 2nd edition.

   Churchill Livingston publications. Edinburg England page 666:1995

3. Njuki S.K.

   Breech presentation at Kenyatta National Hospital. Mode of delivery and outcome.

   Mmed thesis, University of Nairobi 1979.

4. Failt G, Daniel Y, Lessing B et al

   Outcome of 496 term singleton breech deliveries in a tertiary center.

   Am.J of Perinatology: 15(2) 97-101: 1998

5. Fiano S, Vancheunkova V.

   The site of placental attachment as a factor in the aetiology of breech presentation.

   Acta. Obstet Gynecol Scand. 57: 371: 1978.

6. Norchi S, Tenore A.C, Lovotti M. et al

   Efficacy of external cephalic version performed at term.

   European J. Obstet Gynecol and Reproductive Biology page 76 (2) 161-3: 1998

7. Mohammed K, Seeras R, Coulson R.

   External cephalic version at term. A randomized controlled trial using tocolytics.

   British J. Obstet. Gynecol 98 (1): 8 ; 1991.

8. Irion O., Hirsbrunner A.P, Morabic A.

   Planned vaginal delivery versus elective caserean section. A study of 705 singleton term breech presentations.

   British Jrn. Obstet. Gynecol: 105 (7); 710-717: 1998

9. De-leeuw J.P, De-Haan J, De-Ron R et al.

   Indications for caserean section in breech presentation.

   European J. Obstet. Gynecol and Reproductive Biology : 78 (1) 19-24: 1998

10. Koo M.R., Dekker G.A., Von-Geifn H.P.

    Perinatal outcome of singleton term breech deliveries.

    Am.J Obstet. Gynecol part 1 vol. 172 (2) 518. Feb. 1995

Case No. 4

DEEP VENOUS THROMBOSIS IN PREGNANCY- LIVE BABY

NAME	:	P.W.	PARITY	:	1 + 1
AGE	:	25 YEARS	L.M.P.	:	21/04/01
IP NO.	:	0771478	E.D.D	:	28/01/02
D.O.A	:	06/11/01	MATURITY	:	28 WEEKS
D.O.D	:	16/11/01	READMISSION	:	21/01/02
			DISCHARGE	:	10/02/02

PRESENTING COMPLAINTS

The patient was admitted through antenatal clinic with complains of right leg pain and swelling for three days.

HISTORY OF PRESENTING ILLNESS

She was well until three days prior to admission when she developed sharp pain in the calf and ankle region of her right leg, which was followed by swelling. The swelling and pain were progressive. The pain was made worse by walking and was partially relieved by resting the leg together with taking Paracetemol. By the third day the pain and swelling had made walking very difficult. There was no preceding history of trauma or sores in her right lower limb and no difficulty in breathing or chest pains

HISTORY OF CURRENT PREGNANCY.

The first day of her last menstrual period was on 24/4/01, thus her expected date of delivery was on 28/01/02. Her gestational maturity by dates was 28 weeks and 3 days. She had just booked antenatal care clinic at Kenyatta National Hospital at 28 weeks gestation. She resumed antenatal visits after treatment and made four more visits before she was readmitted at 28 weeks to be converted to heparin. Her antenatal profile showed mild Anaemia with haemoglobin concentration as 9.6 g/dl. Her blood group was O and Rhesus positive, while VDRL and ELISA for HIV tested negative.

PAST OBSTETRIC AND GYNAECOLOGIC HISTORY

She was a para 1 + 1 with last delivery in February 2001, which culminated with intrauterine foetal death (IUFD) at term due to severe pre-eclamptic toxemia (PET). Her blood pressure became normal soon after the delivery. Her first pregnancy ended with a spontaneous abortion at 2 months gestation

in 1999. The puerperal period was un-eventful and there was no history of deep venous thrombosis in her previous pregnancies.

She attained menarche at age 15 years and her menstrual cycles were regular occurring after every 28 days. The periods lasted 4 days and there was no associated dysmenorrhea. She had never used any method of contraception.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant.

FAMILY AND SOCIAL HISTORY

She was a married housewife who was un-employed and lived with her husband at Makadara. Her husband was a businessman in town. She neither took alcohol nor smoked cigarettes and there was no family history of chronic illness or twins.

PHYSICAL EXAMINATION

General Examination

She was in good general condition, mildly pale, afebrile, not jaundiced, not cyanosed and had no lymphadenopathy. Her blood pressure was 110/60 mmHg, pulse rate was 80 beats per minute, respiratory rate was 20 per minute and temperature was 36.8°C

LOCAL EXAMINATION

The right leg and ankle were moderately swollen, tender and warmer than the other leg. The swelling involved more of the lower half of the leg and ankle region. The right calf muscles were tender on palpation. The circumference of the right leg taken 20 centimeters above the medical maleolus was 32.0 cm, while the left leg at some reference point was 30.5 cm. The circumferences of the right and left thighs were equal.

ABDOMINAL EXAMINATION

The fundal height was 30 weeks, the foetal lie was longitudinal, cephalic presentation and the foetal heart was heard, and was regular at 144 beats per minute. There were no contractions.

PELVIC EXAMINATION

This was not done as it was not indicated

OTHER SYSTEMS

The breasts, respiratory system, cardiovascular and central nervous systems were essentially normal.

DIAGNOSIS

A working diagnosis of right leg deep venous thrombosis in early third trimester was made.

MANAGEMENT

The patient was informed the nature of diagnosis and was admitted for bed rest, right lower limb elevation, anticoagulation and analgesia. She was started on heparin infusion at the rate of 10,000 international units (IU) every 8 hours until symptoms subsided. The symptoms subsided after five days of this trestment. She was also put on Ibuprofen 400 mg 8 hourly for analgesia together with junior Aspirin 75 mg once daily. The following investigations were ordered and carried out.

Investigation Results

1. **Haemogram**: Hb 9.8 g/dl, WBC 7.0 x 10^3 /mm^3, differential counts, Neutrophils 62.7%,
   Lymphocytes 28.6%, Monocytes 7.1%, Eosinophils 1.5%
   Platelets 311 x 10^3 /mm^3
   RBC Morphology: Mild hypochromasia and slight anysocytosis.
2. KCCT: (on 8/11/01) Test = 37 seconds, control 27 seconds
   (on 12/11/01)Test = 40 seconds control 31 seconds
   (on 1/02/02) Test = 43 seconds control 30 seconds
3. INR: (on 1/02/02) 3.2
4. PTI: (on 14/01/02) Test = 14 seconds control 12 seconds. INR = 1.17
   (on 22/01/02) Test 17 seconds control 13 seconds INR = 1.31
5. Blood Group: O Rhesus positive
6. VDRL: Negative
7. ELISA for HIV: Negative

8. **Doppler Ultrasound**: (on 7/11/01). The Doppler Ultrasonography of the right lower limb showed a large partially occluding thrombus in the calf and femoral veins (CFV). The CFV showed poor colour filling and poor response to Valsalva maneuver and was only partially compressible. The ileac fossa veins showed normal flow. The superficial femoral vain, popliteal veins and deep calf veins showed flow.

Conclusion: Deep Venous thrombosis at CFV

Though the initial difference between the leg circumference of 1.5 cm was not significant, the difference disappeared after five days of commencement of therapy and the right leg and ankle swelling was not noticable any more. The pain subsided and she was able to walk without difficulty. On 12/11/01 she was conveted to Warfarin 5 mg once daily, given concurrently with Heparin for three days. KCCT and PTI tests were within acceptable limits. She was discharged home on 16/11/02 through our antenatal clinic on haematinic Ranferon-12 one capsule 12 hourly throughout antenatal clinic period. Ranferon–12 capsule contains Ferrous fumarate 300mg, Folic acid.1.5 mg, Cyanocobalamin 5mgas well as Zinc sulphate and Ascorbic acid.

FOLLOW UP AND FURTHER MANAGEMENT

She was seen at antenatal clinic fortnightly starting on 28/11/01 until 21/01/02 when she was readmitted for conversion to Heparin and delivery. The prothrombine time index, INR and KCCT were satisfactory. She was started on Heparin 10,000 I.U. as an infusion in 500 ml of 5% dextrose 8 hourly. On 30/01/02 a decision was made to deliver her as she had reached 40 weeks gestation. The baby felt clinically term and the pelvis felt adequate. The Bishop score was poor, therefore she was planned for induction of labour with Prostaglandin-E_2 pessaries. On 2/02/01 when the Prostin pessaries became available, Heparin was stopped, blood taken for group and cross-match with two unit of fresh blood requested. The KCCT and INR were satisfactory. She was transferred to labour ward for induction of labour and delivery. An intravenous line was placed and bedside clothing time was 7 minutes, which was normal. Her pre-induction, haemoglobin concentration was 11.4g/dl and platelet count was 296 x $10^3/mm^3$.

PELVIC EXAMINATION

Her external genitalia was normal and the cervix was soft, central, closed and about 2 cm long. The sacral Promontry was not reached by the middle figure of the examiner, the sacrum was smooth and concave, and the Ischial spines were not prominent. The first Prostin pessary was placed in the

posterior vaginal fornix. She had been planned for insertion of the second Prostin pessary with review after 6 to 8 hours.

About four hours after insertion of the first pessary the patient developed labour pains. Abdominal examination showed term fundus, cephalic presentation, longitudinal lie, the head was palpable about 4 fifths above pelvic brim, foetal heart was 136 and regular. She had two contractions every ten minutes, each contraction lasting about 30 seconds. Vaginal examination revealed the cervix had dilated to about 3 cm and was about 80% effaced, membranes were intact and no cord was felt. Artificial rupture of membranes was performed and she drained meconeum stained liquor grade II. A decision was made to deliver the baby via emergency caesarian section, considering the fact that she had no living child. The patient was counseled on the nature of diagnosis together with the need for emergency caesarian section and she consented. She was shaved and pre-medicated with 0.6 mg of Atropine Sulphate. As she was being prepared for theatre, she was made to lie on her left lateral side and 10% dextrose infusion started. Two units of cross-matched blood were made available and Protamin Sulphate was acquired.

OPERATION

In theatre, the patient was placed in semilithotomy and vulvo-vaginal toilet done. Aseptic catheterization was performed draining about 150 mls of clear urine. Vaginal examination showed the cervix was about 4 cm dilated and she was draining meconeum stained liquor grade II. No cord was felt. The patient was placed supine, operation area cleaned and draped. Anaesthesia was induced and abdomen opened through a Pfannestel incision. Lower uterine segment caesarian section was done and a life female infant weighing 3200 grams was delivered with Apgar score 8 at one minute and 10 at five minutes. The baby had umbilical cord round the neck twice. The placenta, which was implanted fundo-posterior, was delivered whole by controlled cord traction. The placenta weighed 600 grams and was grossly normal. The bleeding uterine wall edges were held with green Armitages and uterine cavity wiped with gauze roll. The uterine wall was closed in 3 layers and haemostatis achievement. Instrument and swab count correct the abdomen was closed in 4 layers including subcutaneous adipose layer. Vulvo-vaginal toilet was done and catheter removed. Urine was inspected and it was clear post operatively. Estimated blood loss was about 600 mls.

POST OPERATIVE CARE

The patient's vital signs were observed quarter hourly until she was fully awake then four hourly thereafter. Intravenous fluids; normal saline and 5% dextrose were given 500mls every four hours until bowel sounds were oscultated. She was given intramuscular Pethidin 100mg 8 hourly for 48 hours followed by oral Mefenamic acid 500 mg 8 hourly to relieve pain. Intravenous crystalline penicillin 2 mega units every six hours and Gentamycin 80 mg every 8 hours were given. On the first post operative day she resumed Heparin 10,000 I.U. infused every 8 hours. She had re-established bowel sounds and she was started on oral sips. The vital signs were normal, breasts were lactating and not engorged, chest was clear uterus was well contracted and corresponded with 20 weeks fundus. The lochia was normal in volume odor and colour, and there was no calf muscle tenderness. The patient recovered un-eventfully and on the 4th operative day she was started on Warfarin 5 mg once daily. KCCT was normal (Test was 47 seconds, control was 28 seconds.) On the 7th post operative day all stitches were removed, Heparin was stopped and the patient was discharged home on Warfarin 5mg once daily and Ranferon. She was booked postnatal and haematology clinics to be reviewed after six weeks.

FOLLOW UP

After six weeks, she was reviewed at haematology clinic and the Warfarin was discontinued. At the postnatal clinic, she was found to be in good general condition, not pale and the operation site had healed well. In view of her condition she was advised to avoid contraceptives that contains oestrogen especially the combined oral contraceptive pills and Morning after pills. She could use barrier methods, progesterone only contraceptive pills, injectables and surgical methods when she attained desired family size. She was sent to clinic 66 for appropriate contraception. She was counseled on the need to start antenatal clinic early in subsequent pregnancies

DISCUSSION

The patient presented here was a para 1+ 1, gravida 3 without any living child who was diagnosed to have deep venous thrombosis (DVT) of the right leg in early third trimester. She was treated with Heparin, bed rest and analgesics until the acute phase was over, then she was changed to Warfarin. She used Warfarin until she reached term when she was reconverted to Heparin. She was delivered via emergency caesarian section when she was noted to have meconeum stained liquor grade II in early labour. She delivered a live baby with cord round the neck twice. After delivery, she was discharged home on Warfarin, which she took throughout her puerperium. The postoperative recovery and puerperium was uneventful.

Deep venous thrombosis is a vascular occlusive disorder caused by the formation of a pathological thrombus in the blood vessels of a living person. A thrombus being a solid mass comprising Platelets, Polymorphonuclear cells and fibrin strands with trapped red blood cells. In the achieving normal haemostatis, vascular constriction, formation of platelet pug and fibrin generation are the key mechanisms involved. Injury to vessel wall, stasis and changes in local clotting factors comprise the 'Virchow's triad', which lead to intravascular coagulation. Thus, any factor that leads to the components of the triad will predispose to venous thromboembolic disease [1,2,4].

The incidence of venous thrombosis in pregnancy varies from 1 in 1000 to 1 in 2000 according to different studies. The incidence per age groups is about 0.615 per 1000 pregnancies in women aged younger than 35 years and 1:216 per 1000 in women older than 35 years. The rate of post partum venous thrombosis is about 0.304 per 1000 pregnancies in women younger than 35 years and 0.72 per 1000 pregnancies in women older than 35 years [3]. Antenatal venous thrombosis is more common than post partum venous thrombosis. Antepartum deep venous thrombosis occurs more commonly in the 2nd and 3rd trimester than in the first [1,2,3]. At Kenyatta National Hospital the incidence of deep venous thrombosis was reported to be 0.16% (1.6 per 1000) of all pregnancy admissions. Out of the 80 cases analyzed by Waweru 61% were associated with pregnancy and 76% of these the thromboses occurred in the left lower limb [5]. The patient presented was 25 years old, had antepartum deep venous thrombosis which occurred during early third trimester.

The likelihood of venous thrombosis in normal pregnancy is increased by factor 5 when compared with non-pregnant state of similar age [1,2]. In the past the disease was common in puerperium but nowadays it is frequently seen antepartum. The decrease in postpartum thromboembolic disease may

be as a result of the frequently practiced early ambulation after delivery [1,2,4]. These thromboembolic diseases can be placed into three categories, namely superficial thrombophlebitis, Deep venous thrombosis (DVT) and pulmonary embolism [1,3]. Thrombophlebitis is a term used when thrombosis occurs in a vein secondary to inflammation of the wall or endothelial surface of the vein following trauma, infection or hypertension. Phlebothrombosis means coagulation or thrombosis occurs is veins without antecedent inflammation may be following increase in clotting factors and platelets or decrease in fibrinolytic activity. Embolism of a thrombus occurs when the solid mass is dislodged from its site of formation to another region of the body through the veins. A thrombus can be formed in the deep veins of the legs and dislodged to the lungs (pulmonary embolism). Superficial thrombophlebitis is the most common thrombosis associated with pregnancy usually in varicose veins in the calf. Deep venous thrombosis may be a sequel of superficial venous thrombosis [1,2,3]. The patient presented had deep venous thrombosis, which involved the right calf superficial, and deep veins.

Pregnancy is a hypercoagulable state, which all the elements of "Virchow's triad" are present. In pregnancy, venous stasis results due to the increased distensibility of the veins by mechanical obstruction of the gravid uterus and the relatively reduced mobility of the pregnant women. Physiologic changes in adaptation to pregnancy result in increased venous distensibility and capacity. This is worsened by the increased prevalence of women working during pregnancy at jobs, which they sit for long periods for example secretarial duties. A change in clotting factors occurs in pregnancy and reaches its peak at term. There is increase in factors II (Fibrinogen), V, VIII and X together with decrease in fibrinolytic activity and elevated levels of platelets. Blood vessel injury may occur from labour process, operative vaginal delivery and pelvic infections [1,2,3,4].

The risk factors include prior history of deep venous thrombosis, venous varicosities, leg oedema, decreased pre- and postoperative ambulation, pelvic or bone surgery, malignancy, prior pelvic radiation therapy, obesity, age above 45 years and prolonged duration under anaesthesia. Other predisposing factors include heavy cigarette smoking, anaemia, diabetes mellitus, hypertensive disorders, heart disease, prolonged labour, operative delivery and post partum endometritis [1,2,4]. Blood group "A' had been related to increased risk deep venous thrombosis [2,7]. The patient presented did not have any of the above risk factors except for pregnancy itself.

More recently, attention has been directed to a number of isolated deficiencies of proteins involved either in coagulation inhibition or in the fibrinolytic system. The main congenital thrombophilia are

the deficiencies of antithrombin III, protein-C, protein-S and the presence of factors V-Leiden, the Prothrombin gene variant and homozygosity for the thermolabile variant of Methylenetetrahydrofoate reductase (MTHFR) [1,3,6]. In the patient presented the screening for these protein deficiencies was not undertaken due to the unavailability of the relevant technology. A strong association between lupus anticoagulant and deep venous thrombosis has been established [7]. Mwanda recommended screening for lupus anticoagulant in those patients with thromboembolic events, positive VDRL and recurrent foetal loss [8].

Deep venous thrombosis can be divided into proximal (iliofemeral) and calf or distal. In the proximal which comprise about 80% of cases, the popliteal, femoral and ileac veins are involved. The distal type is limited to the calf and forms the remaining 20% of the deep venous thrombosis of lower limbs. Proximal vein thrombosis is associated with higher incidence of pulmonary embolism, which is detected in about 50% of patients with documented deep venous thrombosis in the limb veins. The calf veins thrombosis rarely causes pulmonary embolism unless it first extends into the proximal veins. Proximal extension of calf deep venous thrombosis occurs in about 30% of cases [1,2,3]. The patient presented had calf deep venous thrombosis without proximal extension and she did not develop clinically detectable pulmonary embolism.

Almost 90% of deep venous thrombosis affect the left side among pregnant women compared with 55% among women who were not pregnant [3]. At Kenyatta National Hospital Waweru [5] found that deep venous thrombosis was three times more common in the left lower limb than the right side. The difference may reflect the compression of the left ileac vein by the right ileac and the right ovarian arteries which cross the ileac vein on the left side only [3]. The patient presented belonged to the minority group who had deep venous thrombosis on the right lower limb.

Most patients with deep venous thrombosis are completely asymptomatic. Symptoms may be subtle or classic depending upon the site and extend of the thrombosis together with the status of collateral venous circulation. Classic features include swelling of the affected site, pain, tenderness, local cyanosis, fever and positive Homan's sign. However, three quarters of the patients who present with suspected deep venous thrombosis have non-thrombotic causes of leg pain. These include leg trauma, cellulitis, obstructive lymphadenopathy, superficial vein thrombosis, post-phlebitic syndrome and ruptured Baker's cyst [1,2,4]. In the patient presented clinical findings of leg pain, tenderness and swelling were used to make a working diagnosis as confirmatory tests were planned for.

Clinical diagnosis of deep venous thrombosis is neither sensitive nor specific, with false positive rate as high as 50 to 75% according to different studies [1,2,3]. The safest method of confirming the diagnosis of deep venous thrombosis in pregnancy is the use of impedance Plethysmography, Doppler Ultrasonography and limited venography. Outside pregnancy, the most definitive investigation is venography. Doppler Ultrasonography with compression scanning is good for scanning deep venous thrombosis of the thigh. Other tests include radioactive Iodine laden fibrinogen scanning, Magnetic resonance imaging (MRI), computerized tomographic scanning (CT Scan) and D-dimer assays. D-dimers are formed when cross-linked fibrin content within thrombus is proteolysed by plasmin. Various dimer assays available include: enzyme linked immunoabsorbant assays (ELISA), latex agglutination assays and whole blood agglutination test [1,2,3]. In the patient presented, Doppler Ultrasonography and compression studies confirmed the diagnosis of deep venous thrombosis in the right leg calf.

Patient demonstrated venographycally to have deep venous thrombosis manifest with pain or tenderness in 60 to 90% of cases, ankle oedema in 40 to 75%, a positive Homan's sign in 30 to 40% and superficial venous dilatation in 30%. A palpable venous cord is more reliable but it is present in only 10% of cases[2,3]. The patient presented had leg pain, tenderness and ankle oedema.

The management of deep venous thrombosis can be divided into acute and remission phases. The main objectives of treatment strategy are to stop the growth of the existing thrombus, control pain and swelling with analgesics and bed rest with elevation of the affected limb to facilitate venous return and decrease oedema. Physiotherapy and mobilization is carried out as soon as pain subsides and prophylaxis is provided to those at risk to stop formation of thrombus [1,2,9]. During pregnancy, the drug of choice is Heparin. The main problems with heparin include prohibitive cost, inconvenience caused by repeat injections and compliance. It has been established that Heparin is the safest anticoagulant to use during pregnancy because it does not cross the placenta and is not secreted into breast milk. Heparin may be given by intermittent intravenous boluses, continuos intravenous infusion or by intermittent subcutaneous injections. During acute phase, the mainstay of treatment is intravenous Heparin together with ancillary measures to improve venous return and reduce patient's discomfort. The supportive measures include bed rest, elevation of the affected limb, local application of heat and analgesics. Aim at 30,000 to 40,000 international units per day intravenously during acute phase as an infusion or intermittent four hourly boluses. After acute phase when there is

need to continue Heparin therapy the maintenance dose is 5000 international units 8 hourly or 12 hourly [1,2,3,4].

The action of Heparin is immediate through acceleration of the activity of antithrombin III which in turn decreases the activity of factors IX, X and XI. The half-life of Heparin is 60 to 90 minutes. It is only available in injectable form and this is its main disadvantage. It is never given intramuscular because it causes bleeding into muscles. It is also never given when platelet counts are less than 50,000/mm^3. The main side effect of Heparin is bleeding. Other adverse effects include allergic anaphylactic reactions, thrombocytopenia, transient allopecia, osteoporosis and fat necrosis at injection sites. A rare but dangerous toxic effect of Heparin is adrenal haemorrhage and necrosis, which is usually fatal. The antidote of Heparin is Protamin Sulphate at a dose of 1 mg to every 100 international units of Heparin. If more than 30 minutes have elapsed after Heparin administration half this dosage is given. Protamin Sulphate in itself posses anticoagulant activity, hence it is considered unsafe to exceed 100mg over a short period. Intravenous injection of Protamin Sulphate may cause sudden fall in blood pressure, bradycardia, transitory flushing or feeling of warmth. During Heparin therapy, the adequacy of anticoagulation can be monitored using activated partial thromboplastin time APTT or KCCT, which should be 1.5 to 2 times the control value. Other tests include coagulation time, thrombin-clotting time, total blood count and Heparin assays [1,2,3,4]. In the patient presented KCCT, bedside clotting time and haemogram were used to monitor Heparin treatment. Analgesics were given together with bed rest and limb elevation.

Warfarin can be used after the acute phase is over but should be stopped at 36 weeks and Heparin restarted. Its action starts after 3 day through inhibition of vitamin K dependent clotting factor synthesis in the liver. Warfarin crosses the placenta and being teratogenic, it is contraindicated in first trimester of pregnancy. It causes nasal hypoplasia, opthalmological abnormalities, mental retardation, allopecia, uticaria and severe dermatitis apart from bleeding. Warfarin is not used after 36 weeks because it crosses the placenta and may cause bleeding tendency in the foetus especially intracranial haemorrhage apart from abruptio placenta. Some clinicians believe Warfarin should be avoided throughout pregnancy because the pathologic effects on the foetus associated with its exposure occur to some degree in all trimesters of pregnancy [1,2,4]. The usual dosage of Warfarin is 10 to 15 mg daily given orally until the therapeutic level of Prothrombin time is achieved followed by maintenance with 5 mg daily. Prothrombin time should be 1.5 to 2.5 times the control value and Prothrombin time

index (PTI) should be 50%. The antidote of Warfarin is vitamin K in a dose of 5 to 10 mg intravenously but the process of antidote is slow taking up to 72 hours to reach maximum activity [1,2,3,4]. In the patient presented, Warfarin was used after acute phase between 30 and 37 weeks of pregnancy then she was converted to Heparin at term. Prothrombin time and INR were used to monitor its therapy. The baby did not show any gross pathological congenital effects of Warfarin exposure.

Intrapartum, Heparin dose should be withheld until after delivery. If there was minimal trauma because of surgery it can be resumed after 12 hours, otherwise a delay of one or 2 days may be advisable. If the patient undergoes caesarian section, some cross-matched fresh blood or fresh frozen plasma together with Protamin Sulphate are kept on standby in case of severe uncontrollable haemorrhage [1,2,4]. In the patient presented the above stated precautionary measures were taken as she was delivered through emergency caesarian section and Heparin was resumed after about 16 hours.

The acute phase is considered to have resolved when the clinical features subside, especially pain, tenderness, swelling and warmth. The decrease in swelling and oedema may be assessed by serial daily or alternate day limb circumference measured at same spot using a fixed reference point such as the medial maleolus, tibial tuberosity, or anterior superior ileac spine with the patient lying supine on the bed [1,2,4]. In the patient presented the limb circumference were used to monitor progress together with clinical resolution of pain and tenderness.

Anticoagulation should be continued throughout puerperium (for six weeks post partum) preferably using oral anticoagulants. Warfarin has no significant transfer across the breast, therefore it is safe to use during lactation [1,2,4]. The patient presented was discharged home after 7 days on Warfarin, which was stopped after six weeks postpartum.

Recently released for clinical use, though more costly is the Low-molecular weight Heparin (about 4000 Dalton compared with about 16,000 Dalton for conventional Heparin). It has been shown to be safe and effective for treatment of proximal vein thrombosis in non pregnant patients. Its safety in pregnancy has not been well assessed. The main advantage is the low risk of complications, and does not require an antidote [1,2,9].

Prevention measures include early mobilization in postoperative period and puerperium together with physiotherapy. Oral anticoagulants and cigarette smoking be discontinued if the patient is to be detained for major surgery. Provide prophylactic anticoagulants to high-risk groups. Pregnant women with previous history of thromboembolic disease and those with artificial valves should have prophylaxis. In women with multiple thrombotic events during previous pregnancies antenatal prophylaxis should start at least 4 to 6 weeks in advance of the gestation at which the previous episode occurred. Deep venous thrombosis deterrent stockings may be useful in pregnancy as they prevent over distention of veins and hence prevent endothelial damage [1,2,3,4].

REFERENCES

1. Cunningham F.G., Macdonald P.C., Leven K.J. et al

   Pulmonary and thromboembolic disease in pregnancy.

   In Williams Obstetric 19th edition

   Appleton and Lange publication. Stanford Connecticut page 1111-1118: 1993

2. Bonner J., Chamberlain G.

   Venous thrombosis and pulmonary embolism

   In Turnbull's Obstetrics 2nd edition.

   Churchhill Livingstone publications. Edinburg England page 789-801: 1995

3. Greer I.A.

   Thrombosis in pregnancy. Maternal and foetal issues

   Lancet 353: 1258-65 1999

4. Manoj K.B., Perloff D. Pernol M.L.

   Haematological disorders in pregnancy. Deep venous thrombosis.

   In current Obstetric and Gynaecologic diagnosis and treatment 7th edition.

   Appleton and Lange publications. USA page 443-445 : 1991

5. Waweru J.M.

   Deep venous thrombosis

   Mmed Thesis University of Nairobi 1981

6. Heifboer H., Brandles P.M., Butter H.R.

   Deficiencies of coagulation inhibiting and fibrinolytic protein in outpatients with deep venous thrombosis.

   New England Journal of Medicine 323: 1512- 16; 1990

7. Iriplett D.A.

   Antiphospholipid antibodies, lupus anticoagulants and thromboembolic disease.

   Haemotologica 80:122 – 6; 1995

8. Mwanda O.W.

   Lupus Anticoagulant Syndrome. Case report.

   East African Medical Journal 75 (10): 619-620 ; 1998

9. Hull R.D, Raskob G.E, Pineo G.F. et al

   Subcutaneous low-molecular weight Heparin compared with continued intravenous Heparin in the treatment of proximal vein thrombosis.

   New England Journal of medicine 326:975: 1992.

Case No. 5

TEENAGE PREGNANCY--- LIVE BABY

NAME	:	I.A	D.O.A	:	12/11/01
AGE	:	16 YEARS	D.O DELIVERY	:	12/11/01
IP NO.	:	0777604	D.O DISCHARGE	:	14/11/01
PARITY	:	0 + 0			
L.M.P	:	? MARCH 2001			
EDD	:	? DECEMBER 2001			

PRESENTING COMPLAINTS

The patient was admitted to labour ward through casualty department with labour pains and draining of liquor for six hours.

HISTORY OF PRESENTING COMPLAINTS

She developed abdominal pains late in the afternoon of the date she presented (4 p.m.) which was intermittent and gradually increased in intensity and frequency. She also noticed a bloody mucous and tenacious discharge. About three hours after the onset of abdominal pains the membranes ruptured spontaneously and she started draining clear liquor.

HISTORY OF CURRENT PREGNANCY

The patient could not clearly recall her last menstrual period, but she thought it occurred during the first 10 days of March 2001. Her estimated date of delivery was in the first half of the month of December 2001. The maturity or gestation age by dates was between 35 and 36 weeks. She also said she attended antenatal clinic at Nyanza general Hospital Kisumu, where she made six visits starting from when she was about five months pregnant. She claimed antenatal profile was done and she was informed the results were normal, but there were no records to support. On further inquiry she could also not recall when quickening started. She said she received two doses of anti-tetanus toxoid and the antenatal period was un-eventful.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant

PAST OBSTETRIC AND GYNAECOLOGICAL HISTORY

She was a primigradiva who had menarche at age of 14 years. Her periods lasted 4 days and were coming irregularly after 21 to 28 days. The flow was normal and she had no dysmenorrhea. She had never used any contraceptive method.

FAMILY AND SOCIAL HISTORY

She was a single unemployed teenager. She was orphaned and lived with her Aunt at Kisumu. She had come to Nairobi to visit a relative. She dropped out of school at standard seven due to lack of school fees. She did not smoke cigarette or cannabis, and did not drink alcohol. The boyfriend responsible for her pregnancy did not accept the responsibility and they were no longer friends. Her father died of pulmonary Tuberculosis (PTB) in 1991 and her mother died in 1999 of a chronic febrile illness.

PHYSICAL EXAMINATION

General Examination

She was a young woman in good general condition afebrile and not pale. She was not jaundiced and had no oedema. Her pulse rate was 80 beats per minute, respiratory rate 20 per minute, temperature 36.4°C and blood pressure was 110/70 mmHg.

ABDOMINAL EXAMINATION

The abdomen was uniformly distended and stria gravidarum were present. The fundal height corresponded to 36 weeks gestation. The foetus was in longitudinal lie, cephalic presentation and the foetal head was one fifth above the sympysis pubis and engaged. The foetal heart rate was 128 beats per minute and was regular. She was getting 4 strong contractions in 10 minutes each lasting about 50 seconds. She reported feeling the urge to beer down.

VAGINAL EXAMINATION

Her external genitalia were normal and she was draining clear non-offensive liquor. The cervix was fully dilated, there was mild caput and first degree molding of the foetal skull. No cord was felt and the pelvis felt adequate.

OTHER SYSTEMS

The breasts, cardiovascular system, respiratory system central nervous system and musculo-skeletal systems were essentially normal.

DIAGNOSIS

A diagnosis of Teenage pregnancy in 2nd stage of labour was made

MANAGEMENT

She was taken to second stage room for delivery, where she was encouraged to bear down during a contraction. She was given a left mediolateral episiotomy, as the perineum was tight around the crowning head after infiltration of Lignocaine to provide local anesthesia. With 4 difficult bearing down attempts she succeeded in delivering a live female infant birth weight 2250 grams. The newborn had a good Apgar score of 8 at one minute, 9 at 5 minutes, and 10 at 10 minutes. The placenta and membranes were delivered by controlled cord traction and were found to be normal. The placenta weighed 560 grams and the blood loss was estimated to be 250 mls. The episiotomy was sutured with chronic catgut number 2/0. She was instructed on warm saline sitz baths at least twice daily.

Post delivery the mother's and baby's condition remained stable. The blood pressure was 110/70 mmHg, pulse rate 84 beats per minute and respiratory rate 22 per minute. They were transferred to post- natal ward where she was put on analgesic, assisted to suckle the baby in the correct manner and clean the baby. A teenager counselor discussed general baby care, her nutrition, safe sex and availability of contraception. Both the mother and the baby were discharged home on the 3rd post natal day in good condition.

FOLLOW UP

The patient opted to go for post natal clinic maternal child and family welfare clinic at Kisumu where she resided.

DISCUSSION

The patient presented here was a 16 years old teenage primigradiva who was admitted in second stage of labour and progressed to deliver a live baby by spontaneous vertex delivery.

Teenage pregnancy is said to occur when a girl aged between 11 and 19 years becomes pregnant. The term teenager is virtually synonymous with adolescent, the later emphasizing the physiological and psychosocial changes that occur during teenage period [1,3]. Adolescence is a period when complex interplay of physical mental, emotional and psychosocial changes occur. It is the period of self-definition, sexual identity and when sexual maturity is attained. The individual progresses from the point of appearance of secondary sexual characteristics to sexual maturity and a transition is made from a state of total socio-economic dependence to one of relative independence [1,3,6]. The patient presented was a 16 years old teenager.

Although general fertility rates worldwide are declining among all women, the pregnancy rate among adolescents is increasing. Since 1980's, the continued increase in birth rate for women under age 20 years has been associated with a rise in the proportion of teenagers who are sexually active. The factors that have been attributed to this trend include early onset of menarche, increase in school time, breakdown of social virtues and traditional norms with increase in extra marital sexual activity [3,5]. The sexual intercourse that occurs is often unprotected, exposing the teenager to unplanned unwanted pregnancy and sexually transmitted diseases including the dreaded HIV. In most instances the boyfriend denies and refuses to take responsibility of the pregnancy living the girl to face the new situation alone, leaving her emotionally, psychologically and socially traumatized. The girl may be forced to drop out of school without any form of economical independence. Teenagers all over the world have been noticed to use contraceptives less frequently, or use less effective methods of contraception. When under influence of drugs especially alcohol, cannabis or other hard drugs, precautions on safe sexual intercourse are often not taken. Fears of lack of confidentiality appear to inhibit the younger women from obtaining contraceptives in all social and economic groups [3,6,8]. In the patient presented, the boyfriend alleged to be responsible for the pregnancy denied her and the socio-economic responsibility of this teenager and the baby rested on the girl's relatives.

In Kenya, the mean age of menarche is 13 years in the urban set up and 14 years in the rural areas [3,5]. The patient presented had her menarche at age 14 years, which tallies with her rural set up upbringing. In sub Saharan Africa, most females are sexually active by age 20 years [8,9]. Mati and company [4] reported the incidence of teenage pregnancy was 19.6% at Nairobi and Muraya [5] found the incidence in rural Kenya to be 21%. Twenty eight percent (28%) of all abortions at Kenyatta National

Hospital were found to occur in teenagers. In Brazil [1,6] one study reported the incidence of teenage pregnancy to be 20 to 25%. In United States of America, the incidence was reported as 13 to 16% with 11% of all pregnant girls being between age 15 and 19 years. Muraya further noted that 66.4% of pregnant rural teenagers had only primary education while Sanghvi reported 58.4% of all cases in Nairobi became pregnant while in primary school [4,5]. The frequency of teenage pregnancy has achieved such alarming proportions that many teenagers opt to get illegal abortions, and for those who choose to carry the pregnancy to delivery, they face more antenatal and intrapartum problems than the older mothers [7]. The patient presented had primary school level of education and she opted to carry her pregnancy to delivery despite the boyfriend denying responsibility.

Adolescent pregnancy is a high-risk pregnancy both obstetrically and socio-economically. Obstetric risks were also found to be associated with poverty. Inadequate nutrition, poor health before pregnancy, maternal age itself and the physiological demands for growth spurt that is normally present at this age period. Other associated risk factors include smoking tobacco, alcohol and hard drug abuse, and sexually transmitted genital infections [3,7,8]. The major problems commonly found in pregnant teenagers include: Iron deficiency anaemia, increased incidence of abortion, low birth weight, prematurity, difficult labour with caphalo-pelvic disproportion, pre-eclamptic toxemia and eclampasia, intra uterine foetal demise and increased maternal mortality and morbidity [6,7]. Ondeko [8] reported that 36 to 42% of teenage pregnant mothers had Iron deficiency anaemia. Muraya found hypertensive disease in pregnancy was 2.5% in adolescent compared to 0.5% in older mothers (a five times risk)[5]. The patient presented had un-eventful antenatal period and the delivery process progressed well. However, she delivered a baby of low birth weight (2250 grams).

Recent studies have suggested that in general adolescents have very little difference in their obstetric performance compared to women between 20 and 29 years, which is the age group considered ideal for pregnancy, delivery and maternity[3,8,9]. The previous described differences in outcome disappear when controlled by parity and prenatal care, even for women in the beginning of reproductive age. Therefore, the overriding factor in poor outcome may be poor antenatal care. It has actually been observed that most adolescent pregnant mothers do not attend any antenatal clinic or make very few visits out of ignorance or fear of stigmatization [8,9]. The patient presented made adequate antenatal visits and appears to have had adequate care.

The psychosocial issues of adolescent pregnancy and child bearing are more overwhelming than the medical issues [1,10]. MacCormic and associates [1] found that young maternal age appears to be a health hazard to the children they bear. High level of post natal health problems such as accidents,

infections, child abuse and neglect are linked to increased infant mortality and morbidity, a condition described as "transmitted deprivation". The risk of teenage multiparity is quoted as over 20% in many studies. Many of these pregnancies end up with induced abortion and of those who survive many are given up for adoption, abandoned in institutions or left under the care of grand parents or other family members. The patient presented was given a thorough counseling at adolescent clinic before discharge and she was informed about family planning together with safe sex. With this, it was hoped that she would not become multiparous while still a teenager and be able to practice safe sex. At Kenyatta National Hospital a teenage antenatal clinic separate from the other antenatal clinic has been set up with an aim of providing the specific needs of this age group without them feeling intimidated by the older mothers.

In conclusion an aggressive teenage program on counseling, sex education together with prenatal care that addresses the unique problems of the adolescent can help to decrease the incidence of teenage pregnancy and the inherent complications to the mother and baby. The problem requires multisecterial and even global approach to address the problem internationally, regionally, nationally, at home, in school, within the religious sector and at health institutions.

REFERENCES

1. Cunningham F.G, Macdonald P.C. Gant N.F, et al

   Adolescent pregnancy. In William Obstetrics 19th edition.

   Appleton and Lange publication. Stanford Connecticut pg. 651 to 653: 1993

2. Bwibo N.

   The effects of chronic malnutrition on pubertal growth and development.

   Am.J Clinical Nutrition 36 :527; 1982

3. Okpani A.O.U, Ikmalo J., Briggs N.D et al

   Teenage pregnancy

   Int. J. Obstet. Gynecol 12 (1) 34-46; 1995.

4. Sanghvi H.C.G, Mati J.K.G., Aggarwal V.P et al

   Nairobi birth survey. Outcome of pregnancy in teenage mothers in Nairobi Kenya.

   J. Obstet Gynecol East and Central Africa 2: 134; 1983

5. Muraya G.W., Mati J.K.G

   Teenage pregnancy in rural Kenya

   J. Obstet Gynaecol for Central Africa 4: 23: 1985.

6. Martin P., Pernoll R.B,

   Pediatric and Adolescent Gynaecology. Current Obstetric and gynaecologic diagnosis and treatment. 7th edition.

   Appleton and Lange publications. USA pg. 583-84: 1991

7. Nnatu S.

   Obstetric performance of teenage mothers in Nigeria

   J. Obstet Gynecol East and Central Africa 9: 62; 1991

8. Ondeko M.O, Ovokey F., Lawayin T.O.

   Observations on still birth, birth weight and maternal haemoglobin in teenage pregnancy in Ibadan, Nigeria, Africa.

   J. of Medicine and Medical Science. 25 (1) 82 – 86; 1996

9. Kumbi S., Isahak A,

   Pregnancy outcome of teenage pregnancies in North Western Ethiopia.

   East Africa Medical Journal 76: 138-40; 1999

10. Senayake P, Ladsila O.,

    Adolescent health: Changing needs

    Int. J. Gynecol. Obstet. 465: 137-143; 1994

Case No. 6

UNSENSITIZED RHESUS NEGATIVE PREGNANCY-SUCCESSFUL INDUNCTION OF LABOUR WITH OUTCOME OF LIVE BABY

NAME	:	**C.W**	**PARITY**	:	**1 + 0**
IP NO.	:	**0771590**	**AGE**	:	**29 YEARS**
L.M.P	:	**5/2/01**	**D.O.A**	:	**12/11/01**
E.D.D	:	**12/11/01**	**D.O.D**	:	**15/11/01**
GBD	:	**40 WEEKS**	**D.O.DELIVERY**	:	**13/11/01**

HISTORY OF PRESENTING CONDITION

The patient was admitted to labour ward through our antenatal clinic as a para 1 + 0 gravida 2 at gestation 40 weeks by dates with Rhesus negative blood group. She was seen at the clinic on the scheduled appointment date and was send for induction of labour in view of the danger associated with her rhesus negative state if allowed to continue beyond 40 weeks. She had no complains. She reported normal foetal movements and there were no labour pains, no per vaginal bleeding and no drainage of liquor.

She attended antenatal clinic at Kenyatta National Hospital first seen on 29/8/01 at 25 weeks gestation. Her antenatal profile was as follows: Haemoglobin concentration was 9.8 grams per deciliter, VDRL serology was negative, ELISA for HIV was negative, her blood group was B and Rhesus negative. Indirect Coombs test (ICT) tested negative at 28, 32 and at 39 weeks gestation. She was treated with haematinics for her anaemia after her stool for ova and cysts was negative and peripheral blood film showed features of iron deficiency anaemia. She made seven antenatal visits. Her husband's blood group was O and Rhesus positive.

PAST OBSTETRIC AND GYNAECOLOGICAL HISTORY

She was a para 1 + 0 gravida 2 with last delivery in 1996 at a private health facility in Kayole. The delivery was normal and labour lasted about 8 hours. Her Rhesus negative status was not known or evaluated at that time. The baby was normal, cried immediately after birth and it did not develop jaundice or anaemia. However, at 8 months she was noted to have developed delayed milestones. To date, at age 5 years the child is unable to talk, walk or feed himself. With occupational therapy, the child is able to crawl on his knees. The mother does not know the child's blood group. Her menarche

was at age 16 years and her menstrual cycles were regular with length about 28 to 29 days. The duration of flow was three days and there was no associated dysmenorrhea. She had used oral contraceptives pills between 1997 and February 2001 when she stopped to conceive.

PAST MEDICAL AND SURGICAL HISTORY

She had not been admitted to hospital before except for obstetric reasons and she had not had a history of blood transfusion.

FAMILY AND SOCIAL HISTORY

She was a married housewife who lived with her husband at Kayole in Nairobi. The husband was a production employee at British American Tobacco Company (BAT). She did not drink alcohol nor smoke cigarettes. There was no history of any chronic illness in her family.

EXAMINATION

General Examination

The patient was in good general condition, afebrile not pale, not jaundiced and not cyanosed. She had no pedal oedema and no lympadenopathy. Her pulse rate was 80 beats per minute, respiratory rate was 20 per minute, temperature 36.8° C, and blood pressure 110/70 mmHg.

ABDOMINAL EXAMINATION

The abdomen was uniformly distended and moved with respiration. The fundal height was corresponding to term gestation. The foetus was in longitudinal lie, cephalic presentation and the back was palpated on the right side. The head was 5/5 up above the pelvic brim and foetal heart rate was 136 beats per minute and were regular. There were no uterine contractions. The liver and spleen were not palpable.

PELVIC EXAMINATION

She had normal external genitalia and the vagina felt normal. The cervix was firm, closed, posterior and about 1.0 cm long. Bishop score was 2. The pelvis felt adequate.

OTHER SYSTEM

Her breast respiratory system, cardiovascular system and central nervous system were essentially normal.

DIAGNOSIS

An impression of unsensitized Rhesus negative mother at 40 weeks with poor Bishop score.

MANAGEMENT

The condition was explained to the patient, who consented to the planned induction of labour to deliver the baby as soon as possible. She was informed of the planned taking of baby's cord blood for blood grouping and Rhesus state determination, bilirubin levels, haemoglobin concentration and direct Coombs test. She was also informed that the baby would be admitted to Newborn unit for observation and care by neonatologists until they are satisfied that it is safe to be released to the mother.

Two Prostaglandin E-2α pessaries, one six hourly were inserted high into the posterior fornix of her vagina. The first Prostin pessary was inserted at 4:45 p.m. of 12/11/01 and the second at 1:30am of 13/11/01. At about 5:00am same day she developed labour pains, which were intermittent, and increased in frequency and intensity with time. She was taken to labour ward, where she was examined at 7:00am. Her vital signs were normal. Abdominal examination revealed a term fundus, with foetus in longitudinal lie, cephalic presentation and head had engaged leaving 3/5 above the pelvic brim. Foetal heart was 148 beats per minute regular and she had 3 strong uterine contractions every 10 minutes each lasting about 50 seconds.

Pelvic examination revealed previous findings of external genitalia. The cervix was dilated about 7cm and membranes had ruptured spontaneously. She was draining fresh meconeum stained liquor grade II. There was no cord felt, no caput, no moulding and the presenting head was well applied to the fully effaced cervix.

Spontaneous vertex delivery was anticipated within two hours and she was made to lie in her left lateral position. Oxygen was administered by mask and a drip with 10% dextrose was run. Foetal heart was monitored and recorded half hourly. A bolus of Buscopan 40mg stat given intravenously to help relax the cervix and hence augment labour. She was planned for review after two hours.

When reviewed after two hours, (at 9:10am) she was found to be fully dilated and foetal heart rate and rhythm was good. She progressed well and at 9:20 a.m. she delivered a life female infant who weighed 3000 grams, and got an Apgar score of 7 at one and 8 at five minutes. The baby was taken to newborn unit after the cord blood samples were taken as planned and previously stated. The placenta was delivered by controlled cord traction at 9:30am and it weighed 500 grams. Estimated blood loss was approximately 250 mls.

POST PARTUM MANAGEMENT

Her fourth stage was uneventful and she was transferred to the post- natal ward to await outcome of the baby's laboratory tests. She was to visit newborn unit every three hours to breast-feed her baby.

The baby did well in newborn unit and the results of cord blood samples were as follows:

(1) Full blood count Hb = 15.0 g/dl other parameters were normal

(2) Blood group = B and Rhesus negative

(3) Direct Coombs test was negative

(4) Bilirubin levels were normal = Total bilirubin = 5.9 mg/dl and indirect bilirubin = 3.1 mg/dl.

The baby did not develop jaundice and suckled her mother's breast well. She did not have any congenital abnormalities.

The mother also did well post partum and when she was reviewed after two days she was not pale, not jaundiced, vital signs were normal, and breasts were not engorged. On abdominal palpation the fundus corresponded with an 18 weeks gestation and was well contracted. The lochia was normal in amount and did not have abnormal smell. Because the baby's blood group and Rhesus state corresponded to her mothers, there was no indication for Anti-D dose, hence she was discharged home together with the baby on 15/11/01 (on third post natal day)

FOLLOW UP

She opted to continue post-natal clinic at a health facility nearest to her residence. She was advised to start antenatal clinic early and have indirect Coombs tests performed in subsequent pregnancies.

DISCUSSION

The patient presented is a 29 years old para 1 + 0 who had blood group B and Rhesus "D" negative. She was unsensitized at term and was induced successfully to deliver a life baby girl who did not suffer from the haemolytic condition.

Rhesus isoimmunization is a condition which occurs when a Rhesus negative mother carries a Rhesus positive foetus and her immune system generates antibodies against the foetal red blood cells. When these antibodies cross the placenta into foetal circulation, they cause destruction of the antigen carrying Rhesus positive foetal red blood cells by haemolysis. The outcome is aneamia with release of bilirubin into foetal circulation and amniotic fluid, extramedullary haemopoiesi with hepato-splenomegaly in sever cases, hydrops foetalis and Kernicterus post-natally [1,2].

Isoimmunization and its concomitant syndrome hydrops foetalis was first described in 1609, its pathogenesis was known in 1932 and this was proved in 1941 by Levine and colleagues after discovery of the Rhesus blood group system in 1940 by Landsteiner and Weinner [1,2,6].

Rhesus negativity is mainly a Caucasian trait affecting 15 to 16% of this population. Basque populations have the highest incidence of Rh-negativity (30-35%). The incidence in the Negroid race is between 4 and 8% and in Chinese and Japanese populations it is less than 1% [2,6]. In Nairobi the incidence is 5% of all mothers attending antenatal clinics while in Kenyatta National Hospital it is 4.1% [3,4].

A foetus receives half of its genetic components from its mother and half from its father and it may therefore have different blood group from that of its mother. The Rhesus (RH) blood group is the most complex in human blood groups. The Rh antigens are grouped into 3 pairs Dd, Cc, Ee which are inherited in mendellian version. The major antigen in this group, factor Rh-D is of particular importance in causation of isoimmunization. An individual with Rhesus positive blood group is either homozygous (45%) or heterozygous. The Rhesus antigens are in the form of lipoproteins that are confined to the red cell membrane [1,3,6].

Isoimmunization may occur following incompatible blood transfusion or following foetomaternal haemorrhage between a mother and an incompatible foetus. With no apparent predisposing factors, foetal red cells have been detected in maternal blood in 6.7% of women during 1st trimester, 15.9% during 2nd trimester and 28.9% during third trimester. There is increased risk of large foetomaternal haemorrhage in fulminant pre-eclampsia, placenta abruptio, twin births, caesarian section, manual removal of placenta and external version. At cesarean section large foetal maternal transfusion is

minimized by avoiding rushed manual removal of placenta plus avoiding spillage of blood into peritoneal cavity by careful packing and swabbing out [1,2,6].

Spontaneous abortion causes a risk less than 0.1 ml of foetomaternal transfusion, while therapeutic abortion is associated with a higher risk (20 to 25%) with volumes exceeding 0.2 ml [6,10]. Intra uterine foetal death, abdominal trauma to the mother and amniocentesis are also associated with increased risk of foetomaternal transfusion. ABO incompatibility between a Rhesus positive foetus and Rhesus negative mother provides some protection against Rhesus isoimmunization (overall incidence 1.5 to 2%) because the foetal red blood cells are destroyed as soon as they enter maternal circulation before they have sufficient time to induce Rhesus isoimmune response. ABO compatible mother and foetus have about 16% overall risk of isoimmunization. About 30% of Rhesus negative mothers never become sensitized (non-responder) [2,6,10].

The initial maternal immune response to Rhesus sensitization is low levels of IgM. Within 6 weeks to 6 months, IgG antibodies become detectable and being small, they are capable of crossing placenta and destroying Rh-positive cells. The destruction of foetal or newborns red blood cells causes anaemia which stimulates extramedullary erythropoiesis and releases heme which is converted to bilirubin. Both heme and bilirubin are neurotoxic and in the foetus, these two substances are effectively removed by placenta to be metabolized and excreted by mother. The newborn's immature liver is unable to cope with the increased quantities causing jaundice and Kernicterus if serum levels exceed critical level. Severe anaemia in utero leads to foetal hypoxia with hyper-dynamic circulation that causes congestive cardiac failure, oedema, pleural and pericardial effusion, and ascites (picture of hydrops foetalis) or intra uterine foetal demise. Compensatory placental hyperplasia may occur to increase oxygen transfer from mother to foetus[6,8,10].

Unlike ABO antigens, Rhesus antigens are well developed by 30 days in fetal red cells. Most of the first pregnancies escape severe haemolytic disorder. The subsequent pregnancies, however small the foetomaternal transfusion generates a rapid IgG nature response that may cause significant haemolytic disease [6,10].

Every woman at her first antenatal clinic visit should have blood tested for blood group and Rhesus antigen. If she is Rhesus negative, indirect Coombs test (ICT) must be done immediately to check for maternal sensitization. The blood group of the husband or the father of the baby must also be determined. If the father is Rhesus negative her foetus will be Rhesus negative too therefore, no further test will be necessary. But if the father is Rhesus positive his Rhesus phenotype should be determined. If he is heterozygous there is 50% chance that the bay is Rhesus positive, but if he is homozygous, the baby will definitely be Rhesus positive. If the father's ABO group is incompatible

with the mother's there is approximately 60% chance that the baby is ABO incompatible and, this reduces the risk of isoimmunization from 16% to 2% [2,6,10]. In the patient presented the blood group, Rhesus state and ICT were determined, together with the husbands blood group. However, the Rhesus phenotype of the husband's blood group was not determined. The husband's ABO group (blood group O) was incompatible to the patients (blood group B). The baby's blood group was B and Rhesus negative just like her mother.

It is recommended that Rhesus negative mother whose husband is Rhesus positive should have the first indirect Coombs test before 22 weeks and repeat tests at 26 to 28 weeks, 32 to 34 weeks and at 36 to 38 weeks. The patient presented had her first indirect Coombs test at 28 weeks, a repeat test at 32 weeks and the last test at 39 weeks, all of which tested negative. She booked antenatal clinic at 26 weeks which was a late presentation [1,4].

There is little or no evidence suggesting that isoimmunization is a risk following spontaneous abortion before 12 weeks [1,6]. But the risk of significant foetomaternal bleeding and isoimmunization increases as pregnancy grows. Many centers advocate giving prophylactic anti-Rhesus D antibody or immunoglobulin following therapeutic abortion, instrumentation for removal of products of conception and after 12 weeks gestation threatened or complete abortions. If pregnancy and per vaginal bleeding persist it should be repeated every 6 weeks until bleeding stops. Up to 20 weeks gestation the dose recommended is 150 ∝ grams (half dose) but thereafter the standard dose of 300∝ grams should be given. Any transplacental bleeding should be quantified in case any additional anti-D is required. When the initial indirect Coombs test is negative repeat tests should be carried out every 4 weeks till delivery and the mother be given prophylactic dose of 300∝ grams intramuscularly at 28 weeks and at 34 weeks gestation[2,4,6]. Other centers especially in United States of America (USA) advocate one single dose of 300∝ grams at 28 weeks gestation being sufficient[2,10]. The patient presented was not given any prophylactic anti-D because of prohibitive cost.

At delivery, cord blood of the newborn must be tested for ABO and Rhesus group, direct Coombs test and haemoglobin concentration. Maternal blood should also be tested for indirect Coombs test for antibodies and also tested for presence of foetal red cells. Prophylactic dose of Anti-D 300∝ grams intramuscular is normally given to mothers who test negative for anti-Rhesus D antibodies and have delivered Rhesus positive babies irrespective of the blood group. Approximately one in four hundred women have foetomaternal transfusion in excess of 30 mls and may not be protected by this prophylactic dose. When large foetomaternal is suspected the dose of anti-D may be increased to 500 ∝ grams or a repeat full dose be given after 4 to 6 weeks [1,6]. The patient presented was not given the prophylactic anti-D post partum because the baby's blood group was Rhesus negative.

When sensitization is detected patients are followed up with serial antibody titres move frequently until a critical titre of 1 in 16 is reached. Serial ultrasound is done to detect any signs of hydrops or Doppler studies to detect impairments of blood flow. Amniotic fluid is tested for absorbency of light in the yellow portion of spectrum for semi-quantification of bilirubin content of the fluid [1,6]. The amount of bilirubin in amniotic fluid is proportional to the degree of haemolysis of foetal red cells. The optical densities are interpreted clinically by gestation specific curves developed by Liley in 1964 [5]. The Liley chart sets an intervention criterion according to fetal affliction. The mildly affected foetus placed in zone one of the chart may have amniocentesis repeated every two weeks and delivery carried out once the foetus reaches lung maturity. The moderately affected foetus (zone two) would have amniocentesis every week with enhancement of lung maturity for delivery as soon as lung maturity is achieved. The severally affected (zone 3) requires immediate intervention with measures such as intra uterine exchange transfusion with early delivery [1,5,7]. The patient presented did not require amniocentesis or early intervention because the maternal antibody test (ICT) remained negative throughout the pregnancy.

Other non Rhesus blood group antibodies can cause haemolytic disease in the foetus but they generally cause less significant and less severe disease in a very small proportion (about 1%) of patients. They include the Kell, Lewis, Kid, Lutheran, Diego and ABO blood groups among many others. Prophylactic anti-sera such as anti-Kell have been developed to treat such cases [1,2,10].

Rhesus antibodies can be detected using the following methods [2,6,10]

1. **Saline test** which rhesus positive erythrocytes suspended in isotonic saline are agglutinated only by IgM and anti-D IgG by bridging the gaps between the red cells suspended in the saline
2. **Indirect Coombs test or indirect Antiglobulin test,** which uses serum obtained from animals injected with specific human immunoglobulin g (IgG) to agglutinate incubated red cells coated with anti-D antibodies (positive indirect Coombs test). This test can be performed in titres. This is the test used in our set up.
3. **Enzyme techniques** are the most sensitive of the available methods. Red cells are incubated with enzymes such as Papain, Trypsin and Bromelin, which reduce the negative electrical potential of these cells. The red cells so treated and suspended in saline are closer together and are readily agglutinated by IgG anti-D
4. **Autoanalyzer method** is the most specific of all the methods. It is however not commonly employed due to prohibitive cost as well as the fact that a highly specific costly test is not appropriate as a screening test.

Foetal red blood in maternal circulation can be detected by **Kleihauer** (or acid elution test) and erythrocyte rosette test [6,10]. The concentration of these foetal red cells can be determined to indicate the degree of foetomaternal transfusion.

Perinatal mortality and morbidity remains high amongst the isoimmunized women. A study of Rhesus isoimmunization at Kenyatta National Hospital showed a perinatal mortality of 600 per 1000 of the isoimmunized cases [3,4]. The practice in Kenyatta National Hospital at the moment is never to allow these mother's to go beyond 40 weeks gestation estimated from last menstrual period, because the incidence of foetomaternal haemorrhage and transfusion increases significantly after 40 weeks and perinatal mortality and morbidity increase. The patient presented was induced at 40 weeks gestation when she did not go into spontaneous labour in keeping with the practice

REFERENCES

1. Bowine J.W, Reece A.E

   Maternal alloimmunization and foetal haemolytic disease.

   In Medicine of the foetus and mother. 2nd edition.

   Lippincott- Reven publishers. England page 1242 : 1999

2. Pernoll L.M, Durfee R.B

   Rhesus isiommunization and other blood group incompatibilities.

   In current Obstetric and Gynecologic diagnosis and treatment. 7th edition

   Appleton and Lange publications. USA page. 334: 1991

3. Mati J.K.G, Aggarwal V.P, Sanghvi H.G, et al.

   The Nairobi Birth survey: Antenatal care in Nairobi

   J. Obstet. Gynecol for East and Central Africa. 2 (1): 1, 1983

4. Mulandi T.N.

   A two-year prospective study to show the effectiveness of anti-D Gamma-globulin in preventing Rhesus isoimmunization of Rhesus negative pregnant Kenyan women at Kenyatta National Hospital.

   Mmed thesis, University of Nairobi 1985.

5. Liley A.W

   Liquor amni analysis in the management of the pregnancy complicated by Rhesus sensitization

   Am.J. Obstet. Gynecol 82:1359-70 1963

6. Whitfield C.R

   Rhesus and other red cell isoimmunization in pregnancy.

   In Turnbull's Obstetrics. 2nd edition

   Churchill Livingstone publications. Edinburg England 1995.

7. Ney J.A, Dooley S.N, Socol M.L. et al

   Perinatal outcome following intravascular transfusion in severely isoimmunized foetuses.

   International J. Gynecol. Obstet 35:41, 1991.

8. Nicolini U, Fisk N., Rodecvk C.H, et al

   Foetal liver dysfunction in Rhesus alloimmunization

   Brt. J. Obstet. Gynecol 98:287; 1991

9. Weiner C.P, Grant S.S., Sipes S.L. et al

Risk factors for cordocentesis and fetal intravascular transfusion.

Am.J. Obstet. Gynecol 165:1020; 1991.

10. Cunningham F.G, MacDonald P.C, Leveno K.J

Foetal- maternal haemmorrhage and Hemolysis from isommunization.

In Williams Obstetrics 19th edition.

Appleton and Lange publications. Stanford Connecticut pg. 1003: 1993

Case No. 7

RETAINED PLACENTA - MANUAL REMOVAL

NAME	**:**	**A.N**	**DOA**	**:**	**13/11/01**
AGE	**:**	**32 YEARS**	**DOD**	**:**	**17/11/01**
IP. NO.	**:**	**0772660**	**L.MP.**	**:**	**11/02/01**
PARITY	**:**	**4 + 0**	**EDD**	**:**	**18/11/01**

PRESENTING COMPLAINTS

The patient was admitted through casualty department with complains of per vaginal bleeding and retained placenta for 6 hours.

HISTORY OF PRESENTING ILLNESS

She had delivered vaginally at home about 8 hours prior to admission assisted by a neighbour. The outcome, a live female infant cried immediately after birth. Despite massaging of the uterus by the neighbour who assisted the delivery the placenta did not come out. There was an associated continuous per vaginal bleeding which came in clots. She also developed dizziness and intense thirst.

OBSTETRIC AND GYNAECOLOGICAL HISTORY

She was a para 4 + 0 and her last menstrual period was on 11/2/01 hence her expected date of delivery was on 18/11/01. Her gestation by date was therefore 39 weeks and 5 days. Her first delivery was via emergency caesarian section because of foetal distress. The second and third deliveries were vaginal deliveries at Kenyatta National Hospital. All the children were alive and well. Her menarche was at age 15 years and she had regular menstrual cycles every 28 to 30 days. The duration of flow was four days and were not associated with dysmenorrhea. She used injectable contraceptive between last delivery in 1996 and November last year when she stopped to conceive.

The patient attended Antenatal clinic in Waithaka where she says she was given a booster dose of anti-tetanus toxoid and blood for some investigations taken. However, she did not have any records to confirm this history.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant

FAMILY AND SOCIAL HISTORY

She is married and lives with her husband in Waithaka where she ran a grocery store. She did not smoke cigarettes or drink alcohol. There was no family history of chronic illness.

PHYSICAL EXAMINATION

General Examination

She was in fair general condition, moderately pale, afebrile, not jaundiced, no oedema, no lymphadenopathy. Her blood pressure was 90/50 mmHg, pulse rate was 104 beats per minute, respiratory rate 24 per minute and temperature 36.7°C.

ABDOMINAL EXAMINATION

The abdomen was uniformly distended in supra-pubic and umbilical region, but moved uniformly with respiration. There was a sub umbilical midline surgical scar. The fundus corresponded with a 24 weeks gestation and had mild tenderness. There was no hepatosplenomegaly and bowel sounds were normal.

PELVIC EXAMINATION

The external genitalia was normal but were soiled by blood clots. The untied umbilical cord was visible hanging out through the vulva, but there was no active bleeding. The cervix was about 4 cm dilated with part of placenta protruding into upper vagina.

DIAGNOSIS

A diagnosis of retained placenta was made and the patient was immediately prepared for manual removal in theatre under general anaesthesia.

MANAGEMENT

The patient was explained about the nature of her condition and the planned management in theatre under general anaesthesia. An informed consent was obtained and the patient was pre-medicated with intra-muscular Atropine Sulphate 0.6 mg. Blood was also taken for group and cross-match of two units of blood. Two intravenous lines with wide bore intravenous canulae were set up, one for normal saline and the other containing 40 IU. of Oxytocin.

MANUAL REMOVAL OF PLACENTA

In theatre, the patient was placed in lithotomy position under general anaesthesia and vulvo-vaginal toilet was done. She was draped and catheterized aseptically obtaining about 200 mls of clear urine. Pelvic examination under anaesthesia confirmed the earlier findings in the ward. Vagina and cervix were intact. The right hand was inserted into the uterus identifying the placenta site as fundo-anterior. The placenta had not separated. The left hand was used to support the uterus while the ulna aspect of the right hand inside the uterus was used to shear off placental attachment. The placenta was found to be quite adherent to the previous scar site of lower uterine segment. Complete placental separation was achieved, the hand was withdrawn and placenta was delivered. The placenta was complete and weighed 600 grams. The uterine cavity was explored and found empty. Uterine massage was carried out as Oxytocin drip rate was increased, achieving hemostasis. The cervix, vagina and perineum were once more carefully inspected and no lacerations were seen. General anaesthesia was reversed and the patient was wheeled out of theatre.

POST OPERATIVE MANAGEMENT

Her vital signs were observed half hourly until she was fully awake then, four hourly there after. They remained normal throughout the recovery period. Intravenous infusion of Oxytocin 40 international units in 500mls of normal saline was continued at 40 drops per minute. She was allowed to take orally when fully awake. Vaginal bleeding remained minimal as expected of lochia loss. She was started on oral Amoxycillin 500mg 8 hourly, Metronidazole 400mg 8 hourly for 5 days and hematinic Ranferon-12 with 300mg of Ferrous fumarate 8 hourly for 8 weeks. On the third post-natal day her check Haemoglobin concentration was found to be 7.8 grams per deciliter. She was discharged home to attend post-natal clinic and she opted to be seen at health facility near home.

DISCUSSION

The patient presented here is a 32 years old para 4 + 0 with one previous scar who presented with post partum haemorrhage secondary to retained placenta. She was managed by manual removal of placenta in theatre under general anaesthesia.

If placenta has not been delivered by 30 minutes after delivery of the baby the placenta is considered to be retained [1,2,4]. The median time of placental delivery is 6 minutes and 95% of spontaneous placental deliveries occur within 30 minutes. The precise reason for delay in detachment beyond 30 minutes is not always obvious, but in most instances, it seems to be due to inadequate uterine contraction and retraction. Sometimes the placenta is unusually adherent to its site because of scanty or absent decidua so that the physiological line of cleavage through the spongy layer of endometrium (Nitabuch or fibrinoid layer) is lacking. As a consequence one or more cotyledons of the placenta are firmly adherent to the defective decidua basalis or even myometrium. When the placenta is thus anchored, the condition is called **placenta accreta**. When the placenta penetrates into the myometrium but does not traverse it the condition is called **placenta increta** and when it traverses the myometrial layers the condition is called **placenta percreter** [1,2,4,5]. The patient presented had not delivered placenta six hours after delivery and the cause was found to be the unusual adherence to the scarred endometrial lining from previous caesarian section. The diagnosis of placenta increta and percreta is retrospective and is only found when laparotomy and hysterectomy are performed for uncontrollable post partum haemorrage secondary to retained placenta [4,6,7].

Physiologically, the uterus should contract soon after the delivery of the baby. The placenta will then separate from the uterine wall along the fibrinoid or Nitabuch layer and is spontaneously expelled. Blood accumulating in retro-placental space initially created by separation helps to speed up the separation process. Spontaneous placental separation is indicated by the lengthening of the umbilical cord, a gush of blood per vagina, uterus becoming more globulous and the fundus moving upwards [1,5,7].

The incidence of retained placenta is approximately 5% of globally [2,3,7]. However, about half of these respond to initial measures of 2nd dose of Oxytotic or setting up of Oxytocin drip and massaging the uterus to contract. Therefore, only half of these patients end up in theatre for manual removal under anaesthesia [7].

Failure of the placenta to deliver spontaneously is an important cause of post partum haemorrage. However, it has been shown that there is no increased risk until 30 minutes have elapsed and suggestion that conservative management is appropriate during this interval. There is increased incidence of retained placenta among patients who have pre-term labour and in those with previous

caesarian section scars [2,7]. The patient presented had one previous caesarian section scar, and the placenta was found very adherent to the previous scar site of endometrium.

Though some obstetricians deliver placenta manually as soon as the baby is delivered, most wait for spontaneous expulsion, manual removal being indicated only if conservative management fails [3,5,7]. In our unit use of Oxytotic drugs especially Ergometrin is advocated and used after delivery of the baby unless there is a contraindication. If the cause of retained placenta is found to be uterine atony Oxytocin infusion is occasionally used to enhance uterine contractions. Our unit also advocates active management of labour to make it relatively short enough, comfortable for the patient and quick action incase of abnormal labour. This involves rupturing membranes at 4 to 6 centimeters of cervical dilatation and augmenting labour with Oxytocin if uterine contractions are poor. At 3rd stage Ergometrin is given at delivery of the baby's shoulder and the placenta is delivered soon as possible. The umbilical cord is kept slightly taut; the uterus is lifted caphalad with abdominal hand and with only mild traction of the cord to prevent uterine inversion. This is what is referred to as controlled cord traction [1,7].

The patient who has retained placenta is often in hypovolemic shock having had post-partum haemorrhage. Adequate resuscitation is mandatory before attempting manual removal. This should include administration of second dose of Oxytotic and blood transfusion if the patient is bleeding [5,7]. The patient presented had severe post partum hemorrhage and was admitted in hyporolemic shock. She was given intravenous fluids, which included Hartmans solution, normal saline and hemacel before being taken to theatre. Blood for group and cross match was taken but blood was not available for her at our blood transfusion unit. Oxytotic drug infusion was carried out both before and after manual removal of placenta.

Manual removal of placenta is performed under general anaesthesia or sedation, and aseptic surgical techniques are employed. After holding the uterine fundus through the abdominal wall with one hand to stabilize it, the other hand is introduced into the vagina and passed into the uterus along the umbilical cord. As soon as placenta is reached, its margin is located and the ulna border of the hand insinuated between the placenta and the uterine wall. Then with the back of the gloved hand in contact with the uterine wall, the placenta is peeled off its uterine wall attachment by a motion similar to that employed in separating the leaves of a book. After complete separation, the placenta should be grasped with entire hand, which is then withdrawn gradually. Any remaining membranes or pieces of placenta tissue may be removed with ovum forceps. Gentle sharp curettage may also be done to remove any retained pieces of placenta or membranes as Oxytocin infusion is in progress. Post operatively these patients should be given prophylactic antibiotics to prevent Endometritis or

puerperal sepsis [3,5,7]. The patient presented had manual removal of placenta done under general anaesthesia in theatre and she was put on a course of broad spectrum antibiotics namely Amoxycillin and Metronidazole together with hematinics to treat her anaemia.

Complications of manual removal of placenta include post partum haemorrhage, uterine inversion, infection and uterine rupture. These complications are minimized by employing appropriate technique at every stage of labour [3,5,7]. The patient presented did not develop any of these complications.

REFERENCES

1. Cunnigham F.G, Macdonald PC, Gant N.F

   Abnormal third stage of labour. In William Obstetrics. 20th edition.

   Appleton and Lange publications. Stanford Connecticut pg. 424: 1997

2. Laros R.K, Comts C.A

   Prolonged third stage, morbidity and risk factors

   Obstet. Gynecol 77 (6) 1991

3. Dombrowski P.M, Romero R, Saleh A.A et al

   Third stage of labour. Analysis of duration and clinical practice.

   Am.J obstet Gynecol 172; 1279: 1995.

4. Berchuk A, Sokol R.J.

   Previous caesarian section, placenta increta, and uterine rupture.

   Am.J obstet. Gynecol 145 :766, 1983

5. Kepernick P.S

   Post partum hemorrhage.

   Current obstetric and Gynaecologic diagnosis and treatment 7th edition.

   Appleton and Lange publication. USA pg. 568 : 1991

6. Koonings P.P, Clark S.L, Phelon J.P

   Placenta previa / accreta and previous caesarian section.

   J. Obstet. Gynecol : 66: 89: 1985

7. Loeffler F, Newton M, Rauff M.

   Abnormalities of 3rd stage of labour: Retained placenta.

   In turnbull's Obstetrics. 2nd edition

   Churchill Livingstone publications. Edinburg England pg. 730: 1995

Case No. 8

PUERPERAL SEPSIS AFTER CAESARIAN DELIVERY FOLLOWING PRLONGED OBSTRUCTED LABOUR

NAME	:	**E.N**	**L.M.P.**	:	**15/2/01**
AGE	:	**25 YEARS**	**E.D.D.**	:	**22/11/01**
IP NO	:	**0775017**	**D.O.A.**	:	**23/11/01**
PARITY	:	**0 +0**	**D.O.D**	:	**1/01/02**

PRESENTING COMPLAINTS

The patient was admitted through casualty department as a referral from a private health facility, where she had presented from home with history of labour pains for two days.

HISTORY OF PRESENTING COMPLAINTS

The patient who had not attended antenatal clinic developed labour pains shortly after midnight of 21st November, 2001. She initially laboured at home alone and a day later attempts by a neighbour to assist her deliver failed. Membranes had ruptured spontaneously at home and she drained clear liquor. She was taken to the nearest private health facility where a quick assessment showed the patient had obstructed labour and she was referred to Kenyatta National Hospital for further management.

OBSTETRIC AND GYNAECOLOGICAL HISTORY

She was a primigravida. The first day of her last menstrual period was on 15/2/01, thus her expected date of delivery was on 22/11/01. Her gestational age by dates was 40 weeks. She said she could not attend antenatal clinic because she did not get time off from her place of work. However, she did not encounter any major problems during pregnancy.

She attained her menarche at age 15 years. Her menstrual cycles were regular, occurring every 28 to 29 days and the flow lasted 3 days. There was associated dysmenorrhea. She had never used any contraception.

PAST MEDICAL AND SURGICAL HISTORY

This was not significant.

FAMILY AND SOCIAL HISTORY

She was a single lady who worked at a plastic factory as a casual labourer. She lived at Kwa Njenga where she was accommodated by a friend. She had attained standard eight level of education and dropped out of school due to lack of school fees. She did not drink alcohol or smoke cigarettes. There was no family history of twins or chronic illness and she had no known drug allergy.

PHYSICAL EXAMINATION

General Examination

She was a young lady who appeared exhausted, anxious and dehydrated. She was afebrile, not pale, not jaundiced and had no pedal oedema. Her blood pressure was 130/80 mmHg, pulse rate was 96 beats per minute, respiration rate was 22 per minute and temperature was 37°C

ABDOMINAL EXAMINATION

The abdomen was uniformly distended and moved with respiration. There were no surgical scars or stria graviderum. The fundal height was term, the foetus was in longitudinal lie and cephalic presentation. The head was palpable about three-fifths above the pelvic brim and was not mobile. The foetus felt clinically big. Foetal heart rate was 128 beats per minute and was regular. The urinary bladder was distended with urine and attempts to catheterize her were not successful because the foetal heard compressed the urethra. She could not void voluntarily either.

VAGINAL EXAMINATION

She had normal external genitalia and the vaginal mucosa appeared grossly normal. The cervix was fully dilated and there was a long caput succedaneum on the foetal scalp together with severe moulding of the foetal skull bones. There was no cord felt, but she was draining meconeum stained liquor grade II

OTHER SYSTEMS

The breasts, respiratory, cardiovascular and nervous systems were normal.

DIAGNOSIS

A diagnosis of a primigravida with obstructed labour was made.

MANAGEMENGT

The nature of diagnosis was explained to her together with the planned emergency caesarian section and she gave informed consent for the operation. She was given one litre of intravenous fluids as 500mls of normal saline and 500 ml of 10% dextrose while she was being prepared for theatre. Blood was drawn for group and cross-match and two units of whole blood were requested. The abdomen was shaved and she was pre-medicated with 0.6 mg of Atropine Sulphate given intramuscularly.

OPERATION

In theatre, the patient was placed in semilithotomy position and vulvo –vaginal toilet was done. She was catheterized aseptically and about 200mls of blood stained urine was drained. Digital examination confirmed the earlier findings in the ward. The patient was replaced supine, abdomen cleaned and draped. General anaesthesia was induced and the abdomen was opened via a sub-umbilical midline incision. The sides of the uterus were carefully packed with abdominal packs. The urinary bladder appeared grossly oedematous but was intact. The visceral peritoneal reflection between the lower uterine segment and urinary bladder was lifted with tissue forceps and incised. The bladder was mobilized caudally into the pelvis to expose the lower uterine segment. Lower uterine segment caesarian section was performed and the head of the baby which had got impacted in the pelvis was pushed onto the surgeons hand from below by a gloved midwife. A live female infant who weighed 3850 grams was extracted. She had a very poor Apgar score of one at one minute, three at five minutes and four at 10 minutes. She was admitted to high dependency unit (HDU) of newborn unit where she later died due to severe birth asphyxia.

The liquor was meconeum stained grade III and was foul smelling. The placenta, which was implanted fundo-posterior, was delivered whole by controlled cord traction. It weighed 650 grams and appeared grossly normal. She had sustained a small longitudinal tear about 3 centimeter long on the left lateral side of the lower uterine segment which did not involve the bladder or cervix. The uterine cavity was wiped off blood clots and meconeum with a gauze pack and bleeding edges *held* with green Armitage clamps. The uterine wall and the tear were sutured in three layers and haemostasis was achieved. The packs were removed from the sides of uterus and the peritoneal cavity cleaned with Riforcine in warm saline. The posterior side of uterus, fallopian tubes, ovaries and pouch of Douglas were inspected and found grossly normal. Instrument and swab count correct the abdomen was closed in layers and vulvo-vaginal toilet done. The urine was still moderately blood-

stained post operatively and an indwelling catheter was left in situ for 10 to 14 days. Estimated blood loss was approximately 600 mls.

POST OPERATIVE CARE.

The patient's vital signs were observed quarter hourly until she was fully awake then four hourly thereafter. Intravenous fluids; normal saline and 5% dextrose were given 500mls every four hours until bowel sounds were auscultated. She was given intramuscular Pethidine 100mg 8 hourly for 48 hours followed by oral Mefenamic Acid 500 mg three times daily to relieve pain. Intravenous Crystalline Penicillin 2 mega units 6 hourly and Gentamycin 80 mg 8 hourly were given. An input-output chart was kept and colour of urine noted every day. On the first post operative day she had re-established bowel sounds and had passed flatus. She was started on oral sips as she continued intravenous fluids to the second post-operative day. The breasts were not engorged, vital signs were normal, chest was clear and she was draining lightly blood stained urine with output 1200mls against input of 3 litres. She was started on Bromocriptine 2.5mg twice daily to suppress lactation. She was cancelled for the loss of the baby and was treated with general care and understanding to enable her bear perinatal grief.

On the third postoperative day, she developed a fever with temperature rising to 39°C. She was mildly pale but not jaundiced. The breasts were engorged and tender. The respiratory, cardiovascular and nervous systems were normal. The dressings on the operation wound were removed and the operation site was found to be intact and healing well. The uterus was tender, had not involuted and corresponded to a 22 weeks fundus. The lochia was foul smelling and grossly appeared lochia rubra. The catheter was draining clear urine and the output was adequate. There was no calf tenderness. An impression of puerperal sepsis was made.

An Endocervical swab was taken for gram stain, culture and sensitivity and catheter specimen of urine taken for microscopy culture and sensitivity. Blood slide for malaria parasites was also taken as blood was drawn for postnatal profile because she had not been investigated during antenatal period. She was offered pre-test counseling and blood taken for HIV test. Intravenous Metronidazole 500 mg 8 hourly was added to the Penicillin and Gentamycin stated above to cover for anaerobes. Intravenous fluids were maintained, as she was not able to take orally as required. She was also started on haematinics.

Investigation Results

1. **Blood slide for Malaria parasite**- Negative
2. **Catheter specimen of urine**:

   Urinalysis – pH 7.5 and glucose, Proteins, Ketones, Bilirubin, blood, pus cells and ova were reported nil

   Microscopy- Many pus cells, few red blood cells and numerous leucocytes (+++)

   Culture sensitivity- Nil growth
3. **Endocervical swab**

   Microscopy – many pus cells seen, no yeast cells seen, no Trichomonas Vaginalis seen.

   Gram strain- Mixed gram negative and gram positive cocci

   Culture and Sensitivity- Multiple colonies of Staphylococcus aureus, Bacteroides and Strephococcus sensitive to Cefuroxime, Piperacillin and Augmentin among other antibiotics
4. **Haemogram:** Hb was 7.3 g/dl, total white cell count was 16.4 x 10^3 /m^3 differential

   WBC counts: Neutrophils 76.1% Lymphocytes 17.7% Eosinophils 2.0% Monocytes 4.2% .

   Platelets were 161 x 10^3 /m^3

   Red blood cell morphology was reported as normochromic
5. **VDRL:** Negative
6. **Blood group**: O Rhesus positive
7. **ELISA for HIV**: Negative

The fever persisted through to day 6-post operation when Endocervical swab results were received. She was converted to Cefuroxime 750 mg 6 hourly for five days together with Metronidazole 500 mg 8 hourly both given intravenously basing on sensitivity results of the culture. The degree of pallor had increased and check haemoglobin concentration (Hb) was 5.8 g/dl. She was transfused 2 units of whole blood and a check Hb on day 10 post operative had improved to 8.6 g/dl. She continued haematinic Ranferon 10mls twice a day.

On the 10th post operative day the fever had settled, the patient's general condition had significantly improved and she was ambulant. The urine output had remained adequate and the catheter was removed. She was able to pass urine without any problem and she was continent. The stitches had

been removed after eight days post-operative and the wound had healed well without would sepsis. The uterus had not involuted and corresponded to a fundus of 20 weeks. She was put on Ergometrine 0.5 mg twice a day for two days. By 16th postoperative day the uterine size corresponded with an 18 weeks fundus though the lochia had dried off and there was no fever. An ultra sound done showed a bulky uterus without intrauterine or extra uterine pathology. She was given oral Augmentin 625 mg (Amoxycillin 500mg and Clavulenic acid 125 mg) twice daily for five days and Ibuprofen 400 mg 8 hourly. The uterus gradually involuted and on 1st January, 2002 when she was discharged home it was not palpable above the pubic symphysis. She went home on haematinics and was booked postnatal clinic to be reviewed after 4 weeks.

FOLLOW UP

She was seen at postnatal clinic on 1st February, 2002 and she had no complaints. She was not pale and the operation site had healed well. A check haemoglobin concentration was 10.8 g/dl. She had not resumed her menses. She was counseled on family planning and was referred to clinic 66 for contraception. She was also informed that her subsequent pregnancies would be delivered by caesarian section and that she should start antenatal care visits as soon as she realises she is pregnant.

DISCUSSION

The patient was a single 25 years old primigradiva with a term pregnancy who underwent emergency caesarian section for obstructed labour after labouring at home for two days. She delivered a severely asphyxiated baby who died 16 hours after delivery. She subsequently developed puerperal sepsis, which was managed successfully with antibiotics guided by culture and sensitivity results of Endocervical swab

Puerperal infection (or puerperal sepsis) is any bacterial infection of the genital tract after delivery. Previously used but less satisfactory synonyms are puerperal fever and childbed fever [1,2]. Other clinicians use the general term puerperal morbidity which is currently defined as follows: temperature 38.0°C (100.4°F) or higher, the temperature to occur on any two of the first 10 days post partum, exclusive of the first 24 hours, and to be taken by mouth by a standard technique at least four times daily [1,2]. While this definition suggests that all puerperal fevers are the consequences of pelvic infection, temperature elevations may be the result of other causes. Some of the extra genital causes of puerperal fever include respiratory complications, pyelonephritis, intense breast engorgement, bacterial mastitis, thrombophlebitis and in cases of laparotomy, incisional wound sepsis or abscess. Fever occurring within the first 24 hours is often in patients, who underwent caesarian section and is commonly due to respiratory anaesthetic complications such as atelectasis, aspiration pneumonia and occasionally bacterial pneumonia. It is also important to note that overt infections can and do occur in the absence of fever though fever of some degree remains a hallmark of puerperal infection [1,2,5]. The patient presented had fever with temperature 39° C starting on 3rd postoperative day which persisted for five days.

Puerperal infection morbidity affects 2 to 8% of deliveries globally and is more common in those of low socio economic status, those who underwent caesarian section, operative vaginal deliveries, premature rupture of membranes, prolonged labour and those with multiple pelvic examinations [1,2,5]. In our set up Wanjohi [4] and Sinei [3] reported an incidence of 5% to 8% at Kenyatta National Hospital. The proportional frequency of the various types of infections was: genital tract 45 to 55%, urinary tract in 35 to 60%, breast in 5 to 10% and intercurrent infection in 2 to 5% of cases. The patient presented hailed from a low socio-economic background, had prolonged labour for two days, prolonged rupture of membranes and caesarian delivery, therefore she was highly predisposed to puerperal sepsis.

Almost all post partum infections are caused by bacteria normally present in the genitalia of pregnant women. The lochia is an excellent culture medium. In women who have undergone pelvic surgery as the patient presented more devitalized tissue and foreign bodies (sutures) are present providing fertile ground for possible contamination and subsequent infection. About 70% of puerperal soft tissue infections are mixed infections consisting of both aerobic and anaerobic organisms. Infections occurring in women who have undergone caesarian section are more likely to be serious [1,2].

The flora of the birth canal of pregnant women is essentially the same as that of non- pregnant women. Several mechanisms appear to prevent overt infection in the genital tract, such as: the acidity of the normal vagina, thick tenacious cervical mucus and maternal antibodies to most vaginal flora. The organisms forming normal vaginal or external genital tract flora are generally considered to be of low virulence, but become pathogenic in the presence of haematomas and devitalized tissue [1,2,5]. During labour and particularly after prolonged rupture of membranes some of the protective mechanisms are no longer present. Repeat vaginal examinations and invasive monitoring apparatus probably facilitate the introduction of vaginal bacteria into the uterine cavity, which is usually sterile before rupture of membranes to cause some degree of Endometritis [2,5]. The patient presented developed overt infection post operatively and had obstructed labour together with prolonged rupture of membranes. She therefore had devitalized tissue, foreign body (suture material), lochia and bacterial contamination, all of which provided a fertile ground for sepsis.

Predisposing factors of puerperal sepsis include: prolonged rupture of membranes for over 24 hours, chorioamnionitis, excessive number of digital vaginal examinations, prolonged labour for over 8 hours, eclampsia intrauterine pressure catheters, foetal scalp electrodes monitoring, pre-existing vaginitis or cervicitis, operative vaginal deliveries, caesarian section, intrapartum or post partum anaemia, corticosteroid therapy, diabetes mellitus, immunosupression, poor nutrition, obesity, low socio-economic status and coitus near term [1,2,4,5]. The patient presented had many of the above listed predisposing factors namely: prolonged labour, prolonged rupture of membranes, caesarian section delivery, post partum anaemia, low socio-economic status and poor haemostasis leading to haemotoma formation.

The evidence that anaemia increases the likelihood of infection is not conclusive. The results obtained from both animal and invitro experiments are consistent with the view that iron deficiency anaemia does not predispose to infection and some believe it may actually prevent infections.

Transferin, which is increased in iron deficiency anaemia appears to have significant antibacterial action [1,5,6]. The role of poor nutrition is that cell mediated immunity is impaired in both malnourished individuals and laboratory animals [1,2]. Sexual intercourse especially when membranes have ruptured, or when rupture occurs soon after coitus, increases the incidence of post partum sepsis. Moreover preterm delivery has been reported in women who had intercourse late in gestation and the aetiology includes the consequence of infection [1,6]. Berenson and colleagues, [7] 1990 reported that colonization of the lower genital tract with micro-organisms such as group B streptococcus, Chlamydia trachomatis, Mycoplasma hominis and Gardnerella vaginalis are associated with an increased risk of post partum infection.

The bacteria commonly implicated are gram positive aerobes such as group A,B and D Streptococci, Enterococcus, Staphylococcus aureus, gram negative aerobes such as Escherichia coli, Klebsiella and Proteus. Anaerobes commonly encountered are Peptococcus species Peptostrephocccus species, Bacteroides species, Clostridia species and Fusobacteria. Other implicated pathogens include Mycoplasma hominis, Chlamydia trachomatis and Gardnerrella vaginalis have been reported to be more common among adolescents with puerperal infection [1,2,7]. In the patient presented the Endocervical swab showed mixed gram positive and gram negative cocci. Its culture grew Staphylococcus aureus, Streptococcus and Bacteroides, the first two being aerobes and the latter being an anaerobe.

The clinical picture of puerperal sepsis varies with the extend of the disease. The diagnosis is often based on the presence of fever, raised pulse, abdominal pain and tenderness, sub-involution of the uterus and lochia characteristics. The lochia may or may not have a foul smell or odor. Whenever fever persists post partum, uterine infection (Endometritis) should be suspected. When the infection is confined to the Endomentrium (decidua) and superficial myometrium the clinical picture is mild and there is minimal fever. More commonly the temperature exceeds 38.3 °C and may be associated with chills and rigors which suggest bacteremia. The pulse rate typically rises following the temperature curve [1,2,5]. The patient presented had the typical picture described above.

Most persistent fevers after childbirth are caused by genital tract infections. Regardless, every post partum woman whose temperature rises to and persists above 38° should be evaluated for extra pelvic causes of fever as well as for puerperal infection. Respiratory infections are most often seen within 24 hours following delivery and almost invaribly in women delivered by caesarian section [1,2].

Pyelonephritis may be difficult to diagnose post partum, but in a typical case Bacteriuria, Pyuria and costovertebral angle tenderness are diagnostic [2,5]. Breast engorgement commonly causes brief temperature elevation and the fever characteristically lasts not longer than 24 hours unless there is bacterial mastitis. Superficial or deep venous thrombophlebitis, which may cause temperature elevation in puerperium, is diagnosed by observation of a painful swollen leg accompanied by calf muscle tenderness [1]. The patient presented had obvious genital tract infection as well as an extra genital cause of fever namely breast engorgement. There was no costovertebral angle tenderness, catheter drained clear urine and laboratory evaluation of her urine specimen ruled out pyelonephritis. Her legs were not swollen and there was no calf muscle tenderness.

The diagnosis of puerperal sepsis is confirmed by laboratory findings, which include haemotological studies, lochia or Endocervical swab cultures, urine cultures and blood culture [1,2]. A total blood count may reveal leucocytosis of over 15,000 white blood cells per cubic milliliter, predominantly Neutrophils with toxic granules and presence of anaemia. However, leucocytosis is a common normal finding during labour and immediate puerperium with white blood cell counts reaching 15,000 to 20,000 per microlitre in the absence of infection. Leucocytosis in the presence of fever and other clinical features of puerperal sepsis are collaborative with the diagnosis. Infections in which Mycoplasma or Bacteroides are the predominant organisms frequently have positive blood cultures[1,6]. Because of their anatomical close proximity urinary tract and genital tract infections may co-exist, therefore laboratory analysis of urine including cultures and sensitivity should be performed. It is prudent to carry out laboratory studies and cultures of lochia taken from Endocervical canal or upper vaginal fornices through a sterile speculum examination to identify specific microorganisms together with their antimicrobial sensitivity [2,8]. In the patient presented Endocervical swab cultures, urine cultures and haemogram were performed. The haemogram revealed severe anaemia and leucocytosis, which necessitated blood transfusion. The Endocervical swab culture grew both gram positive and negative aerobes together with anaerobes. Urine cultures were negative, while blood cultures were not done due to shortage of relevant culture material.

Treatment for Puerperal sepsis depends on the suspected causative organisms and severity of the disease. The guiding principle is to use broad spectrum antibiotic or antimicrobial either singly or in combination to cover both aerobes and anaerobes as well as both gram positive and gram negative organisms at the onset then modify or change according to culture and sensitivity results [1,6,8,9]. The initial therapy should use intravenous antibiotics in appropriate high doses comprising a Penicillin to

cover gram positive organisms, plus an Aminoglycoside to cover gram negative and Metronidazole or Clindamycin to cover for anaerobes. Single agent therapy with very broad-spectrum second or third generation Cephalosporins or fortified Penicillins such as Augmentin and Piperacillin are acceptable alternatives [1,2]. In the patient presented a triad of intravenous Crystalline Penicillin, Gentamycin and Metronidazole were initially used, then Crystalline Penicillin and Gentamycin were replaced with Cefuroxime basing on culture and sensitivity report.

On commencement of Antibiotics therapy improvement does follow in 48 to 72 hours in nearly 90% of patients. Persistence of fever after this period mandates a careful search for causes mainly refractory pelvic infections, although non pelvic source are occasionally found. Complications that cause persistence of fever include parametrial Phlegmons, surgical incisional sepsis, pelvic abscess peritonitis or septic pelvic thrombophlebitis. Wound abscesses require drainage and antimicrobial therapy. Peritonitis and pelvic abscesses may require fluid and electrolyte replacement together with antimicrobials to stabilize the patient before laparotomy to drain the abscess or loculated peritoneal exudates [1,2,5].

Other complications of puerperal sepsis that can occur include adnexal infections with chronic pelvic inflammatory disease resulting in subsequent tubal occlusion and infertility. Septicemic shock is a dreadful complication that carries high mortality. It is caused by release of mediators such as Histamine, Kinins, Prostaglandins and complement system activators induced by products of bacteria especially gram negative cell wall degradation. The released mediators cause multiorgan dysfunction with vasodilatation, hypotension, renal failure, pulmonary oedema and severe myocardial depression[5,6,8]. The patient presented did not develop any major complication except for very slow involution of the uterus, which pelvic ultrasound did not reveal any major pathology.

Puerperal infections are either directly responsible or contribute to the death of about one third of all pregnant women who die each year [1,2]. The disease may disrupt the relationship between mother and her infant and require separation from each other at a time when intimate contact is highly desirable. The cost of treatment, hospitalization together with the strain of the family income is considerable together with time lost from work [8,9]. The patient presented stayed in hospital for six weeks incurring a huge bill not to mention expenses incurred by family to visit and support her. She lost her job as a casual labourer at the plastic factory because of prolonged absences from work.

Puerperal infections may be prevented by identifying those with infection or those at high risk for infections during labour and instituting appropriate therapy at or before delivery. The initial peripartum therapy should comprise 2 or 3 drug regimens in which one of agents covers anaerobic organisms. Single agent intravenous infusion of broad-spectrum antibiotic such as Piperacillin or Cefoxitin may be equally effective [5,6]. Prophylactic antibiotics given after every emergency caesarian section has been shown to decrease the incidence of puerperal wound sepsis from an average of 7% to 2% [2]. Adequate antenatal care visits together with education of the pregnant women encouraging them to deliver in hospital and to avoid prolonged labour especially among primigravidas may decrease the incidence of puerperal sepsis.

REFERENCES

1. Cunningham F.G. MacDonald P.C., Leveno K.J. et al

   Puerperal infection. In William's Obstetrics 19th edition

   Appleton and Lange publications. Stanford Connecticut page 627-642: 1993

2. Kapernick P.S., Pernoll M.L.

   Abnormal Puerperium: Postpartum and puerperal infections

   In current Obstetrics and Gynaecologic diagnosis and treatment 7th edition.

   Appleton and Lange publication. USA pg. 576-583: 1991

3. Sinei S.K.A

   Post caesarian section febrile morbidity at Kenyatta National Hospital. Bacterial pattern and drug sensitivity.

   Mmed Thesis University of Nairobi 1981

4. Wanjohi M.E.

   Risk factors associated with wound infections after caesarian delivery at Kenyatta National Hospital.

   Mmed Thesis University of Nairobi 1989

5. Turnbull A.P., Chamberlain G.

   Puerperal sepsis. In Turnbull's Obstetrics 2nd edition.

   Churchill Livingstone publications. Edinburg England pg. 917-930: 1995

6. Mattingly R.F.I, Thompson J.D.

   Wound infection in Telinde's Operative Gynaecology 7th edition

   Lipincott and Raven publication. Philadephia pg. 175-179: 1997

7. Berenson A.B., Hammil H.A., Faro S. et al

   Bacteriologic findings of post-caesarian Endometritis in adolescents

   J. Obstet. Gynecol 75:627:1990

8. Faros S. Gilstrap L.C.

   Soft tissue infections in pregnancy.

   J. Obstet. Gynecol 76: 1055; 1990

9. Maberry M.C., Gilstrap L.C., Dax J.S. et al

   Anaerobic coverage for intra-amniotic infections. Maternal and perinatal impact.

   Am.J Perinatology 8:338;1991