

**THE PRESENTATION, MANAGEMENT AND  
OUTCOME OF HAEMORRHOIDS AS SEEN IN  
KENYATTA NATIONAL HOSPITAL  
GENERAL SURGERY UNIT 1990-1999**

BY:

*DR. RAYMOND O. OIGARA MB Ch B(UoN)*

A DISSERTATION SUBMITTED IN PART FULFILMENT FOR THE  
AWARD OF THE DEGREE OF MASTER OF MEDICINE IN SURGERY  
M.MED (SURG) - UNIVERSITY OF NAIROBI

2003  
MEDICAL LIBRARY  
UNIVERSITY OF NAIROBI

University of NAIROBI Library




0390150 1

## DECLARATION

### CANDIDATE:

THIS DISSERTATION IS MY ORIGINAL WORK AND HAS NOT BEEN PRESENTED FOR A DEGREE IN ANY OTHER UNIVERSITY.

SIGNED.....

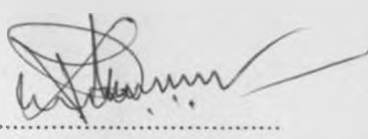
DR. RAYMOND O. OIGARA  
M.B.ChB (NAIROBI)

DATE .....

10/02/03

### SUPERVISOR:

THIS DISSERTATION HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS UNIVERSITY SUPERVISOR.

SIGNED.....

DR. FRANCIS A. OWILLAH  
MBCHB(NBI), MMED (SURGERY) (NBI)  
DEPARTMENT OF SURGERY  
UNIVERSITY OF NAIROBI.

DATE .....

10/02/03

## ACKNOWLEDGMENTS

I owe a dept of gratitude to numerous persons without who I may not have completed this study.

I'm especially indebted to my supervisor **Mr. F.A. Owillah** who guided me in my study.

I am grateful to the **Ministry of Health** for having provided the scholarship to meet the cost of training.

I am also indebted to the Kenyatta National Hospital **Ethical and Research Committee** without whose approval this study would not have been possible.

Special thanks to **Mr. Nyabola** for data analysis and **Ms Janet Musia** for typing and graphical work

Many thanks to **Lords pharmaceutical** and **health net** for exhaustive literature search and **Kenyatta National Hospital Records staff** for availing the records.

I am thankful to my long time friends and colleagues, **Dr. Ndege N.P.K.** and **Dr. Nyandiko Winstone** for advice and encouragement.

God bless you.

## DEDICATION.

This dissertation is dedicated to my wife **Everlyne**, my son **Paul** and my daughter **Kimberly** for being supportive, patient and understanding in this enduring task. The same goes to my siblings and parents.

## CONTENTS.

	PAGE
TITLE.....	i
DECLARATION.....	ii
ACKNOWLEDGMENT.....	iii
DEDICATION.....	iv
CONTENTS.....	v
LIST OF TABLES AND FIGURES.....	vi
SUMMARY.....	vii
INTRODUCTION.....	1
LITERATURE REVIEW.....	3
RATIONALE/STUDY JUSTIFICATION.....	28
AIMS AND OBJECTIVES.....	29
MATERIALS AND METHODS.....	30
RESULTS.....	33
DISCUSSION.....	48
CONCLUSIONS.....	54
RECOMMENDATIONS.....	56
APPENDICES.....	57
REFERENCES.....	61

## LIST OF TABLES AND FIGURES.

		PAGE
Figure 1:	Age distribution of cases.....	33
Table 1:	Occupational status.....	34
Table 2:	Associated clinical conditions.....	35
Figure 2:	Examination procedures done.....	36
Figure 3:	Stage of haemorrhoidal disease .....	37
Table 3:	Route of admission to Kenyatta National Hospital.....	38
Table 4:	Duration of symptoms .....	39
Table 5:	Clinical presentation.....	40
Figure 4a:	Clinical findings at first presentation.....	41
Figure 4b:	Site at first presentation.....	41
Figure 5:	Complications .....	43
Table 6:	Specific investigations performed.....	43
Table 7:	Treatment options.....	44
Table 8:	Complications of interventional treatment.....	45
Table 9:	Outcome of treatment on follow up.....	46

## SUMMARY

This study was carried out at Kenyatta National Hospital where the records of a total of 133 patients with haemorrhoidal disease were reviewed. There was a total of 87 65.4% males and 46 female 34.6% patients representing a male preponderance with a ratio of 2:1.

The majority of patients were in the active age group of 20-39 years and the mean age was 37 years. Anal fissure and HIV disease were the two conditions most commonly associated with the haemorrhoids at a rate of 35.3% and 26.3% respectively..

Proctoscopic examination was done in 79.9% of all patients with haemorrhoids. As proctoscopy is a gold standard examination procedure in the diagnosis of haemorrhoids, this was an obvious shortcoming on the clinical assessment. The most common stage at presentation was third degree haemorrhoids at 62.7%.

The mean duration of illness on presentation was one (1) year with the main symptoms being pain, prolapse and bleeding accounting for 92.5%, 91% and 82.7% respectively. Thrombosis was the commonest encountered complication at presentation accounting for 44.2%, followed by bleeding at 36.5% and ulceration at 25%.

Haemorrhoidectomy was the commonest interventional method used for treatment representing 86% of all interventional methods. Less demanding outpatient procedures such as rubber band ligation were not carried out over the period 1990 to 1999 in

Kenyatta National Hospital. Sclerotherapy, a cost effective mode of interventional therapy is rarely carried out being performed in only 11.9% in this study.

Pain was the most frequent early complication of treatment accounting for 70.4%, while recurrence was the most frequent late complication 54.8%.



## INTRODUCTION

Haemorrhoids are one of the most frequent anorectal disorders encountered in our health care set up. It has affected man from time immemorial, being documented at the time of Hippocrates.

The term haemorrhoid is Latin for flow of blood and it's synonym pile is Latin for ball (pila). Haemorrhoids are swollen veins occurring in relation to the anus. They may be external or internal depending on their situation in relation to the anal orifice. The term "haemorrhoidal disease" should be used specifically for symptoms secondary to abnormalities of the internal haemorrhoidal plexus (1). These are vascular cushions, covered by mucosa, originating from the plexus rectalis superior, as part of the normal anatomy of man (2).

Haemorrhoids are a very widespread disease causing pain by thrombosis, anaemia through bleeding and can be a burden by weeping and pruritus (3). It is a disease often encountered in daily practice and patients may be anxious about aggravating symptoms and the type of diagnostic procedures to be used (4).

Fortunately, haemorrhoidal disease is usually a benign process that responds to patients' reassurance and proper application of a few simple treatment methods. Furthermore, most of the medications used to treat haemorrhoids may be obtained without a prescription. Most important, physicians need to have a clear, concise grasp of the disease process, the symptoms and their meaning, and the timing of treatment.

Interventional treatment of haemorrhoids is also fairly straight forward. These ranges from rubber band ligation and injection sclerotherapy to the surgical excision of the haemorrhoids. There are no figures in our set up in reference to the interventional

therapy especially so for the timesaving and cost effective methods such as rubber band ligation and injection sclerotherapy.

So far, there are no accurate figures in terms of demography of the condition in our set up, hence the need for such a study. Ogendo (5) in 1986/1987 showed a large size of estimated total number of asymptomatic haemorrhoids patients passing through Kenyatta National Hospital (72,012 patients per year), thus haemorrhoidal disease is a very common condition in our set up, hence the need for recent accurate data on presentation and treatment.

Haemorrhoids are also increasingly being seen in HIV positive patients for whom treatment is difficult. One would ask whether there is a relationship and if so what are factors involved.

Haemorrhoids can be broadly classified into :

- a) Internal haemorrhoids are those that arise as a result of prolapse of the internal haemorrhoidal plexus.
- b) External haemorrhoids arise from the external haemorrhoidal plexus
- c) Interoexternal haemorrhoids arise due to prolapse of both plexi.

Internal haemorrhoids are the main interest of this study.

## LITERATURE REVIEW.

Haemorrhoidal disease is a subject that many have talked and written about elsewhere. The lack of data in Kenyatta National Hospital has got to do more with poor record keeping as shown by work already done on haemorrhoids by Ojara (6) and Ogendo SWO (5). Burkitt D. was the pioneer of the work in Eastern and Southern Africa which he did on varicose veins, deep vein thrombosis and haemorrhoids (7). In the consensus of development conference of 1993 the Dutch Surgical Society met and deliberated on the confusing subject of haemorrhoids. They agreed that these are vascular cushions covered by mucosa, originating from the plexus rectalis superior and are part of the normal anatomy of man (2). They also agreed that portal hypertension is not a cause of haemorrhoids.

### **ANATOMY.**

Haemorrhoids represent a normal anatomic state and occur in all adults. Only when the vascular lining (veins) becomes swollen and starts to produce symptoms is a person said to be suffering from 'piles' (8).

The anal canal is a sphincteric tube 4-5 cm in diameter, upper two thirds being thrown into vertical folds while the lower one third is an appendageless squamous epithelium of the sensitive anodermal cuff, the two meeting at the dentate line.

### **ANAL CUSHIONS.**

The upper anal canal is lined by three separate cushions of submucosal vascular tissue composed of elastic connective fibres supporting veins of the internal haemorrhoidal plexus (9,10). These folds lie in the right anterior, right posterior, and left lateral positions. They extend above and below the dentate line. With the patient in lithotomy

the positions are 3.7 and 11 o'clock. Arterio-venous shunts appear to form a component of the above mentioned plexus, as evidenced by the fact that haemorrhoidal blood is bright red and contains oxygen at a level approaching that in arterial blood (9,10).

### **BLOOD SUPPLY.**

The anal folds receive a very rich intercommunicating supply from the superior, middle and inferior rectal arteries. The profuse arterial supply communicates with the venous system not only through capillaries but also by direct arterio-venous shunts thus allowing rapid filling of the veins about the anal canal with arterial blood and making the various portions of the continence mechanism much more responsive. The bright red blood of bleeding piles reflects this arteriolar shunt theory, (anal corpus carvenosum) (11).

The veins drain mainly through the superior rectal vein into the portal circulation but also through and below the sphincter into the systemic circulation via the inferior rectal vein. Anatomically, an internal haemorrhoid is an exaggerated vascular cushion with enlarged internal venous plexus located above the dentate line and covered with squamous epithelium: it's often associated with skin tags (4). The two plexi of the internal and external haemorrhoids anastomose freely and comprise the venous return of the inner rectum and anus. Interoexternal haemorrhoids arise due to prolapse of both internal and external plexi.

### **SUPPORT.**

The anal folds are present in embryonic life and are necessary for full continence (12). Straining causes these cushions to slide downwards and internal haemorrhoids develop in the prolapsing tissues (13). They are supported against the shearing, extruding forces of defaecation by smooth muscles - the muscularis submucosae ani (Treits 1853) and by elastic tissue. The muscularis submucosae ani descends from the internal sphincter in separate bundles, which coalesce beyond the dentate line under the anoderm to form a

dense stroma around the venous sacculles (13). The looser submucosal part of the cushions is supported by the tougher more strongly secured anodermal component. The muscle contraction during defaecation flattens the folds and holds them up against the internal sphincter.

### **FUNCTIONS OF HAEMORRHOIDS.**

The major portion of continence is maintained by muscle pressures exerted about the anorectum which results in closure of the lumen. The haemorrhoidal vessels line the anal canal and may serve as a minor continence mechanism (14). When the sphincter muscles are exerting pressure, space available for haemorrhoidal dilatation is minimal. However, at the time of defaecation, the muscles are allowed to relax and open. At these times the vessels lining the anal canal are allowed to fill with blood and bulge as if to fill the gap. As the sphincter muscles contract towards a closed position, the blood is squeezed out of the haemorrhoidal vessels except for the small volume which coapts in the midline. Thus, the haemorrhoids serve as a minor factor in continence (15). The anal folds also provide a spongy variable volume "washer" on which the sphincter can contract thereby assisting its closure. Their loose texture supported by the tougher anodermal part below helps to provide a watertight seal (13).

## ETIOLOGY.

### AETIOPATHOGENESIS.

The pathogenesis of haemorrhoidal disorders is multi-factorial.

#### Critical factors in the pathogenesis of Haemorrhoids

1. Faecal arrest by low residue diet
2. Anal corpus carvenosum
3. Anal cushions
4. Ampullary pump
5. Fragmentation of supportive connective tissue
6. Elevated anal pressures
7. Hormonal and vascular changes during pregnancy

Although heredity may predispose a person to haemorrhoids, the exact cause is probably more clearly related to acquired factors. Some of these aetiopathogenic factors are thus discussed.

#### 1. **Faecal arrest by low residue diet.**

In 1975, Dennis Burkitt described the role of the low-fiber diet in the formation of abnormal Haemorrhoids (7). A low residue diet results in small, hard stools and a long transit time. This type of stool increases the need to strain to empty the rectum and sigmoid colon. Such straining results in stasis of the venous flow and enlargement of the haemorrhoidal veins (16). It's upon this hypothesis that modification on the diet as a treatment method is based.

#### 2. **Anal corpus carvenosum**

This refers to the system of blood supply and drainage of the anorectum that includes arterial shunt already alluded to earlier.

### 3. **Ampullary pump**

This refers to the entrapment of blood and increase in pressure that results in haemorrhoidal dilatation (17). This retrograde venous pressure is high and sustained during defaecation.

### 4. **Anal cushions**

These cushions shear off under repeated pressure and slide out of the canal as prolapsing haemorrhoids.

### 5. **Fragmentation of supportive connective tissues**

Degeneration and loss of elastic tissues and connective tissues occur as part of aging process (18). As a result of this loss of tissue fixation, the haemorrhoids begin to separate and roll out of the anus as prolapse. This is the sliding lining theory (19). A congenital defect in the supporting tissues may explain it in some patients.

### 6. **Elevation of anal pressure**

Haemorrhoidectomy results in reduced anal pressure hence the latter (i.e. increased anal pressure) is said to be an etiological factor (20,21,22). However, some patients have haemorrhoidal symptoms, with normal or low pressure and therefore the pressure elevation is not the only factor contributing to formation of piles.

### 7. **Hormonal and vascular changes during pregnancy.**

The onset or exacerbation of haemorrhoidal disease, both internal and external, during pregnancy and at delivery is common (23). Fortunately, these problems usually regress after delivery but some workers believe that no total correction occurs and this subsequently worsens in later pregnancies. Similarly, women with persistent haemorrhoidal bleeding and prolapse, date the onset from their last deliveries.

The loosening of supportive structure of the pelvis in preparation for passage of the baby through the pelvic outlet causes haemorrhoidal enlargement. Yet it is interesting to note that the incidence in males is always greater than of females in most studies (5,24).

In terms of aetiology, Delcof and Sonnenberg A. in 1998 did a study on the association between haemorrhoids and other diseases (25). They found that diarrhoeal disease, spinal cord injuries, constipation and related diseases and various types of anorectal diseases were found to be associated with haemorrhoids.

Johnson JF. in 1997 followed up the association of haemorrhoidal diseases with diarrhea disorders (26), he found strong relationships between haemorrhoidal diseases and a number of diarrhoeal disorders, including ulcerative colitis, noninfectious gastroenteritis and functional diarrhoea. Haemorrhoid disease is also closely associated with benign and malignant anorectal neoplasms (24). In 1996, Misra SP and Divivedi M., in a study carried out in India found out that the prevalence of haemorrhoids is not increased in patients with portal hypertension. However, the prevalence of anorectal varices and colopathy is higher in these patients (27).

In 1994, Johanson JF and Sonnenberg A., found out that no significant associations existed between constipation and haemorrhoids (28). Increasing age, cirrhosis and varicose veins likewise were not associated with haemorrhoids. In contrast, they discovered that the subjective complaint of diarrhoea (odds ratio 2:1; 95% confidence limits 1.2-3.7 and obesity (Odds Ratio 1:7, 95% Confidence limits 1.1-2.7) were significantly associated with the presence of haemorrhoids.. Thus diarrhoea but not constipation may present a risk factor for the development of haemorrhoids.



Arabi et al noted that patients with abnormal haemorrhoids had elevated resting anal pressures compared to controls (29). However, they were not as high as with those with anal fissures. This study and that of Gibbons (30) and Hancock and Smith (31) concluded that elevated pressure were responsible for the haemorrhoids. Hiltunen K.M. and Matikanen M., found that bleeding as a symptom, was more frequently associated with high pressure as compared to prolapsing haemorrhoids (32).

Since haemorrhoidectomy resulted in a decrease in anal pressure, El-Gendi and Abdel Becky believed haemorrhoids to be a contributing etiology (20). Read et al (21) and Roe et al (22) agreed and concluded that haemorrhoid masses were responsible for the elevated pressure.

Likewise, Schouten et al performed a similar study and theorized that modification of the anal sphincter pressure by internal sphincterotomy might be appropriate in the treatment of patients with symptomatic haemorrhoids (33).

### Epidemiology.

Johnson JF and Sunnemberg A. in 1990 (28) studied the epidemiology of haemorrhoids vis a vis that of chronic constipation in the USA and found the highest prevalence (both sexes) from age 45-65 years and subsequent decreases after age 65 years. The development of haemorrhoids before age 20 years was unusual. Whites were affected more than blacks and increased prevalence rates were associated with higher socioeconomic status. In contrast, constipation showed an exponential increase in prevalence after age 65 years more commonly in blacks and in families with low socioeconomic status.

In the study by Ojara (6), the average age was between 20-39 years in 1986 Ogendo SW (5) found a mean age of 39.6 years. This age group is relatively young as compared to the American series and probably needs an explanation. In Africa, it was initially postulated to be rare by Burkitt in a study in East and South Africa but subsequently, Ojara (133) published figures of 150 patients over 5 years and Ogendo (134) estimated 11,896 as the number of patients admitted with asymptomatic haemorrhoids admitted into Kenyatta National Hospital per year (1986).

### SYMPTOMS.

Table 2.

Symptoms of haemorrhoids

1. Bleeding
2. Prolapse
3. Pain
4. Pruritus
5. Discharge/soiling
6. Rectal dysfunction

Although the underlying lesion on the piles (disruption of supporting and anchoring tissues) means that prolapse is inherent, patients are often not aware or are unconcerned. Most of them present either when there is bleeding or when in painful stage. Indeed one may find gross protrusion in a patient unaware of the prolapse.

#### Bleeding.

The most common complaint associated with internal haemorrhoids is bleeding. The patient will usually see blood on either the toilet tissue or in the water within the toilet bowl. The blood is bright red and arterial like. Anaemia can be due to haemorrhoidal bleeding. The capillaries of the lamina propria are only protected by a single layer of epithelial cells hence any little trauma will breach them (wiping, contact with clothes etc).

### Prolapse

This is the second most common symptom. Patients may be unaware even if it is a fourth degree pile. Prolapse is the basis to which haemorrhoids are classified clinically (see later).

### Pain

Is not a common feature of symptomatic internal haemorrhoids. There may be some discomfort when haemorrhoids are prolapsed and trapped outside the anal sphincter but reducing internal haemorrhoids usually stops this pain. In many cases pain on defaecation is due to an easily overlooked anal fissure. Severe pain is not associated with internal haemorrhoids and occurs only with external haemorrhoid thrombosis. However, the patient will also describe the appearance of a firm tender mass on the perianal skin. Episodes of painful irreducible swelling, which lasts a week or so can be unpleasant and arises usually due to a greater or lesser degree of infarction resulting from obstruction of venous drainage by thrombosis and consecutive clotting in the sacculated venous plexus. The usual outcome is resolution as the clot shrinks and lyses and venous circulation is restored.

Pruritus ani and discharge are commonly not due to haemorrhoids themselves. However, when prolapse is extensive, the perianal skin may be chronically soiled. Subsequent maceration may lead to a complaint of pruritus or burning sensation of the anal skin. More commonly, pruritus is idiopathic. Chronic soiling is of course due to constant leakage of mucus augmented by leakage of ingested liquid paraffin used to treat the anorectal condition(s).

### Rectal dysfunction.

Problems in defaecation can result from disrupted anal cushion, causing a sensation of incomplete evacuation, particularly when the cushion is engorged by fruitless straining, which further congests the folds and worsens the problem. Unsatisfactory defaecation occurs more commonly with rectal tumours and other anorectal conditions.

In Kenyatta National Hospital the incidence of presenting symptoms (6) was as follows:

Rectal bleeding	77%
Pruritus ani	44%
Discharge	43%
Prolapsed piles	31%
Peri anal pain	23%
Dragging weight	13%
Constipation	10%

### Factors that influences piles presentation.

- The vigorous arterial supply
- The presence and possibility of changing diameters of the arterio-venous shunts
- The variability of cushion bulk due to capacity of the venous saccules
- Effects of cushion displacement and sphincter contraction on venous and lymphatic drainage.

This explains the variability of signs and symptoms in different patients.

### Examination findings.

Equipment required: Proctoscope; sigmoidoscope  
light source and biopsy forceps.

### Findings.

External haemorrhoids: These are seen on inspection obviously protruding especially if thrombosed. If internal haemorrhoids are prolapsed, the redundant covering of mucus secreting epithelium will be observed in one of several quadrants. When a patient is straining, internal haemorrhoids may come into view transiently or if they are third degree they remain prolapsed.

Segal WN et al (34) in a study on the out patient evaluation of haematochezia (in 1998 February) concluded that in patients with haematochezia (passage of bright red blood per rectum), clinicians were unable to distinguish between those patients with and those without significant colonic lesions by history alone. Flexible sygmoidoscopy demonstrated the importance of anorectal endoscopy in patients presenting with haematochezia.

Arullani A. et al in a review article (35) in November, 1995 agreed that proctoscopy is the main diagnostic procedure for staging haemorrhoids. Endoscopic examination with biopsy is helpful to differentiate neoplastic granulomatous and inflammatory anorectal lesions. Janssen L.W. (2) emphasizes the need for proctologic examination in patients with unexplained perianal skin lesions and those with anorectal blood loss and history of haemorrhoids.

Levine et al (36) in 1990 found that specific criteria suggested the diagnosis of internal haemorrhoids in double contrast barium enema (DCBE) examination. Suspected piles that do not fulfill those criteria should be evaluated endoscopically to rule out other more serious pathology. These criteria are:

- i. Lobulated folds extending 3cm or less from anorectal junction
- ii. Multiple submucosal nodules

Thus in summary the main investigations in patients with symptoms pointing to haemorrhoids diseases are

- Digital rectal examination
- Anoscopy
- Proctosygmoidoscopy + biopsy
- Haemogram (anaemia may be a sign)
- Stool for occult blood test
- Double contrast barium enema

In terms of complications. Brook and Frazier (37) studied aerobic and anaerobic microbiology of infected haemorrhoids (1996) retrospectively. They showed a polymicrobial nature and predominance of anaerobic bacteria in infected haemorrhoids. Sixty-three percent was a mixture of anaerobes/aerobes, 32% anaerobes only, 5% aerobes only. The predominant anaerobes were *bacterioides* and *peptostreptococcus sp.* Anaerobes were mainly *E. coli*, *Proteus spp* and group *D streptococcus* and *pseudomonas spp*

### **Classification of Haemorrhoids.**

Haemorrhoids are divided by the dentate line into the internal and external set of haemorrhoids. The external haemorrhoids can be seen by separating the buttocks. By convention, the internal haemorrhoids are divided into four (4) stages or degrees of enlargement or prolapse.

<u>Stage</u>	<u>Degree of prolapse.</u>
First degree	None. They do not descend or prolapse during straining at stool. Some bleeding may be noted.
Second degree	Prolapse occurs with bowel movement but reduces spontaneously with relaxation. On occasion the prolapse may become evident by bleeding and mild discomfort.
Third degree	Prolapse readily with bowel movement, and sometimes with simple exertion. This requires manual reduction (will not return spontaneously). Worsening prolapse results in bleeding, discomfort, and sometimes soiling with resultant burning.
Fourth degree	Persistent prolapse. Reduction is not possible. These haemorrhoids are often thrombosed and are of long standing duration.

### Treatment.

Much study and research has been done in terms of treatment of symptomatic haemorrhoids. Not so much in our centre but elsewhere. There are controversies regarding the different therapeutic alternatives as well as indications for surgery and choice of operative procedure. Present and future research has to address the existing controversies in order to reach a higher degree of standardization in therapy e.g those common proctological disorders.

### Principles of treatment

The decision to treat haemorrhoids is based upon the stage at presentation. If the patient has no major symptoms and does not notice the haemorrhoids (asymptomatic), treatment is seldom indicated. In general, there is no place for cosmetic surgery for haemorrhoids. Symptomatic haemorrhoids may be treated by a number of methods. Minimal symptoms require minimal treatment. Therefore, the first step is to stage the prolapse. Treatment should be suggested, not urged.

Table 3

Principles of the treatment of haemorrhoids	
1.	Reduce straining
2.	Fixate tissue
3.	Remove tissue
4.	Reduce anal canal pressure in selected patient

#### 1. Reduce straining

Modification of the diet is an appropriate adjunct in all patients regardless of treatment method (23,39,40). Bowel movements that are of formed but yet soft stool are easiest to pass, protecting the haemorrhoidal plexus.

High fiber diet includes bran, fresh fruit, vegetables and increased water intake.

Webster reported that in his trial using Ispaghula Husk the first and second degree Haemorrhoids were markedly improved (41). In 1982, Moesgaard reported a 12 week follow up study on patients complaining of bleeding, pruritus and prolapse (42). Patients on a high fiber diet improved more than those in placebo. Jensen et al showed that use of



maintenance bran therapy after rubber band ligation increased the long term cure rate (43).

Perez-Miranda et al (44) concluded that addition of dietary fiber may improve internal bleeding haemorrhoids although with no immediate effect. Fiber addition should be ensured in patients who refuse invasive treatment, waiting for a more definitive form of treatment, or those with contraindications to other modes of treatment.

Conservative treatment for haemorrhoids at stage one and two disease represents a valid preliminary management for a better result of more aggressive treatment, surgical or otherwise (45). Besides local and general drugs other aspects play an important role in conservative therapy of haemorrhoids: adequate local hygiene, current diet, education to a physiological evacuation and stool frequency regulation.

## 2. Fixate tissues

Most local treatment methods create fibrous scars by killing cells lining the anal canal (44). In healing the site of acute injury, the body mends itself by formation of a collagen scar. These scars placed in strategic points fixate the anal canal lining to the underlying muscles, and thereby prevent prolapse. No prolapse means no symptoms. Since sensation within the anal canal extends a little higher than the dentate line, a primary principle of treatment by a fixation method is to treat only internal haemorrhoids at a point at least 2cm proximal to the dentate line. If treatments are rendered at the dentate line or on the anoderm, they will be exquisitely painful. The three methods of tissue fixation are:-

- a. Sclerotherapy
- b. Coagulation
- c. Rubberband ligation

(a) Sclerotherapy

In this method of treatment, a sclerosing agent is injected into the tissues adjacent to the haemorrhoidal columns. Chemical injury with a cell death results in fixation (fibrosis with contraction). It may be performed as an outpatient procedure, and is relatively painless, inexpensive and safe.

Injection treatment has the best indication for first and second degree piles; this procedure is very effective when associated with cryosurgery (47).

Dudenko F. I. et al found that 93.3% of patients after injections, the haemorrhage stopped, in 83.9% the haemorrhoidal nodes didn't prolapse, in 95% the inflammation was liquidated (48). The usual solutions used are 5% phenol in almond oil, quinine urea, 60% alcohol, ethanolamine, and hypertonic sodium chloride.

Dennison et al (49) found that single, large dose injection sclerotherapy combined with daflon 500g was beneficial (short term therapy in patients with isolated strangulated haemorrhoids).

Elastic band ligation

First developed in 1958 (Blaisdeh) but popularized by Barron (1963). The haemorrhoid must be polypoid and not sessile. The elastic rubber band is applied at least  $\frac{1}{2}$  - 1 cm above the dentate line, resulting in tissue death in 48 hours and sloughing in 1-2 weeks. 1% lignocaine can be used and all three haemorrhoids can be managed at one sitting.

Savioz E. in 1998 found this method in a study of relapse as a function of time and concluded that rubber band ligation (RBL) represents an efficient long term treatment of second degree haemorrhoids. Two thirds of the patients were cured after 5 years and more than half after 10 years (50). Spellanzani et al (51) in treatment of second and third degree haemorrhoids found 8.8% recurrence, 2 cases of severe bleeding, no case of

perineal sepsis or urinary retention (sample size 158) , 56% of patients had pain and mild bleeding in 23%.

Basile M. in a 12 year experience with RBL, showed that 79% were completely cured, 18% needed one or more additional sessions of treatment and 2% failed to be cured by RBL and were referred for conventional haemorrhoidectomy. By using this safe and convenient treatment you can save hundreds of hospitalization days and thousands of sick-leave days per year (52).

The efficacy and cost containment of haemorrhoidal ligation is also shown in a study by Querdat D.M. and Jurjus A.R.(53), whereby 72% of patients underwent a single RBL, 22% double band ligation and 6% triple band ligation, in one session without anaesthesia. of the above 81.2% of patients had good long term results, 13% reported pain associated with the procedure, 1.3% were admitted with complications.

Compared with multiple ligation, single RBL in the sitting is followed by a lower complication rate (54). Constipation seems to be a predictable factor in worsening the outcome of RBL (55).

#### Infrared photocoagulation.

This device is powered by a 15 volt tungstenhalogen lamp which may be placed directly onto a haemorrhoid. The unit allows timed pulses of light limited to 0.5-2.0 seconds.

The advantages of infrared photocoagulation include lack of smell and smoke (as compared to other thermal methods), minimal pain, and it can be easily done as an out patient (56,57). It can be performed on the patient without an assistant.

Unfortunately, there is local pain at the time of treatment. Cell death extends only a few millimetres deep and is basically due to heat. The light is bright and unpleasant to the therapist. The equipment is moderately expensive, and both the tips and the red bulb on the device are fragile. Comparison of infrared photocoagulation to rubber band ligation revealed relatively little difference in their abilities to deal with first and second degree haemorrhoids (58).

### Cryodestruction

Nitrous oxide or liquid nitrogen devices are made for haemorrhoidal application(46,59,60). It is a simple, noninvasive method performed under no anaesthesia, hence ideal for out-patient department. Singh D.J. (61) found it to be well accepted, cost effective and with low complication rate in Indian population, in contrast to Western experience. Complications include pain, deep chronic ulceration, secondary bleeding and slough.

Rudd W.W. (62) recommends ligation and cryosurgical techniques to all surgeons for the treatment of all symptomatic patients with haemorrhoids. He describes the procedure as a simple, very effective office procedure that is better for both patient and doctor and cost containing.

Tanaka S. (63) found cryosurgery to be an effective measure for treatment of haemorrhoids, including prolapse. A threatening drawback is lower digestive tract haemorrhage, which occurred in 5% after cryosurgery. It is thought to be due to an autoimmune reaction at the site of the terminal ileum (postulated). It has an onset around fourteenth postoperative day at night or early in the morning, and seen particularly in nervous patients.

### Electrocoagulation

Machicado et al (64) using 10 patients with chronic anal fissures associated with internal haemorrhoids found all 10 patients relieved of pain within two treatments and nine anal fissures healed within four weeks. There were no recurrences in twenty months. One developed a perianal abscess and fistula requiring surgery, hence it was concluded that direct current probe treatment for chronic anal fissures associated with internal haemorrhoidal disease is an important advance as an effective, safe and cost-effective non-surgical treatment in selected patients.

Randoll et al (July 1994), in a prospective study comparing bipolar versus direct current electrocoagulations found that, at 1 year most patients had no (69%) or only mild (23%) recurrence, and a few had severe symptomatic (8%) haemorrhoid recurrence. A greater recurrence occurred with direct current (34%) than bipolar treatment (20%). Their conclusions were (65) that:

- Both direct current(DC) and bipolar probes were effective for control of chronic bleeding from grade 1 to 3 internal haemorrhoids.
- Bipolar probe was significantly faster than DC probe
- DC treatment produced fewer complications than bipolar. These results were supported by a study by Hinton C.P.1990 (66). However, it is an expensive procedure.

### Laser vapourization

Laser heat at 100°C or higher results in vapourization of tissues. Not much work has been done in this field. Iwagaki et al applied carbon dioxide (CO<sub>2</sub>) laser to haemorrhoids in 1816 consecutive patients (67). They found that 86% of the patients had no recurrence after one year thus concluded that laser treatment of haemorrhoids is effective in pain

alleviation from the first session and that patients so treated have a much more comfortable post-operative period. It's an alternative to medical or surgical therapy (67).

### 3. Remove tissue.

Operative haemorrhoidectomy has been employed successfully for many years. Columns of tissue are removed including skin, anoderm and mucosa with the underlying haemorrhoids. The major benefit is creation of long linear fixation scars: this phenomenon is probably more important than the actual removal of the tissues.

Until recently the excisional techniques were relegated to standard operative instruments such as scalpels and scissors. Preservation of sensation and continence along with curing symptoms are primary goals of excisional surgery (22,68).

Excision can be by laser haemorrhoidectomy or by open method.

#### a. Laser haemorrhoidectomy

Lasers are now being utilized for excisional procedures. "The laser may be used with an open tip or a contact tip (69)". Using the open tip or contact tip, laser energy is directed as a light beam to tissues for cutting: Temperatures up to 200°C are generated, burning through and slicing easily into haemorrhoidal tissues. The ability to use the laser like standard scalpel is thought by some surgeons to be an advantage.

The carbon dioxide laser beam is absorbed by water, therefore, it creates a very superficial, but precise burn. Unfortunately, because of this, little coagulation can be obtained. In fact, laser haemorrhoidectomies are likely to be bloodier than a standard operative haemorrhoidectomy. Although some proponents feel laser haemorrhoidectomy is superior, there is no study that shows laser haemorrhoidectomies to be less painful than a standard operative haemorrhoidectomy. Because bleeding is often a problem, the CO<sub>2</sub> laser haemorrhoidectomy takes longer. Healing seems to be at about the same rate if any.

However, the laser can quickly create significant circumferential burns and tissue loss with resultant anal dysfunction and stenosis.

b. Operative haemorrhoidectomy.

Operative haemorrhoidectomy is the gold standard to which other procedures must be compared. The patient must be monitored and some form of anaesthesia is necessary. Local anaesthesia works quite well, especially when mixed with epinephrine, it provides analgesia, haemostasis and muscle relaxation.

Operative haemorrhoidectomy currently is of three types:

1. Scissor excision haemorrhoidectomy, either with wound closure (Ferguson technique) or with open wound (Milligan-Morgan).
2. Stapled haemorrhoidectomy popularized by Longo.
3. Diathermy haemorrhoidectomy

Excision haemorrhoidectomy is associated with significant postoperative pain because of trauma to the sensitive anal mucosa (anoderm). Local wound exposure may also lead to faecal contamination and prolonged healing. It can also be quite bloody (136). Franc Hetzer et al in prospective randomized trial found stapled haemorrhoidectomy to be associated with less pain, early recovery and return to work but with a similar recurrence rate as excision method (70).

Diathermy haemorrhoidectomy has been shown to be associated with less bleeding, shorter operating time and a lower postoperative analgesic requirement as compared to conventional haemorrhoidectomy but it is not intrinsically less painful (71). Improved haemostasis may also offer better visibility and therefore a better dissection. Ligasure is a new haemostatic device primarily for abdominal surgery. It seals blood vessels up to 7mm diameter using precise amount of bipolar energy and pressure that

permanently changes the collagen and elastin within the vessel. Ligasure, haemorrhoidectomy has been shown to be bloodless, quick and although as painful as diathermy excision, it is associated with reduced analgesic component(72).

#### 4. Reduce anal canal pressures

This involves either manual (forceful) anal dilatation and/or lateral internal sphincterotomy. Asfar et al performed four finger dilatation in 133 patients and lateral internal sphincterotomy in 125 patients for control of pain after haemorrhoidectomy (73). Unfortunately, anal stretch did not control pain, urinary retention was high and soiling occurred in 57%. Sphincterotomy, which is a precise technique, was preferable. Not all patients have elevated sphincter pressures, and neither dilatation nor sphincterotomy was preferred in such cases.

Buls reviewed 500 patients who had a closed haemorrhoidectomy and found that they had a relatively low complication rate (74). Twenty one of the 500 patients (4.1%) had bleeding. There were two patients with fistulas, one with a fissure, two with temporary incontinence and six with mild degree of stenosis:

In 1891, Deutsch reported that 80% of 65 haemorrhoid patients followed for two years were satisfied with results of anal dilatation (76). Deutsch confirmed elevated pressures in patients with haemorrhoids, especially males less than age 42 years. Rubber band ligation did not alter the increased pressures in these patients (75). Some haemorrhoid patients have decreased pressures and Bruck et al raised the possibility of pelvic floor denervation as an etiologic factor in some (76).



## COMPLICATIONS TREATMENT.

i. Vasovagal reaction occurs mainly with banding or injections (sclerotherapy). The patient presents with sudden fainting during the procedure.

ii. Pain

Occurs almost after every procedure above with varying degrees of severity. In band ligation, clotting in the adjacent sacculated venous plexus can cause severe pain. Combining banding and anal stretching increases this risk.

iii. Bleeding

All methods can cause this except injection (77). Stretching and open haemorrhoidectomy leaves a moist wound to heal by secondary intention hence risk of secondary haemorrhage. Reassure your patient.

Delayed haemorrhage (1-10 days) post operatively needs in-patient care with bedside packing and/or balloon catheter inflation per rectum being attempted failure of which the patient is taken to theatre for suture ligation.

iv. Infection

This is rare but can occur. Management is by antibiotics and drainage. Haemorrhoidectomy even by banding can be followed by infection in the immunocompromised (78).

v. Impairment of continence

Due to overzealous stretching especially in the elderly. The stretch should be distributed equally around the circumference by changing direction. Another cause is removal of excess tissue during haemorrhoidectomy since most tissue is anodermal hence you should only cut a bare minimum amount of tissue (68). Several reports emphasize the incontinence risks. Snooks et al studied ten patients who had incontinence after anal dilatation (79). Five had abnormal external sphincters by manometry and abnormal single fiber EMG in four. The internal sphincter was damaged in eight patients. Thus, this procedure must be performed with caution, especially in the elderly who have marginal sphincter competence. In a study by Mortensen (80), comparing 17 patients who underwent anal dilatation and 23 who had haemorrhoidectomy only, it was found that despite similar cure rates three of the 17 patients who had anal dilatation done developed incontinence of a minor degree for a year.

vi. Urinary symptoms

Transient dysuria occurs in men. Banding may also induce various bladder symptoms. Urinary retention can occur after haemorrhoidectomy and its aetiology seems to be dysfunction of the bladder muscles in response to pain aided by an excessive administration of fluids and spinal anaesthesia (81,82,83).

vii. Anal stenosis

Usually occurs in a patient who has had haemorrhoidectomy done. This occurs due to over enthusiastic tissue cutting and lack of skin bridges resulting in healing with scarring hence stricture formation. It may be mild, moderate or severe.

In a comparison done by Ojara (1981), there was a similar cure rate for maximal anal dilatation as compared to haemorrhoidectomy, the only difference being in the number of complications. Injection sclerotherapy had 33% failure rate with no complications.

## RATIONALE/JUSTIFICATION.

Haemorrhoids are one of most frequent anorectal disorders encountered in the primary health care setting. Haemorrhoidal disease is a significant cause of admissions and out patients follow-ups attendance in the General Surgery Unit of Kenyatta National Hospital. It causes loss of many man-hours and a lot of emphasis has not been made on cost containment outpatient or office procedures in our set up. There is no recent data on haemorrhoidal disease in terms of frequency, gender prevalence and the various therapeutic methods used. There is also no uniformity or formal protocol in management of the various stages. With the availability of such a guideline, the institution will be very willing to avail resources and equipment for more cost-containing outpatient procedures. Haemorrhoids are among the commonest cause of haematochezia and are responsible for considerable patient suffering and disability. Are we managing the condition the recommended way according to each stage?. Are there any recurrences due to improper management?. Then is there room for improvement especially in regard to out patient care in patient management?. Association with HIV is being questioned. With these reasons I have been positively motivated to undertake this study. I have high hopes in the primary care provider relieving most patients symptoms and ensuring that more significant bowel disease is not overlooked in the immediate and near future as a result of this study. I look forward to seeing our minor theatres (e.g. KNH SOPC minor theatre) taking a more active role in management of patients with haemorrhoids thereby reducing operation theatre work load/waiting lists.

## AIMS AND OBJECTIVES.

### **Broad objectives.**

To analyse the presentation, management and outcome of haemorrhoidal diseases in general surgical patients managed at Kenyatta National Hospital and subsequently recommend a management protocol for Kenya and other developing countries.

### **Specific objectives.**

- To determine the occurrence of haemorrhoids as seen at Kenyatta National Hospital
- To determine the demographic particulars of patients presenting with haemorrhoidal disease
- To determine the risk factors associated with haemorrhoidal diseases
- To determine the frequency and characteristics of symptoms and clinical findings
- To review the specific investigations undertaken
- To determine the various therapeutic methods used and their benefits and complications
- Review the outcome of the above treatment options
- Recommend a guideline on how to manage haemorrhoidal disease in our set up.

## MATERIALS AND METHODS.

### **Study site:**

The study was carried out in Kenyatta National Hospital, a semi-autonomous tertiary hospital in Nairobi province of Kenya.

### **Sample size:**

This was a descriptive retrospective study involving file retrieval from Kenyatta National Hospital Medical Records Department. The duration (period) 1990-1999 was considered.

### **Study population**

The study population were all those patients who were admitted and managed for haemorrhoidal diseases between 1990 and 1999 in Kenyatta National Hospital.

### **Inclusion criteria**

- All electively managed patients followed up and admitted through outpatient clinics
- All emergency admissions for haemorrhoidal complications that were managed after proper physical examination and investigations.
- All patients were to be above 15 years

### **Exclusion criteria**

- All patients with incomplete records, for example due to abscondment.
- Patients with asymptomatic haemorrhoids (incidental finding)
- Patients on regular anticoagulants, immunosuppressants or analgesics with acetylsalicylic acid.

**DATA PROCESSING/ANALYSIS.**

Data was gathered using a data collection sheet (questionnaire – appendix 1). It was verified and entered into a computer spread sheet (excel). Analysis was done using SPSS (Statistical package for social sciences) version 10 software. Particulars pertaining to frequencies, percentages, means and ranges were calculated in reference to aspects of the study referred to in the objectives. The results were presented in tables, pie charts and bar charts. Pearson chi square test could not be utilized as there were certain variables not included in the study, this is in reference to the associated clinical conditions e.g. Human immune deficiency virus status of each patient whose significance could not be ascertained as all the variables were not present (persons without haemorrhoids).

## ETHICAL CONSIDERATIONS

This study was commenced after approval by the Ethical and Research Committee of Kenyatta National Hospital. Full confidentiality was observed. Patients' files were considered as private and confidential as per hospital rules and no names of patients or the medical staff involved in their management were quoted.



## RESULTS.

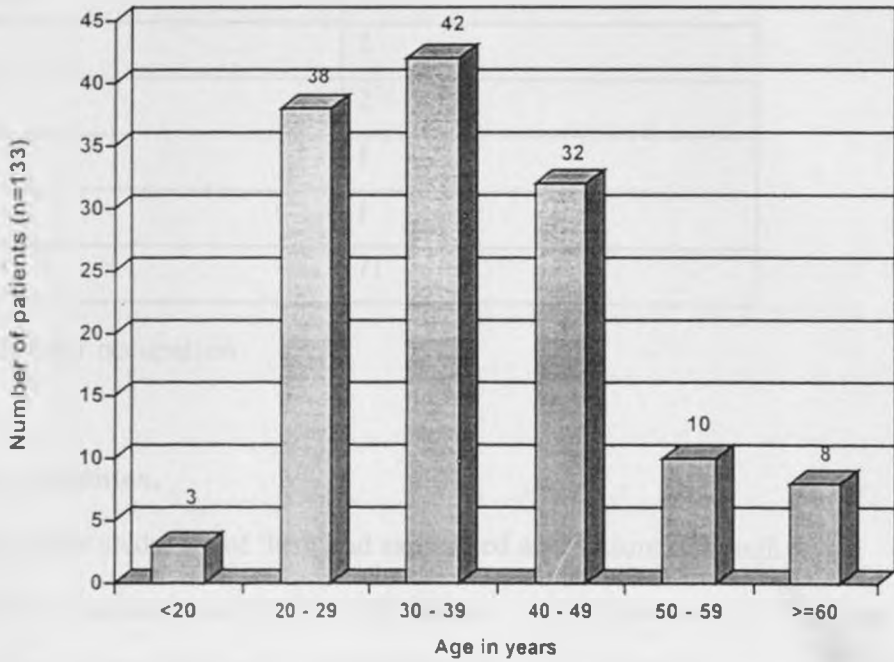
A total of 133 cases were studied of whom 87 (65.4%) were males and the remaining 46 (34.6%) were females.

### DEMOGRAPHY.

#### Age distribution.

Their ages ranged from 8 to 83 years with a mean age of 37 years. (Figure 1) highlights the pattern of age distribution.

Figure 1: Age distribution of cases.



### Occupation.

Only in 71 of the 133 patients is the occupation clearly stated, but no clear pattern emerges as to relationship with occurrence of haemorrhoids (table 1)

**Table 1: Occupational status.**

Occupation	Number
Casual labourer	44
Unemployed	20
Private company employee	13
Business	8
Civil service	6
Farming	5
Student	3
Prisoner	3
Artisan technician	3
Driver	2
Professional	2
Shoe marker	1
Watchman	1
Total	71

\* 62 did not specify their occupation

### Associated clinical condition.

Of the 133 patients in the study, 47 of them had associated anal fissure although it was not specified whether it was acute or chronic anal fissure. This represented 35.3% of the patients. Thirty five out of the 133 patients (26.3%) had associated HIV disease. However, not all patients had the HIV test done. About 9.8% of the patients were pregnant. Other conditions associated with the haemorrhoidal disease were diarrhoeal

disease (9.2%), fistula in ano (5.8%) and chronic constipation (5.8%) (table 2).

**Table 2: Associated clinical conditions (n= 133).**

Condition	Number	Percentage
Anal fissure	47	35.3
HIV disease	35	26.3
Pregnancy*	13	9.8
Diarrhoeal disease	12	9.2
Anal fistula	8	5.8
Chronic constipation	8	5.8
Abdominal tumour	2	1.5
Rectal cancer	1	0.75
Portal hypertension	1	0.75
Ulceration collitis	1	0.75
Nil	5	3.8

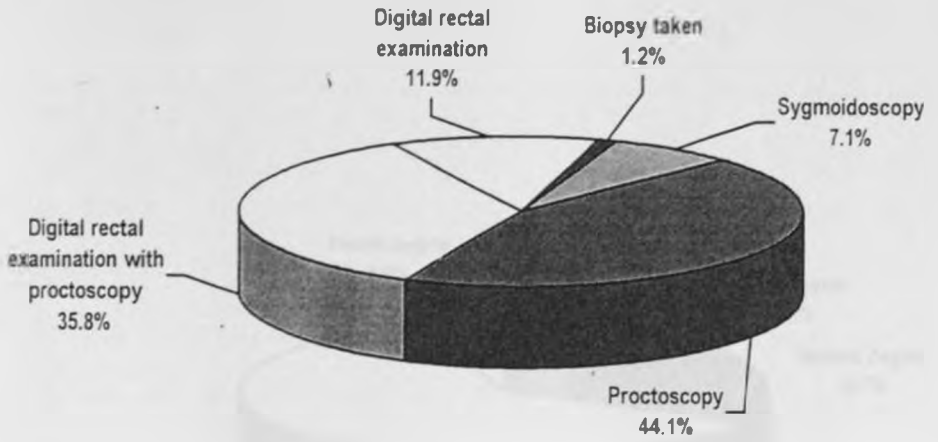
\* applies to females

**MEDICAL LIBRARY  
UNIVERSITY OF NAIROBI**

### Equipment.

In terms of equipment used, only 44.1% of the patients had proctoscopy done either in the clinic or in theatre just before the surgery (figure 2). One point two percent of the patients had suspicious lesions and had a biopsy taken while 7.1% of the patients had a sigmoidoscopy done. The latter group (sigmoidoscopy) had this investigations done either due to their unusual presentation or due to their advanced age. Eleven point nine percent had digital rectal examination done (figure 2) as the only examination procedure.

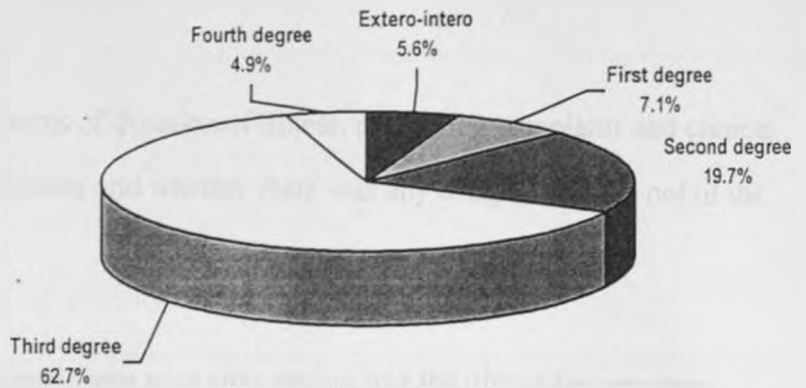
**Figure 2: Examination procedures done.**



### Stage of haemorrhoids.

The most commonly found stage at presentation was at third degree (62.7%). Nineteen point seven percent of the patients had second degree haemorrhoids at presentation (figure 3).

**Figure 3: Stage of haemorrhoid.**



### Route of admission

Most of the patients were seen elsewhere and/or referred to the surgical outpatient clinic from which they were admitted 68.9%. Casualty admissions accounted for 15.9% while 15.2% were interdisciplinary transfers mainly from medical wards where a bulk of the HIV patients in our study came from (see table 3).

**Table 3: Admission to Kenyatta National Hospital.**

Nature	Number	Percentage (n=133)
Emergency	22	15.9
Non emergency	91	68.9
Interdisciplinary: Consultation	20 (Total)	15.2
Medical clinic	1	
Medical wards	10	
Orthopaedics	1	
Others	8	

**Clinical presentation.**

This was considered in terms of duration of illness, presenting complaint and clinical features found on examination and whether there was any complication or not of the haemorrhoidal disease.

Sixty five of the 133 patients were seen after having had the illness for one year representing 52.8% of the total. Twenty five patients were seen after a 5 year duration of symptoms, accounting for 24%.

**Table 4: Duration of symptoms.**

Duration	Frequency	Percentage
≤1 month	25	19.2
1.1-5.0 months	15	14.4
5.1 months - 1 year	25	19.2
1.1 - 2 years	12	8.8
2.1 - 3 years	4	3.8
3.1 - 4 years	9	5.8
4.1 - 5 years	8	4.8
Over 5 years	25	24.0
Total	133	100

Median duration: 1 year

Range: 2 days - 20 years

### **Clinical presentation**

Table 5 shows various ways in which the patients in the study population presented.

Bleeding (82.7%), prolapse (92.5%) and pain on defaecation (91%) were the three commonest presenting symptoms. Pruritus (27.1%), anal dysfunction effects (24.1%) such as constipation or diarrhoea etc were also quite common. Thirty-four of the 133 cases had recurrence of symptoms representing 25.6% of the cases and this was recurrent after one form of treatment or other. Manual anal dilatation of second or third degree haemorrhoids had the highest rate of recurrences.

**Table 5: Clinical presentation**

Presentation	Number	Percentage (n=133)
Prolapse	123	92.5
Pain on defaecation	121	91.0
Bleeding	110	82.7
Pruritus	36	27.1
Recurrence of symptoms	34	25.6
Anal dysfunction effects	32	24.1
Acute severe pain	16	12.0
Mucus discharge/soiling	9	6.8
Incidental finding	3	2.3

**Clinical findings**

In terms of clinical findings figure 4a shows the various features found on examination. A swelling on the anal verge was by far the commonest finding (93.2%). The most common sites affected by the piles were as shown in figure 4b. These are the right anterior or 11 o'clock (33.9%), right posterior or 7 o'clock at (32.9%) and left lateral or 3 o'clock at (28.8%).



Figure 4a: Clinical findings at first presentation

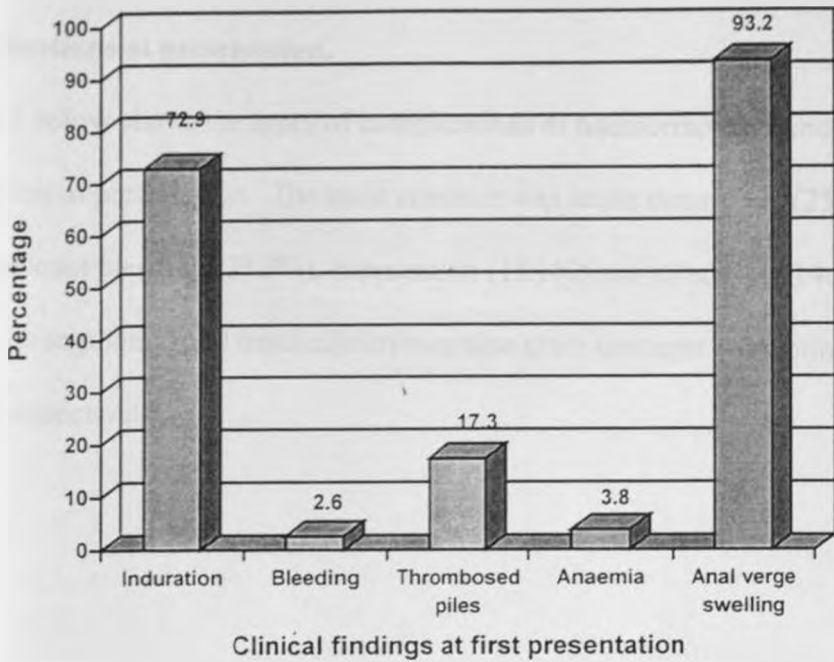
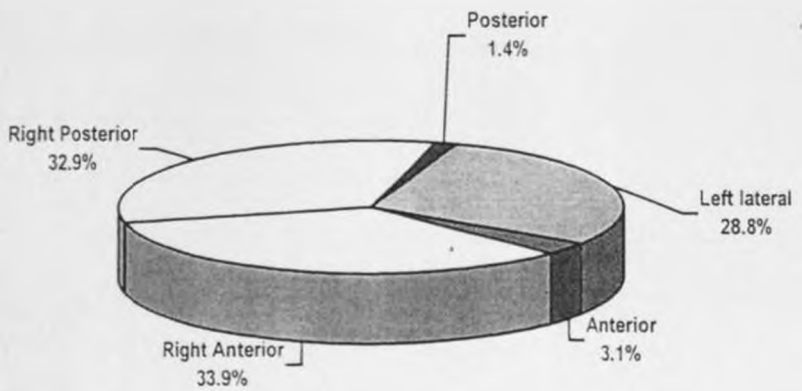


Figure 4b: Site at first presentation



**Complications at presentation.**

Figure 5 below shows the types of complications of haemorrhoids found in the study population at presentation. The most common was acute thrombosis (25.4%) followed by significant bleeding (21.3%), suppuration (15.1%) and ulceration (14.6%) in that order. Strangulation and irreducibility was also quite common accounting for 11.2% and 12.4% respectively.

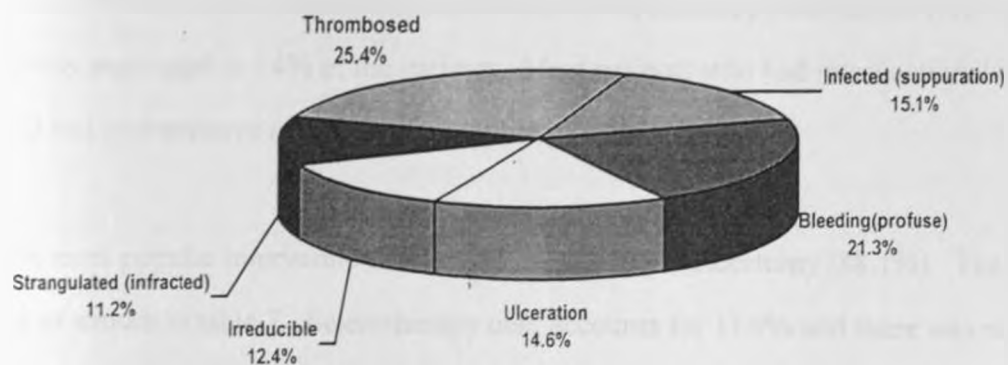
**Figure 5: Complications at presentation:****Investigations.**

Table 6 summaries the types of investigations undertaken. Most common investigating procedure was proctoscopy accounting for 71.7%. Only 21 (16.5%) specimens were taken for histology. In six of the patients, there were no records of any investigations done.

**Table 6: Specific investigations performed.**

Investigation	Number	Percentage (n=127)
Proctoscopy	91	71.7
Haemogram	58	50.4
HIV screening	34	22.0
Histopathological report	21	16.5
Symoidoscopy	14	11.0
Occult blood test	8	6.3
Barium enema	7	5.5
Abdominal ultra sound	5	3.9

### Treatment options.

Only 8 of the 133 patients had no treatment instituted. Some of the patients underwent both conservative and surgical treatment. Conservative treatment consisted of dietary advice (46%), laxatives (80.2%), ointment (76.7%) and suppositories (100%). Daflon tablets were used in 14% of the patients. Most patients who had interventional therapy had had conservative measures tried before going for surgery.

The most popular interventional method was haemorrhoidectomy (88.1%). The others are as shown in table 7. Sclerotherapy only accounts for 11.9% and there was no case of banding or photo/electrocoagulation.

**Table 7: Treatment options.**

	Number	Percentage
<u>Treatment option(s) given (n=133)</u>		
Left alone	8	6.3
Conservative.	86	67.7
Interventional	101	79.5
<u>Conservative (n=86)</u>		
Dietary	40	46.5
Laxative	69	80.2
Creams	66	76.7
Suppositories	86	100.0
Daflon	12	14.0
Vibration	1	1.2
<u>Interventional (n=101)</u>		
Haemorrhoidectomy	86	85.1
Forcible anal dilatation	34	33.7
Sclerotherapy	12	11.9
Other	1	2.0

### Complications of treatment.

The main early complication of treatment (interventional) was pain (70.4%) followed by haemorrhage (21.0%). In two of the cases the patients had to be transfused.

Acute urine retention was seen in 8.6% of the patients studied.

There was extremely poor follow up and even poorer follow up records. The mean duration of follow up was one year. Thirty one of these (40%) were found to have late complications which comprised mainly of infection (12%), impairment of continence (3.2%) and anal stenosis (9.7%). By far the commonest late complication was recurrence at 54%. The lack of proper follow up was reflected in the manner in which over 50% of the patients were lost to follow up after one year.

**Table 8: Complications of interventional treatment.**

	Number	Percentage
Early (n=105)		
Pain	74	70.4
Haemorrhage	22	21.0
Urine retention	9	8.6
Late (n=31)		
Infection	4	12.9
Impairment of continence	1	3.2
Anal stenosis	3	9.7
Recurrence	17	54.8
Others	6	19.4

#### **Outcome of follow up.**

The most important thing to note is the poor patient turnout for follow up. Within one year, only 87 patients out of the 133 turned up for review and follow up. In the second year of follow up, this decreased to 25. The most common complication on follow up was pain/bleeding (13 out of the 85) (table 9).

Table 9: Outcome of treatment on follow up (n=79).

Duration	Outcome									
	Doing well	Pruritus	Recurrence	Constipation	Discharge	Pain/ bleed	Ectomy advice	Infection	NED	Exc. Skin
1/12	3	-	-	-	-	3	-	-	1	-
3/12	14	-	1	-	-	4	-	1	-	1
6/12	25	1	1	-	-	3	-	1	1	1
1 year	19	1	3	1	-	1	-	-	1	-
15/12	8	-	-	1	-	-	-	-	-	-
18/12	2	-	-	-	-	-	-	-	-	-
2 years	4	-	1	-	-	-	1	-	-	-
> 2 years	1	-	4	-	1	2	-	-	-	-

## DISCUSSION.

In interpreting and comparing these results with previous studies both here and elsewhere, we need to bear in mind the fact that our record keeping and follow up of patients has been very wanting on the one hand and on the other hand some patients once treated, do not come back until a problem occurs, or they go and consult someone else. Haemorrhoidal disease is a very common condition in our set up and in the general population at large. In terms of age distribution and occupation this study found that haemorrhoids affect the most active age group, 20-49 years accounting for a total of 84% of those affected in this study. This is in keeping with earlier figures from other workers (5.6). The mean age in this study was 37 years, meaning that it affects mainly the productive members of the society. This is in contrast to Johnanson JF and Sunneberg in 1990 (28) who found that the highest prevalence (both sexes) was from age 45-65 years. Thus our population tends to get piles at a younger age. They (Johnanson JF et al) also found higher prevalence rates associated with higher socio-economic status (S.E.S). Our study did not reveal this association with higher status, although we have to remember that most patients coming to Kenyatta National Hospital general wards are of the low social economic status. There were more males than females with a ratio of 2:1, a ratio comparable to that of Ogendo (1986) of 3:2 with a male preponderance. The reason for this is not clear. Goligher in his book gives a ratio of 2:1 for males to females (24). If women are equally exposed to all the risk factors as their male counterparts, then there should be no reason for their incidence to be lower than that of men and it should be in fact higher as they have one additional risk factor - pregnancy. Pregnancy being the most common abdominal physiological cause of increased pressure means that haemorrhoids are extremely common unless of course its true that haemorrhoids do not progress with subsequent pregnancies (Goligher) and in fact pregnancy may have no effect or is protective to females against subsequent development of haemorrhoids (24).

Table 2 shows HIV disease and anal fissure 26.3% and 35.3% respectively to be the two conditions most commonly occurring in association with haemorrhoidal disease.

However, we need some statistical test to look into the significance of this association. This requires that we have patients without haemorrhoids as a variable. Is it that patients with HIV disease have a higher prevalence of getting haemorrhoids?. Elevated anal pressure is an etiological factor shared between haemorrhoids and fissure-in-ano, hence the co-existence of the two diseases in some patients (20).

The association with HIV disease has also been observed recently in that many patients with Acquired Immune Deficiency Syndrome(AIDS) tend to have suppurative anorectal conditions. It could be due to the chronic diarrhoea associated with AIDS, knowing that diarrhoeal disease is associated with the aetiopathogenesis of haemorrhoids. This has been shown by various workers including Johnson JF in 1997, (26) and Sonnenberg W. in 1994 (27). Diarrhoea and not constipation was shown to be the main risk factor in the causation of haemorrhoids (28). Diarrhoeal disease also comes in significantly in our study (9.2%) and so does pregnancy (9.8%) which is associated with increased (elevated) pressures due to elevated intraabdominal pressures. This would also apply for abdominal tumours found in 2% and in chronic constipation (5.8%). Anal fistula (5.8%) is more of a complication of haemorrhoid treatment or suppurative anal conditions.

In terms of equipment, use of proctoscopy is a very important tool of examination for all patients suspected of haemorrhoidal disease. This was not the case in this study where it was found that a good number of patients did not undergo that examination.

The most common stage at presentation was at third degree haemorrhoids and this is in keeping with many studies. Most patients are not bothered by first or second degree piles



but once they have to be reduced manually and are painful, they present to the doctor. No wonder we see a 24% of patients presenting after having a duration of illness of over 5 years. However, most patients (42%) present with a one year duration of illness.

The clinical features seen in our patients were in keeping with those seen in other studies with bleeding (82%), prolapse (92.5%), and pain on defaecation (91%) being by far the most common presenting features of haemorrhoids. These results are comparable with those of Ojara (133) who showed an occurrence of rectal bleeding (77%), pruritus ani (44%), discharge (43%) and prolapse (31%) as the first five commonest symptoms. Perianal pain occurred in 23% while in this study it was the commonest with 91%. Pruritus and anal dysfunction effects (e.g. diarrhoea, constipation and mucus discharge) do occur in the complicated ones e.g. those with infection. Complications, e.g. thrombosis, infarction or infection, present with acute pain, seen in 12%. Twenty-five percent of patients had recurrence of haemorrhoids and this number could be higher with better follow up records. Brook and Frazier (44) studied infection extensively in 1996 showing a predominance of anaerobes (63%). Recurrence is mainly attributed to method of treatment, manual anal dilatation having the highest rate of recurrence (54.8%).

Clinical findings on examination were mainly anal verge swelling (93.2%), skin induration (72.9%), bleeding in 22.6% and thrombosed piles in 17.3%. Anemia was seen in 3.8%. The commonest sites of location of the piles were right anterior, right posterior and left lateral. Those sites also referred to as 11 o'clock, 7 o'clock and 3 o'clock are the sites of the anal cushions of submucosal vascular tissue (veins of the internal haemorrhoidal plexus). Of the 133 cases, 52 (or 40%) presented with complications. Complications do occur in long standing piles and may be the first mode of presentation. Thrombosed haemorrhoids (44%) is the commonest complication, though profuse bleeding from rupture of a vein (36.1%) and suppuration (25%) also do occur. Others

include strangulation (19%), irreducibility and ulceration. This was also shown by Ogendo (5), who noted that thrombosis, usually secondary to trauma or infection brings the patient to seek medical attention.

The most important investigation for haemorrhoid patients is proctoscopy. Proctoscopy was done in 79.9% of our patients, this should not be the case as all patients should undergo the procedure. You may miss a rectal tumour if proctoscopy or anoscopy is not done. Sigmoidoscopy was done in 11% of the patients. This is normally indicated in patients with atypical presentation or in elderly people where it's again necessary to rule out presence of colonic tumour. Ideally, all haemorrhoidal tissue excised should be taken for histological confirmation but only a very small number of our patients actually had this done (16.5%). The HIV test done in 34 of the patients (22.0%) was mainly for patients suspected of the disease due to other features. Occult blood test and barium enema were also for specific patients suspected of some more proximal pathology.

Treatment options findings indicated a tendency towards interventional (79.5%) than conservative (67.7%) management. Conservative methods (dietary advice, laxatives, suppositories etc) are usually reserved for the first and second degree haemorrhoids. There are controversies regarding the different therapeutic options but most workers do agree that for first and second degree haemorrhoids there is marked improvement on dietary advice and laxatives [Webster, (41), Moesgaard 1982, (42) and Jansen et al (43)]. In our set up, there is use of dietary modification, laxatives, suppositories and local creams on the patients before or after haemorrhoidectomy. This explains the overlap in percentage (67.7%, 79.5%).

Haemorrhoidectomy remains by far the most practiced methods of surgical intervention (85%) in our set up. Forceful anal dilatation (33.7%) and sclerotherapy (11.9%) are also

occasionally done. In a previous study done by Ojara (6) there was a similar cure rate for maximal anal dilatation as for haemorrhoidectomy. Injection sclerotherapy had a failure rate of 33% in this (Ojara) study. Injection sclerotherapy is best indicated for first and second degree haemorrhoids. Elastic band ligation is not done at all in Kenyatta National Hospital according to the above figures, although in other centres it is one of the commoner methods. Savioz E. (50), Spellanzani (51) and Basile M. (52) found rubber band ligation to be an effective, safe and convenient treatment in which you can save hundreds of hospitalization days and thousands of sick leave days per year that usually are associated with haemorrhoidectomies or conservative method. Dudenko (48), Butter M. (3) concludes that rubber band ligation (RBL) is the most effective procedure in first and second grade haemorrhoids while surgical procedure is best in second and third grade diseases. Nontraumatic method and avoiding tampons improves surgery. In meta-analysis McRae and Mcleod (85) conclude that RBL is recommended as the initial mode of therapy of grade 1 to 3 haemorrhoids. Although surgery showed better response it is associated with more complications and pain than RBL. Thus it should be reserved for patients whose haemorrhoids fail to respond to RBL. In a review article Pfenninger J.L. and Surrel J. (86) state that RBL is widely used to treat all grades of internal haemorrhoids. Bipolar electrocoagulation can be applied in all cases, while low voltage direct current is useful in cases of more advanced haemorrhoids.

Acute complications are comparable to other studies elsewhere. Pain (70.4%) and haemorrhage (21%) were the main ones with acute urine retention occurring in 8.6%. The latter may be caused by bladder muscle dysfunction due to pain and also due to excessive preoperative fluid administration. Urine retention can be overcome by reassurance and encouragement and good analgesia, although catheterization is at most times indicated. Delayed haemorrhage (1-10 days) needs inpatient care. It is not immediately clear which of the interventional methods was responsible for the highest

rate of recurrence. Late complications are usually due to prior improper haemorrhoidectomy. This can be quite severe and in my study 2 patients ended up being transfused and returning to theatre for haemostasis under anaesthesia. Anal stenosis may be mild, moderate or severe and this occurred in 9.7% of the 31 patients with late complications. More than half (54.8%) of the complicated patients had recurrence of the condition.

## CONCLUSION.

In conclusion, it was found that haemorrhoidal disease is a very common condition in our set up, responsible for loss of many man hours in the working population which is the age group most affected. Patient management was found wanting/lacking right from the initial physical examination right through to the follow up. There should be a policy to ensure 100% use of proctoscopy in all patients with anorectal complaints, except where pain prevails.

The association of HIV disease and haemorrhoids should be investigated further whereby HIV positive patients are taken and the number with haemorrhoids isolated to find out any significance as compared to HIV negative patients or as compared to the general population.

Multiple methods are employed for treatment of symptomatic haemorrhoids. The primary preventive goal is to reduce straining by modifying the diet with more fiber. Once symptomatic, fixation of tissues is applied to prevent prolapse. The amount of fixation that is required is based upon the degree of prolapse that is being treated. Patients may be assigned to diet modification, outpatient fixation procedures, or haemorrhoidectomy based upon careful classification of the degree of prolapse. The role of sphincterotomy to reduce pain is not established, however, younger males with elevated sphincter pressures associated with haemorrhoids would most likely benefit from the addition of internal sphincterotomy.

Most patients with haemorrhoids present at second or third stage. These could be managed easily with rubber band ligation if it were introduced. This will reduce the cost of hospital stay and the man hours lost from sick off duties given. It could be introduced

as a procedure in the minor theatre of surgical out patient clinic. It would also reduce the waiting lists for theatre.

Last but not least, in our very wanting follow up and record keeping, either the patients abscond or our follow up method does not allow compliance. The duration of follow up as seen from the last table is so low to determine a proper outcome and I would urge at least a 2 year follow up per patient to give a proper assessment of the treatment option.

## RECOMMENDATIONS.

1. Haemorrhoid disease is very common and more efforts should be put to look for better ways of management to reduce incidence of recurrence. More so as it affects the more productive age group
2. Proctoscopy as an examination procedure in proctology should be mandatory in all patients presenting with relevant symptoms.
3. Manual anal dilatation as an interventional mode of treatment should not be used alone as the recurrent rate is quite high.
4. A follow up (pilot) study should be done to find out the cost effectiveness of rubber band ligation as an outpatient method of pile treatment in the minor theatres and the use of Sclerotherapy increased both with the aim of reducing main theatre workload.
5. All haemorrhoidal tissue excised should be sent for histological confirmation. This is important in helping to rule out other more serious conditions that may mimic haemorrhoids.
6. Proper record keeping should be practiced with emphasis on patient follow up.

**APPENDIX 1:****DATA COLLECTION SHEET.**

1. **Personal particulars**
  - Name
  - Age
  - IP number
  - DOA
  - DO operation
  - DOD
  
2. **Associated clinical conditions.**
  1. Rectal ca
  2. Anal fissure
  3. Anal fistula
  4. Abdominal tumour
  5. Portal hypertension
  6. Pregnancy
  7. HIV disease
  8. Diarrhoeal disease
  9. Chronic constipation
  10. Spinal cord injuries
  11. Ulcerative collitus
  
3. **Examination procedure done**
  1. Ptocscopy
  2. Sygmoidscopy
  3. Biopsy forceps
  4. Digital exams only
  5. Digital exams with one/both above
  
4. **Stage of haemorrhoid**
  1. First degree
  2. Second degree
  3. Third degree
  4. Fourth degree



5. **Specific investigation performed**

1. Sigmoidoscopy
2. Proctoscopy
3. Abdominal ultra sound
4. Barium enema
5. Histopathological report - benign, malignant, confirmatory (Haemorrhoids)
6. Haemogram
7. Occult blood test
8. HIV test result (if it was done)

6. **Nature of admission to KNH**

1. Via Casualty
2. Via SOPC - direct b1,  
- referral b2
1. Interdisciplinary consultation  
Medical wards  
Orthopaedics  
Ophthalmology  
Gynaecology  
other specify.....

7. **Clinical presentation**

- a. Bleeding - fresh  
- clotted
- b. Prolapse
- c. Pain on defaecation
- d. Pruritus
- e. Anal dysfunction effects
- f. Mucus discharge/soiling
- g. Acute pain of complication (emergency, acute severe pain)
- h. Incidental finding
- i. Recurrence of symptoms

8. **Clinical findings at first presentation**

- a. Anal verge swelling
- b. Skin induration
- c. Proctoscopy finding
- d. Bleeding
- e. Thrombosed piles
- f. Site\* of Haemorrhoids
- g. Anaemia

Site \*

(R) Anterior	
(R) Posterior	
(L) Lateral	
Anterior	
Posterior	

## 9. Complication

1. Bleeding (profuse)
2. Infected (suppuration)
3. Thrombosed
4. Strangulated (infarcted)
5. Irreducible
6. Ulceration - superficial ulceration of the exposed mucus membrane often accompanies strangulation with thrombosis
7. Gangrene - when strangulation is tight enough to cut off blood supply
8. Fibrosis

## 10. Treatment of option(s) given

1. Left alone
2. Conservative
3. Interventional

## Conservative

1. Dietary
2. Laxative
3. Creams
4. Suppositories
5. Daflon

## Interventional

1. Rubber band ligation
2. Infrared photocoagulation
3. Sclerotherapy (Mitchell)
4. Cryotherapy (cryosurgery - liquid N<sub>2</sub>)
5. Haemorrhoidectomy i.e open, closed
6. Forcible anal dilation
7. Pile stretching

## 11. Complications of treatment

726450 -9

726550 -9

Fax: 725272



KENYA NATIONAL HOSPITAL

P.O. Box 20723, Nairobi

Telegrams: "MEDSUP", Nairobi

Email: knh@healthnet.or.ke

Ref: KNH-ERC/01/905

Date: 13 December 2000

Appendix -2 -

Dr. Raymond O. Oigara  
Dept. of Surgery  
Faculty of Medicine  
University of Nairobi

Dear Dr. Oigara,

RE: REVISED RESEARCH PROPOSAL "THE PRESENTATION, MANAGEMENT AND OUTCOME OF HAEMORRHOIDS AS SEEN IN KNH GENERAL SURGERY UNIT (1990 - 2000) A 10 YEAR RETROSPECTIVE STUDY". (P829/10/99)

This is to inform you that the KNH-Ethics and Research Committee has reviewed and approved the revised version of your above cited research proposal.

However, the bibliography must be corrected to conform with the internationally recognised guidelines on format, content and presentation. A recent copy of E.A.M.J. will provide the guidance you need in addressing this issue.

On behalf of the Committee I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of data-base that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely,

PROF. A.N. GUANTAI  
SECRETARY, KNH-ERC

cc Prof. K.M. Bhatt  
Chairman, KNH-ERC

DD (C/S)

Supervisors: Prof. Adwok J A, Dept. of Surgery, UON  
Dr. F O Owillah, Dept. of Surgery, UON

The Chairman, Dept. of Surgery, UON

The Dean, Faculty of Medicine, UON

## REFERENCES.

1. Van Henverzyn R. et al: Haemorrhoids review Acta Gastrentol Belg (Belgium) Sep. Dec. 1995
2. Dutch Surgical Society consensus Dev. Conference Journal Octo 15 1994 138(42) 2106-2109
3. Butter M. Haemorrhoid etiology, symptom, therapy. Therapeutische Umschan 54(4); 185-9, 1991 April.
4. Cochiara J.L., Lake Charles Memorial Hospital Journal 1998 (2) 13-17.
5. Ogendo S.W.O. Haemorrhoids as seen at Kenyatta National Hospital with reference to asymptomatic haemorrhoids. E.A.M.J. 1991 68:340.
6. Ojara E.A. Haemorrhoids in Kenyatta National Hospital. Medcom 3(4) 1981.
7. Burkit DP, Stewart CW. Haemorrhoids-postulated pathogenesis and proposed prevention. Postgrad Med. J. 1975: 61:631.
8. Way L.W. Current surgical diagnosis and treatment. 10<sup>th</sup> edition, 1994. Appleton & Lange.
9. Haas P.A. Fix T.A Jr. The pathogenesis of Haemorrhoids. Dis cola/rectum 1984 27(7): 442-50.
10. Thompson WH. The nature of Haemorrhoids. Br. J. Surg; 62:542-52.
11. Stelzner F., Staubestand J., Machleidt das corpus covenosum recl. Arch Chir (Berline). 1982; 299-302.
12. Mazier WP. Emergency haemorrhoidectomy - a worthwhile procedure. Dis colon rectum 1973;16:200-205.
13. Morris P.J., Malt R., Oxford text book of surgery vol. 2 1994 1<sup>st</sup> edition Oxford University Press, Oxford pp 1122-1135.
14. Smith L.E. Anal incontinence mechanism. North. Journal Med, 1990; 32 s22-s32.
15. Bates T. Rectal prolapse after anorectal dilatation in the elderly. Br. Med. J. 1972; 2:505.

16. Burkit D.P. Varicose veins, deep vein thrombosis and haemorrhoids: Epidemiology and suggested aetiology. *Br. Med. J.* 1962; **2**:556-561.
17. Parks AG. Surgical treatment of haemorrhoidectomy. *Br. J. Surg* 1956; **43**:337.
18. Haas PA., Foz TA., and Haas GP Pathogenesis of Haemorrhoids. *Dis colon rectum* 1984;**27**:442-450.
19. Graham-Stewart CW. What causes Haemorrhoids?. A new theory of etiology. *Dis colon rectum* 1963;**6**:333-334.
20. El-Gendi MA., Abdel Becky N. Anorectal pressures in patients with Haemorrhoids. *Dis colon rectum* 1986;**29**:388-391.
21. Read M.W., Bartolo D.C.C., Read M.G et al. Differences in anorectal manometry between patients with Haemorrhoids and patients with descending perinium syndrome. *Br. J. Surg.* 1983;**78**:656-659.
22. Roe A.M., Bartolo D.C.C., Vellacott K.D et al. Submucosal versus litigation excision haemorrhoidal: A comparison of anal sensation, anal sphincter manometry and postoperative pain and function. *Br. J. Surg.* 1987;**74**:948-951.
23. Broader J.H., Gunn I.F., Alexander Williams J. Evaluation of bulk-forming evacuant in the management of Haemorrhoids. *Br. J. Surg.* 1974;**61**:142-144.
24. Goligher J.C., Dutchie H.L., Nixon N.N. *Surgery of the anus, rectum and colon.* 3<sup>rd</sup> edition 1975. Baillier Tindall. London 1975
25. Delcof. Sonnenberg A. Association between haemorrhoids and other diagnosis. *Colon Rectum* **41**(12): 1534-1542.
26. Johanson J.F. Association of haemorrhoidal disease with diarrheal disorders: potential pathogenic relationship. *Dis Colon Rectum* **40**(2):215-219.
27. Prevalence and factors influencing Haemorrhoids, anorectal varices and colopathy in patients with portal hypertension. Dept of Gastroenterology, M.L.N. Medical College, India *Endoscopy* May lab **28**(4) p340-5.
28. Johanson J.F., Sunnerberg A. Constipation is not a risk factor for haemorrhoids: A case control study of potential etiological factors: *Am. J. Gastro Nov.* 1994 **89**(11)p1981-6 ISSN. 0016-5085.

29. Arabi Y., Gatehouse D., Alexander-Williams J. et al. Rubber band ligation of lateral subcutaneous sphincterectomy for treatment of Haemorrhoids. *Br. Surg. J.* 1977;**64**:737.
30. Gibbons C.P., Bannister J.J., Read N.W. Role of constipation and anal hypertonia in the pathogenesis of Haemorrhoids. *Br. J. Surg.* 1988;**75**:656-660.
31. Hancock B.D., Smith K. The internal sphincter and Lord's procedure. *Br. J. Surg.* 1975;**62**:833-836.
32. Hiltunen K.M., Matikanen M. Anal manometric findings in symptomatic Haemorrhoids. *Dis. Colon rectum* 1985;**28**:807-809.
33. Schouten W.R., Van Vroonhoven T.J. Lateral internal sphincterectomy in the treatment of Haemorrhoids. *Dis colon rectum* 1986;**29**:869-872.
34. Segal W.N. Association of haemorrhoids with Haematochezia. *Dis Colon Rectum* 1998; **41**(2) 1541-1542.
35. Anillani A. Proctoscopy in staging of haemorrhoids. *Dis Colon Rectum* 1996; **38**(4) 242-246.
36. Levine T.F. Internal Haemorrhoids. Diagnosis with double contrast barium enema. *Radiology (US)* Oct. 1990 **177**(1) 141-4.
37. Frazier E., Brook I. Aerobic and anaerobic microb of infected Haemorrhoids. *Am. J. Gastroe (US)* Feb 1996 **91**(2) P 332-335 ISSN:002-9270.
38. Saint-Pierre A., Treffot M.J., Martin P.M. Hormonal receptors and haemorrhoidal disease. *Coloproctology.* 1982;**4**:116-120.
39. Clark C.G., Giles G.R., Goligher J.C. Results of conservative management of internal Haemorrhoids. *Br. Med. J.* 1967;**51**:631.
40. Johnson C.D., Budd J., Ward A.J. Laxatives after Haemorrhoids and defaecatory habits. *Lancet* Jan 1, 1989, pp 445-448.
41. Webster D.J.T., Gough D.C.S, Craven J.L. The use of a bulk evacuants in patients with Haemorrhoids. *Br. J. Surg.* 1978;**65**:191-192.
42. Moesgaard F., Nielsen M.L., Hansen J.B et al. High fibre diet reduces bleeding and pain in patients with Haemorrhoids. *Dis Colon Rectum* 1982;**25**:454-456.

43. Jensen S.L., Harling H., Tange G. et al. Maintenance bran therapy for prevention of symptoms after rubber band ligation as alternatives to haemorrhoids: A randomized clinical trial to compare rubber band ligation of third-degree haemorrhoids. *Acta Chir Scand* 1988; **154**:395-398.
44. Perez-Miranda M. Dietary fibre supplements in bleeding haemorrhoids. *Hepatogastroenterology*. Nov/Dec. 1996; **43**(12) 1504-1507.
45. Battachio F. Conservative versus aggressive treatment in early haemorrhoids. *Ann Ital Chir* Nov-Dec 1995 **66**(6) p761-7.
46. Lewis A.A.M., Rogers S.H., Leighton M. Trial of maximal anal dilation, cryotherapy and elastic band ligation as alternatives to haemorrhoidectomy in the treatment of large prolapsing Haemorrhoids. *Br. J. Surg.* 1983; **70**:54-56.
47. Dodi G., Pirone E. Sclerotherapy and elastic ligation of haemorrhoids. *Ann Ital Chir (Italy)*. Nov-Dec. 1999; **66**(6) p772-73
48. Dudenko F.I et al. Treatment of haemorrhoids with sclerosing solutions. *Klin Chir (USSR)* 1991; **2**: P27-8 ISSN 0023-2030.
49. Dennison A.R., Whiteson R.J., Rooney S. The management of haemorrhoids. *Am. J. Gastroe.* 1989; **84**:475
50. Savioz E. et al. Rubber band ligation of haemorrhoids: Our experience *Mineroa Chir* Sept 1997; **52**(9) P1047-51.
51. Spellanzani et al. Rubber band ligation of haemorrhoids: Our experience *Mineroa Chir.* Sept 1997; **52**(9) P1047-51.
52. Basile M. Rubber band ligation of haemorrhoida: Convenient and economic treatment. *J. Clin. Gastroent.* July 1996; **23**(1) P50-2.
53. Queidat D.M., Jurjus AR. Management of Haemorrhoids by rubber band ligation. *J. Med. Liban (Lebanon)* 1994; **42**(1) p11-4 ISSN 0023-9852.
54. Wrobenski D.E. Rubber band ligation of haemorrhoids *RI Med (US)* June 1995; **78**(6) P172-3)
55. Mattana C. Rubber band ligation of haemorrhoids and rectal mucosal prolapse in constipated patients. *Dis Colon Rectum (S)* May 1989; **32**(5) P372-5 ISSN. 0012-3706.

56. Leicester R.J., Nicholis R.J., Mann CV. Infrared coagulation. *Dis Colon Rectum* 1981; **24**:602.
57. Templeton J.L., Spence R.A.J., Kennedy T.L et al. Comparison of infrared coagulation and rubber band ligation for first and second degree haemorrhoids: a randomized prospective clinical trial. *Br. Med. J.* 1983;**286**:1387-1389.
58. Ambrose N.S., Hares M.M., Alexander-Williams J. et al. Prospective randomized comparison of photocoagulation and rubber band ligation in treatment of haemorrhoids by cryotherapy. *Br. Med. J.* 1983;**286**:1389-1391.
59. Detrano S.J. The role of cryosurgery in management of anorectal diseases: three hundred and fifty cases. *Dis Colon Rectum* 1975;**18**:284.
60. Kaufman H.D. Outpatient treatment of haemorrhoids by cryotherapy. *Br. J. Surg.* 1976;**63**:462-463.
61. Singh D.J. Cryohaemorrhoidectomy for primary Haemorrhoids: An evaluation of the procedure in the Indian population. *J. of Indian Med. Asso* **96**(1):16-18 1998 Jan.
62. Rudd W.W. Ligation and cryomanaged of all Haemorrhoids. An office procedure. *It Surg. (Italy)* July-Sept 1989; **74**(3) P148-51.
63. Tanake S. Cryosurgical treatment of haemorrhoids in Japan. *Int. Surg.(Italy)* July-Sept 1989; **74**(3) P146-7.
64. Machicado G.A., Cheng J., Jensen D.M. Resolution of chronic anal fissures after treatment of continuous internal haemorrhoids with direct current probe. *Gastrointestinal endoscopy* 1997; Feb **45**(2): P157-62.
65. Randoll et al. Prospective randomized comparative study of bipolar versus direct current electrocoagulation for treatment of bleeding internal haemorrhoids. *Gastrointento. Endosc. (US)* July-Aug 1994; **40**(4) P403-10.
66. Hinton C.P. and Morris D.L. A randomized trial comparing direct current therapy and bipolar diathermy in the out patient therapy of third degree haemorrhoids. *Dis Colon Rectum.* 1990; **33** (1) pp 931-932 ISSN:0012-3706.
67. Iwagaki H., Higuchi Y., Fujimoto S. and Urita K. The laser treatment of haemorrhoids: results of a study on 1816 patients. *Jap. J. Surg.* 1989; **19**:658.



68. Read M.G., Read N.W., Haynes W.G. et al. A prospective study of the effect of haemorrhoidectomy on sphincter function and fecal continence. *Br. J. Surg.* 1982;69:396-398.
69. Sankar M.Y., Joffe S.N. Laser surgery in colonic and anorectal lesions. *Surg. Clin North Am.* 1957;94:114.
70. Franc H Hertzler M.D. et al. Stapled vs excision haemorrhoidectomy . *Arch Surg* 2002; 137 pp 337-340.
71. Seon-Choen F. et al. Prospective randomized trial comparing pain and clinical function after conventional scissor excision/ligation vs diathermy excision without ligation for symptomatic prolapsed haemorrhoids *Dis Colon Rectum* 1992; 35:1165-9.
72. Pallazo F.F. Randomized clinical trial of Ligasure™ vs open haemorrhoidectomy. *Br. J. Surg.* 2002; 89:154-157.
73. Asfar S.K., Juma T.H., Ala-Edeen T. Haemorrhoids. *Surg. Clin North AM.* 1978;58:469.
74. Buls JG., Goldber SM. Modern management of Haemorrhoids. *Surg. Clin. North Am.* 1978;58:469.
75. Deustch AA., Mocshkovitz M., Nudelman I. et al. Anal pressure measurements in the study of haemorrhoid etiology and their relation to treatment. *Dis Colon Rectum* 1987;30:855-857.
76. Bruck CE., Lubowski DZ., King DW. Do patients with Haemorrhoids have pelvic floor denervation? *Int. J. Colon Dis* 1988;3:210-214.
77. Ferguson JA., Mazier WP., Ganchrow HL., Friend WG. The closed technique of haemorrhoidectomy surgery. *Dis Colon Rectum* 1971;70:480-484.
78. Wolf J.S., Munoz J.J., Rosin J.D. Survey of haemorrhoidectomy practices: Open versus closed techniques. *Dis Colon Rectum* 1979;22:536-539.
79. Snooks S., Henry N.M., Sawsh M. Fecal incontinence after anal discharge. *Br. J. Surg.* 1984;71:617-618.
80. Mortensen PE., Olsen J., Perdesen IK. et al. Randomized study on haemorrhoidectomy combined with anal dilation. *Dis Col. Rect.* 1987; 30:755-757.

81. Bailey R., Ferguson J.A. Prevention of urinary retention by fluid restriction following anorectal operations. *Dis Colon Rectum* 1976;250-252.
82. Prasad M.L., Abcarian H. Urinary retention following operations for benign anorectal diseases. *Dis Colon Rectum* 1978; 21:490-492.
83. Salvati E.P., Kleckner M.S. Urinary retention in anorectal and colonic surgery. *Am J. Surg* 1957;94-114.
84. Smith LE. Ambulatory surgery for anorectal diseases: an update. *S. Med. J.* 1986;79:163-166.
85. MacRae HM., McLeod RS. Comparison of haemorrhoidal treatment: a metaanalysis. *Canadian J. of Surg.* 1997; 40 (1) 14-17.
86. Pfenninger JL., Surrel J. Non surgical treatment of options for internal haemorrhoids. *Am Fam Physician (US)* Sep. 1995; 52(3) P 821-34, 839-41.