

"A STUDY OF HAEMORRHOIDS AS SEEN AT KENYATTA
NATIONAL HOSPITAL WITH SPECIAL REFERENCE TO
ASYMPTOMATIC HAEMORRHOIDS"

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A DISSERTATION SUBMITTED IN PART FULFILMENT FOR
THE DEGREE OF MASTER OF MEDICINE (SURGERY) OF
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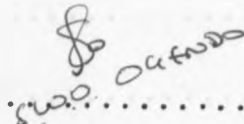
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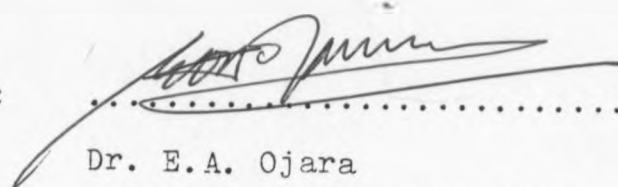
DECLARATION

I certify that this thesis is my own original work and has not been presented for a Degree in any other University.

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This Dissertation has been submitted for the examination with my approval as a University Supervisor.

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SUMMARY

- : Sample size 80 patients
- : Total males in sample 55 males
- : Total females in sample 25 females

- : Total number of asymptomatic haemorrhoids = 17 patients
- : Total males in asymptomatic haemorrhoids group = 13 patients
- : Total females in asymptomatic haemorrhoids group = 4 patients

- : Male:female ratio 3:2 (calculated with percentage).
- : Mean age of sample 39.6 ± 17.32 years.
- : Total population over 50 years with asymptomatic haemorrhoids = 7 (29.2% of all above 50 years).
- : Mean age (calculated) of female in population (sample frame and hence national population) = 4.4 - 61.1 years.
- : Mean age for males in population (as above) = 45.5 - 47.2 years.

- : No statistical difference between the two age groups (i.e. age structure).
- : Significant difference noted in the incidence of asymptomatic haemorrhoids between male and female.
- : Significant difference noted between British and Kenyan figures for those over 50 years of age.
- : Estimated asymptomatic haemorrhoids passing through O.P.D. at Kenyatta National Hospital = 60,116 patients a year.
- : Estimated asymptomatic haemorrhoids admitted into Kenyatta National hospital a year = 11,896 patients a year.

: Estimated total number of asymptomatic haemorrhoids passing through Kenyatta National hospital = 72,012 patients per year.

: No meaningful conclusions could be drawn about the total number of symptomatic haemorrhoids seen throughout Kenyatta National Hospital; as no record is maintained of them in the surgical outpatient clinic.

I N T R O D U C T I O N

Haemorrhoids is a condition defined as a swelling at the anal margin, a pile. This condition has been known to afflict mankind for a long time having been documented from the time of Hippocrates. So far it has not been possible to obtain accurate figures of the number of sufferers of this condition in our or other communities but estimates suggest that a high number are affected in both the symptomatic and probably more in the asymptomatic form (15). It has been estimated that fifty per cent of adults over fifty years of age in the United Kingdom are affected by this condition (15) and there is evidence that the incidence increases with age.

The word haemorrhoid is derived from the Greek word "haemorrhoids" meaning blood flow and this word emphasises the main clinical feature associated with this disease i.e. the passage of blood per rectum.

The classification of haemorrhoids can be broken down as follows:

- a) Internal haemorrhoids are those which arise as a result of prolapse of the internal haemorrhoidal plexus.
- b) External haemorrhoids are those which are noted to arise from the external haemorrhoidal plexus.

c) Interoexternal haemorrhoids are those which arise due to prolapse of both internal and external plexi.

Internal haemorrhoids which are the main interest of this paper are further graded according to the severity of prolapse into -

- Primary (1⁰) Those haemorrhoids confined within the anal canal and not extending beyond the anal verge.
- Secondary (2⁰) Those which will protrude beyond the anal verge on defaecation only, but will return spontaneously thereafter.
- Tertiary (3⁰) Those which will prolapse out of the anal verge on defaecation, but will not return into the anal canal unless reduced digitally by the patient and further exertion of any kind (not necessarily defecation) will result in their prolapse.
- Quaternary (4⁰) Are haemorrhoids of long standing which become large and develop considerable skin covered components that they cannot properly be returned into the anal canal.

SHORT HISTORY OF HAEMORRHOIDS AND AETIOLOGY

As mentioned earlier, haemorrhoids is not a new condition to mankind and has been with us for a long time.

A lot of confusion has also existed as to its exact aetiology and this could have accounted for the slow rate as well as the different modalities of treatment which were devised to treat the condition.

ETIOLOGY

From the etiological view, haemorrhoids can be divided into two (15):

a) Patients with a definite obstruction within the portal system e.g.

liver cirrhosis

thrombosis portal vein

abdominal and rectal tumours

The main factor here is blockage of the drainage of the internal rectal plexus.

It should be noted, however, that portal hypertension per se is very rarely associated with haemorrhoids. Pregnancy is probably the most common cause of abdominal tumour affecting about 50% of our population, also after delivery, it is believed that no total correction of subsequent haemorrhoids occurs and this subsequently worsens with later pregnancies; yet of interest is that the incidence of females afflicted is always less than males (15, 28). Rectal carcinoma likely acts by causing obstruction to drainage as well but from within the wall of the rectum.

b) Idiopathic haemorrhoids with no evidence of obstruction.

In this group, no definite disease can be found. The relevant factors are:

- hereditary with a family history or associated with varicose veins probably due to some vascular anomaly.

- anatomical/physiological factors e.g. upright posture, straining, constipation all leading to increased pressure within the rectal plexus.
- constipation, diarrhoea or straining at stool is another factor.
- prolonged standing or walking will act in a similar manner as the upright posture.
- Relaxation or deficiency of anal sphincter. It has been noted in patients with sphincter damage after treatment of anal fistulae that a few do get haemorrhoids on the opposite side as a result of disruption of the normal support of the anal haemorrhoids.

SHORT HISTORY OF HAEMORRHOIDS

This is presented after the section on etiology as with the discovery of different etiological factors different authors through time discussed haemorrhoids, in relation to etiology i.e. 'as caused by', and hence influenced others and the evolution of the management of the condition.

The history as well as the management of this condition is old with operative treatment having been done for thousands of years with little operative risk and reasonable results (30). Prior to the 19th century, only two operations were performed, the first was ligature operation in which the haemorrhoid was grasped and tied with a ligature of wool in ancient times or silk in the middle ages onward. The second method was simple ligation with

no attempt to control haemorrhage, however, this did not pose as much of a problem as might be expected. It was only later that more sophisticated procedures were devised starting from Salmon who demonstrated that the blood supply to the anal canal and rectum was through the superior haemorrhoidal artery thus opening the way to a better anatomical understanding of the condition (29).

Salmon combined ligature with excision and this overcame the problem of bleeding.

In 1749, Morgagni postulated that following the adoption of an upright posture an increase occurred in pressure in the lower tributaries of the portal system and this resulted in vescosities of the venus plexus and hence haemorrhoids. Further support for this theory came from the fact that quadrupeds were never afflicted with the condition. This theory was held in vogue for a long time, however, it did not explain all the facts e.g. why should haemorrhoids occur alone and not with varicose veins.

In 1855, Verneulis suggested occlusion of rectal tributaries about 10cm above the anal verge at a point at which they transversed the rectal musculature produced a back pressure leading to varicosity and haemorrhoid formation. Again this failed to explain all the facts.

Duret, in 1879, believed that straining at defecation played a contributory role and the transient increase in

intra-abdominal pressure being responsible. Still his theory had shortcomings which it failed to explain e.g. why are haemorrhoids only limited to the anal canal and why so few patients with portal hypertension present with a main complaint of haemorrhoids. Tylor, in 1954 made the following observation; "we have yet to see a portal hypertension patient presenting to us with the main complaint of haemorrhoids". Thompson (34) also said varicositis of the anus, a very rare manifestation of portal hypertension, occurring apparently only when there is co-existent systemic vein obstruction look like other distended veins e.g. like varicose veins and not like haemorrhoids.

Duret also observed that the pressure within the internal haemorrhoidal plexus was 25cm of water in supine position, and 45cm in the upright position.

Parks blamed constipation as a causative factor and as a result of direct pressure interruption of venous return occurred with less effect on arterial flow. The resulting arterial engorgement of the venous plexus resulting in rupture and rectal bleeding. He was of the opinion once varicosity occurred and was followed by partial prolapse, the condition worsened until tertiary and quaternary haemorrhoids resulted.

Meanwhile, modification in the surgical technique were occurring too with modifications being made to Salmon's

technique. Miles (30) modified the procedure with limited dissection of the haemorrhoid off the muscle layer followed by ligation. He however, involved the sensitive skin of the lower anal mucosa and hence, a painful operation.

It was Milligain however, in 1919 who as a result of drawing attention to anatomical landmarks, devised the Milligan Morgan haemorrhoidectomy which forms the basis of most operations done today. They kept their dissection above the mucocutaneous junction and hence relatively pain free. Care however, had to be exercised to avoid anal stenosis or damage to the internal sphincter.

Whitehead in 1882, described a radical operation in which all the haemorrhoid bearing area is removed as a circumferential dissection. To cover the defect, the remaining mucosa is pulled down and stitched to the squamous mucosa at the pectinate line. This procedure is now however, not used.

Since then a large number of modifications have been made and resulted in many different forms of haemorrhoidectomies. These will be looked at under the section of management.

In 1968, Lord (23) noted that on rectal examination of patients with haemorrhoids a tight band could be felt and he postulated that haemorrhoids occurred as a result of this constriction. This formed the basis of Lords opera-

ion, and maximal anal dilatation broke this constriction, it was later to be disproved that there was a constriction. Good results are quoted by many authors using his procedure.

Other techniques developed with time will be looked at when we discuss management.

There was not much activity in the field of haemorrhoids (in terms of aetiology for some time after Parks until about 1982 when Thomson (34) put forward his theory of the true nature of haemorrhoids which is now accepted widely. He said that vericosities did not in fact lead to the formation of haemorrhoids as previously thought, but were in fact a normal occurrence in the rectal plexis and were present in all individuals even at birth. He noticed after doing numerous dissections that there existed along the rectal plexus dilatations or succulations which were connected to adjacent segments with normal veins and that these dilatations were in fact congenital and not secondary to any anal or other pathology. He also stated that the superior haemorrhoidal artery did not after its primary division produce three main branches feeding the areas of the anal canal from which haemorrhoids arose.

The third point was the presence of a well developed arrangement of smooth muscle fibres within the sub mucosa running from the internal sphincter (intermingled within

the plexus) to the submucosal layer (Trietz's muscle).

He also noted that the dilatations occurred within three mucosal swellings which he called "anal cushion". These anal cushions consisted of smooth muscle (Trietz's muscle) connective tissue and venous plexus and occurred at the positions normally noted for haemorrhoids.

His explanation as to the pathophysiology of haemorrhoids was as follows:

The smooth muscle is responsible for the support of the anal cushion. As a result of some factor e.g. straining at defecation, increased intra-abdominal pressure, the integrity of this support is broken resulting in prolapse of the anal cushion(s) and hence haemorrhoid. Thus haemorrhoids are normal anal cushions which have prolapsed. There is now no evidence to support that fact that vericosities lead to haemorrhoids though they can (rarely) present as a rectal mass which can be confused with haemorrhoids in patients with vascular anomalies and these are usually noted in patients below 20 years of age (5).

With increased destruction of the smooth muscle integrity internal haemorrhoids will go through the various degrees of severity.

Burkitt D., while working in both Eastern and Southern Africa, noted that the incidence of haemorrhoids in the

African population was extremely low and cited factors like diet as the main cause (6). Other authors found similar results. Dodd in South Africa and Trowell, saw only one case in three years and one case out of a total of 11,000 African inpatients respectively. In a five year period between 1975 and 1979 at Kenyatta National Hospital (KNH) only 150 cases of haemorrhoids were diagnosed and managed (28), a very low figure in comparison to western figures.

Problem Identification

From the above section, it would seem that haemorrhoids are rare in our community and we would see only about thirty in one year (about 3 in a month). Why should this be so?

A lot of medical students about ten or so years back were taught that haemorrhoids were rare in the Africans and with the literature supporting such statements, we tended to believe this. However, one only has to stay in a surgical outpatient clinic at KNH and one will see about three to four cases of haemorrhoids (both new and re-visits) during each clinic (personal observation).

If indeed it is true that haemorrhoids are rare in the Africans, then this observation should not arise, and as KNH acts as a national referral hospital this situation will reflect the national situation.

It is interesting to note that apart from constipation,

all the other etiological factors which apply to the western community apply equally to ours, more so in the case of pregnancy where the average African woman has a four times greater risk of getting pregnant than her western counterpart (35). It is thus interesting that our incidence is still lower.

In the study quoted by Ojara (28), the average age was found to be between 20-39 years is sharp contradistinction to Goligher's figures where 50% of all adults over 50 years of age are afflicted (15).

Howley in his study (17), found that 40% of the British population are affected by haemorrhoids in their life time. This also is very unlikely in our set up with the figures so far available.

In this paper, it is hoped to try and determine a more accurate figure of our true incidence of haemorrhoids by looking at both the asymptomatic as well as symptomatic group and further try to determine if our incidence is really lower than others and if so why.

ANATOMY OF ANORECTAL AREA

It would be incomplete to discuss haemorrhoids without looking at the anatomy of the anorectal region.

The anorectal region consists of the rectum which continues down into the anal canal. The rectum is about 12 cm in length and commences at the level of the third sacral bone and ends about 2.5 cm beyond the tip of the coccyx by joining the anal canal. At the distal end of the rectum a dilatation, the ampulla is found.

The rectum has two anteroposterior curves, a large sacral curve above and a smaller perineal curve below. Three lateral curves also occur during its course, upper convex to the right, middle convex to the left and lower convex to the right again. The middle curve being the largest.

The blood supply to the anorectal region is through the superior, middle and inferior rectal vessels as well as the median sacral artery. The former two are branches of the inferior mesenteric and the inferior rectal, a tributary of the pudendal artery. The median sacral is a direct extension from the aorta from its division. Veins drainage is along equivalent venous vessels.

The anal canal is about 4cm in length and runs in an anteroposterior direction.

The upper two thirds of the anal canal is surrounded by

the internal sphincters muscle and the lower one third by the external sphincter. The mucous membrane of the anal canal in its upper part is thrown into folds, vertical in orientation called anal columns of which there are six to ten joined at their lower ends by valves, anal valves; above which lies a small cavity, the anal sinus. The line of attachment below the anal canal is called the pectinate line and lies opposite the middle of the internal sphincter.

For 1.5cm below this the area of the anal canal is called the pecten, consists of variable epithelium, striated collumnar, squamous and has no sweat glands. The epithelia is adherant as the submucosa contains dense connective tissue which anchors it down. This area ends in a narrow wavy zone, the white line (of Hilton). Below this, the anal canal is lined by true skin and continues to the anal orifice.

The anal musculature consists of an internal and external sphincter, the innermost being the internal which is a continuation of the inner circular coat of the rectum. It constitutes the proximal 5-8 cm. from the white line and is made up of smooth muscle.

The external sphincter is made of three parts, the deep, superficial and subcutaneous parts. The deep being thick and annular and being the most superior and fused to the puborectalis muscle. It has no bony attachment.

The superficial part is elliptical in shape being the only part of the sphincter being attached to bone arises from the coccyx through a fibrous raphae. Anteriorly it is inserted into the perineal body.

The subcutaneous part consists of a flat band about 15cm broad and is found at the lower border of the internal sphincter and lies just below the skin. Some fibres are attached from it to both the perineal body and the ano-coxygeal raphae.

The external sphincter is made up of striated muscle.

Signs and Symptoms of Haemorrhoids

The predominant symptoms of haemorrhoids are bleeding and prolapse (15).

The first manifestation to be noticed by a patient with internal haemorrhoids is painless rectal bleeding usually noted at the time of defaecation. It tends to be bright red in colour, is not severe and occurs only at defaecation. The condition can stay static at this stage for a long time (1^o haemorrhoids). With time the 1^o haemorrhoid will progress on to a 2^o haemorrhoid with prolapse and spontaneous reduction during and after defaecation respectively. At this stage the patient is able to describe "something prolapsing out of the anus".

By this stage he/she may or may not have developed secondary symptoms such as discharge occurring as a protective response of the mucosa to irritation. Pruritis ani may be noticed.

Chronic haemorrhoids may be associated with anaemia, ulceration of mucosa, infection, thrombosis and even fibrosis.

Haemorrhoids per se are painless and pain occurs when a complication or associated factor arises like thrombosis or anal fissure. History of some pain was elicited in 86% of 138 patients examined by Bennett, Friedman and Golligher in 1963 (15) and was the main complaint in 18% of these cases.

A study done at Kenyatta National Hospital (KNH) (28) gave

the following incidence of presenting symptoms (% n = 150)

| | |
|-----------------|-----|
| Rectal bleeding | 77% |
| Pruritis ani | 44% |
| Discharge | 43% |
| Prolapsed piles | 31% |
| Perianal pain | 23% |
| Dragging weight | 13% |
| Constipation | 10% |

This incidence of prolapse was noted as number four in this series. It is not exactly clear whether this was a presenting symptom when the patient came to the doctor i.e. 3^o and 4^o haemorrhoid or whether the patients had prolapse only at defecation, or if both were combined.

External haemorrhoids tend to be asymptomatic and are brought to the attention of the patient when thrombosis sets in with an acute attack of pain.

Examination of haemorrhoids is a simple procedure requiring only a proctoscope for examination of the anal canal. However, colonoscopy and barium enema may be needed to rule out rectal carcinoma or other pathology as the primary course.

As mentioned earlier, haemorrhoids per se do not give rise to a lot of difficulty except for rectal bleeding. Complications do occur with time. Source of these complications are:

- a) Profuse haemorrhage usually noted with 2^o haemorrhoids is most likely as a result of trauma. This can be severe enough to cause alarming bleeding.
- b) Thrombosis can occur secondary to trauma or infection. This is a painful process and will bring the patient in to seek medical attention. With strangulation and thrombosis after a time resolution will occur with shrinkage and fibrosis which can result in smaller piles than before the attack or in polypoid haemorrhoids. Occasionally, necrosis of the haemorrhoid occurs and very rarely this can extend to rectal gangrene as reported by Lockhart-Mummery and Joshi, in 1951 and Gabriel in 1982 (33).
- c) Ulceration is mainly a feature of 3^o haemorrhoids. Mechanical trauma is the main factor. Due to rapid mucosal regeneration with removal of the stimuli ulcers heal well.
- d) Fibrosis and gangrene have been mentioned above.
- e) Suppuration and phlebitis too will occur quite often some initial trauma with or without concurrent illness will be associated.

Incidence

There has been quite a lot of material written in the literature about the incidence of haemorrhoids in Europe,

but very little as far as Africa is concerned; the overall picture that comes out is that Europe has a very high incidence while that in Africa it is extremely low.

Goligher (15), in his study of the general population in the United Kingdom, stated that 50% of all adults over the age of fifty years were afflicted by haemorrhoids and that even more perhaps had asymptomatic haemorrhoids which were only detected on routine rectal examination. This disease is found in all age groups with men affected about twice as often as women. Similar studies done have tended to reflect the generally high incidence in Europe.

Hawley determined that 40% of the white population in Britain will have haemorrhoids within their lifetime(17) while 80% of all patients presenting themselves for proctoscope exam for one reason or another were noted to have haemorrhoids (27).

In sharp contradiction to these figures, are those of studies done in Africa both Eastern and Southern. Burkitt during his study in both East and South Africa, indicated that haemorrhoids were rare in the rural African community and only a few cases were found in the "Urban African" who he postulated as a result of a low residue European type of diet was constipated and hence more at risk of developing haemorrhoids (6).

Similar results were obtained by Dodd and Trowell, they also blamed diet as a cause. They saw one case in 11,100 in patients.

Haemorrhoids are not as rare in our setting as the above facts would lead us to believe, as is indicated from the number of cases seen in out patient clinic (SOPC) (personal observation). I also feel that the incidence is much higher.

A study done at KNH (28) studied a total of 150 patients with haemorrhoids over a five year period (As will be discussed later, the total number of new cases actually seen is likely to have been much more than this). This figure in itself is much more than expressed by either Burkitt or the other writers but is still relatively low. The average age was found to be between 20-39 years again a relatively young group as compared to European series.

Why is it that the incidence of haemorrhoids is found to be lower in our set up as compared to the European community, or is it just that there is some reason for unreporting of our cases?

If we consider secondary haemorrhoids, all the factors mentioned as etiological causes can and do occur within our community and if we especially single out pregnancy, the average African woman gets pregnant four times more than her European counterpart.

As for the idiopathic cause with the possible exception of diet alone, all the other factors such as hereditary (as seen by the number of vascular anomalies) anatomical and physical factors, prolonged standing are seen in our

communities too. The african woman is in fact always (relatively) on her feet and in the farm working.

With all the required factors present, why is it then that we see less haemorrhoids than in Europe.

Management

As a final section, we shall look at how to manage haemorrhoids.

The management of this condition can be divided into three main forms:

- those requiring no treatment at all.
- those needing only conservative treatment.
- those needing some form of surgical procedure.

As is mentioned later on in the article, only about 28% of all haemorrhoids will not need treatment at all and advice and diet are all that are given if anything. Within this group, falls the asymptomatic group. In the treatment of haemorrhoids a good rule of thumb is if the haemorrhoids are not causing any harm or discomfort to the patient leave it alone unless the patient specifically asks for its removal (24).

Conservative treatment will consist of topical applications, the main objective is to have a soothing effect and reduce pruritis and discharge.

Surgical treatment consists of the following

- sclerosant therapy
- elastic band ligation
- maximal anal dilatation
- cryosurgery
- haemorrhoidectomy

Of the latter haemorrhoidectomy, there are three different forms used:

- open
- closed
- radical

Studies have been done which show that conservative treatment offers an 'equal' alternative to surgical management.

Topical applications

The objective here is to simply reduce local skin irritation and has no effect on the actual progression of the haemorrhoids pose.

Injection therapy

This is a commonly used outpatient procedure. It involves the injection of an irritant (5% phenol in almond) into the submucosal layer. The irritant effect with time results in fibrosis and later contraction of the submucosal layer to the underlying muscle, this results both in reduction in size and congestion (and hence bleeding) of the anal cushion. Its failure rate is about 15% in 3 years (17).

This procedure was documented as far back as 1871 by Mitchell but was not widely used until 1973 when Denker again popularised it.

The sclerosant is injected just above the haemorrhoid and the patients re-examined after two months when re-injection can be done if necessary.

Band ligation

Band ligation was a procedure devised way back in the middle ages where some dissection and ligation with non absorbable material like wool or linen was used (14). Rubber band ligation as we know it today i.e. rubber band ligation as opposed to band ligation with non elastic material, is a technique first devised by Blaisdel in 1958 but was not however, widely used till 1963 when Barron with the aid of more refined instruments re-introduced the procedure and is now is widely used office procedure (10). A pre-requisite is that the haemorrhoid be polypoid and not sessile.

The rubber band is applied at least 0.5-1cm above the dentate line, necrosis resulting in 24 - 48 hours and sloughing within 7-10 days. 1% lignocaine can be injected to increase the tension at the band site as well as to reduce discomfort. All three haemorrhoids can be managed at a single sitting.

In one study, it was noted that less than 50% of patients with band ligation were symptom free up to six years after the procedure (2,32).

Maximal Anal Dilatation

Lord, during his examination of patients with haemorrhoids noticed that on digital examination of these patients a tight circular band could be palpated. He concluded that as a result of this band haemorrhoids were formed and hence

trapped as it were by this band to result in prolapse. He concluded that by breaking this band, he could relieve haemorrhoids. To achieve this he devised the procedure of maximal anal dilatation and dilated up to eight fingers for which he got very good results (23). His procedure is widely used today and in a study done at this hospital (KNH) maximal anal dilatation gave the best results (28), 97.5% complication free good results with only one patient developing the complication of transient incontinence, one of the accepted complications. It is now accepted that there is no band as such and studies have now shown that patients with haemorrhoids tend to have on average a higher sphincter tone over normal individuals; 93.6 cm H₂O as opposed to 66.8 cm H₂O for normal individuals (16). In addition to the increased tone, ultraslow waves were noted in 37% of haemorrhoid patients (However, 7.5% of non haemorrhoid patients had similar waves). This pattern is not affected by general anaesthesia or skeletal muscle relaxants and occurs as a result of overactivity of the internal anal sphincter. This elevated tone was noted to be eliminated by maximal anal dilatation. It should be pointed out that some workers however, were not able to demonstrate any difference from normal in basal pressures and they state it may be just a secondary effect rather than a cause.

Cryosurgery

Cryosurgery works on an identical principle to elastic band ligation and results in cell death through the use of extreme cold. It is not as widely used as the other forms

of treatment and will not be discussed further here.

Haemorrhoidectomy

Haemorrhoidectomy can be considered the final form of treatment and up to 90% of patients will be well using the other forms of therapy (16,21,32). Some surgeons reserve the procedure only for large and/or thrombosed haemorrhoids.

Basically there are three main forms of haemorrhoidectomy which are:

- open haemorrhoidectomy
- radical haemorrhoidectomy
- closed haemorrhoidectomy

In the open haemorrhoidectomy, which is widely used in KNH after submucosal ligation of the haemorrhoid the wound is left open with no attempt to stitch it. Healing occurs through granulation. In the closed haemorrhoidectomy, however, the resulting mucosal defect is stitched. The technical procedure and complications of each we will not go into here.

In the radical haemorrhoidectomy, the whole of haemorrhoid affected area is removed in a circumferencial way and the resulting mucosal defect stitched by bringing down the rectal junction. A well done haemorrhoidectomy will give very good results in good hands and can be a disaster if not done well.

As can be expected with a very wide number of different methods available to manage one condition, there will be

attempts to try and evaluate them and hence determine which one will be the best and hence be the standard procedure. Many such trials have been done and it will not be possible to go through them all and only a few will be mentioned.

Chant (8), compared anal dilatation with the Milligan-Morgan haemorrhoidectomy and found that the final outcome from the two procedures was no different (cure rate) except for the fact that soiling of undergarments, pain and prolonged hospital stay (with associated expense) were the main problems associated with haemorrhoidectomy.

With its convenience of speed, simplicity and time, anal dilatation has obvious advantages over conventional haemorrhoidectomy. However, the incidence of post operative incontinence was greater with dilatation increasing both in incidence as well as severity and duration with increasing age of patient. Similar trials done by other authors gave similar or nearly similar results (19),

Jones and his colleagues compared the three procedures, rubber band ligation, anal dilatation and haemorrhoidectomy (Jones et al) (20) and again as for the above noted that the final outcome for the three procedures was fairly similar but the patients over fifty years of age had a higher incidence of rectal prolapse. Bates carried out a similar trial with similar results.

Sclerotherapy and rubber band ligation are both very simple

outpatient procedures needing about the same amount of time and roughly the same (or similar instruments). Arabi followed up patients subjected to the above two procedures and followed them up for one year. He obtained similar rates for the two methods (4). Immediate side effects like bleeding and pain were more commonly associated with band ligation.

As far as our set up at KNH, a comparison done by Ojara (28) covering a five year period, 1975-1979 had a similar cure rate for maximal anal dilatation as compared to haemorrhoidectomy again only differences arising as a result of complication. Injection sclerotherapy had a 33% failure rate (4/12) with no complications. Why this high failure rate is not quite clear.

What can we conclude from these different clinical trials? The first obvious conclusion is that irrespective of which method is used, the final outcome is no different whichever method is used. This is fairly significant for a country where facilities are in short supply and procedures like maximal dilatations need no facilities above those already present.

The simple procedures are relatively easy to do, can be done as an outpatient procedure and compare very well in terms of outcome to haemorrhoidectomy or cryosurgery. In fact it has now been shown that 90% of haemorrhoids can be managed without haemorrhoidectomy (17, 19, 29).

Macload, looked at the management of haemorrhoids with par-

ticular reference to aetiology and anatomy. He came up with the following points.

- a) The concept of haemorrhoidal destruction as a mode of treatment should be replaced by one of fibrosis, contraction of fibrous tissue and hence reduction in size of the haemorrhoid.
- b) Only internal haemorrhoids need treatment.
- c) No haemorrhoid needs treatment unless they have symptoms or the patient specifically requests treatment.
- d) Treatment is only needed if extensive destruction of the haemorrhoid exists.
- e) The treatment of the haemorrhoid should be related to the stage (degree) of the haemorrhoid (24).

The table below represents a rough guide to treatment of the different degrees of haemorrhoids.

| Degree | Ideal mode of management |
|-----------|--------------------------|
| Primary | maximal dilatation |
| | band ligation |
| | sclerotherapy |
| Secondary | dilatation |
| | band ligation |
| | sclerotherapy |
| Tertiary | maximal dilatation |
| | haemorrhoidectomy |

MATERIALS AND METHODS

The study was carried out as a prospective study on patients seen at the Kenyatta National Hospital (KNH) both in the wards and outpatient clinics (OPD). The bulk of the patients were seen in the general surgical wards 16 and 18 as they had a wider selection of different diagnosis and continued in the cardiothoracic ward (12) and neurosurgical ward (14) (the latter two yielding three patients each). The duration of the study was nine months of which the time spent collecting data in wards 18, 16, 12 and 14 was one, three, three and two months respectively.

The sample size originally hoped for was one hundred but due to unavoidable difficulties, this was reduced to eighty.

Source of Patients

Patients selected for the study came from three main sources to try and give as wide a selection as possible. These three sources were:-

- a) Patients admitted into the ward as acute admissions during the call week of the author.
- b) Patients admitted for the routine elective theatre list of the ward during the week the author was on call.
- c) The first patient seen by the author in the OPD during the clinic of the respective ward, unless the

patient failed to fill the criteria for selection in which case the next was chosen.

The sample frame for the study thus consisted of surgical patients seen at the KNH. It is realised that this sample is a bit biased towards "sick" patients but it is not felt that this pattern of patients will influence the presentation of asymptomatic haemorrhoids in the population. Factors like hysteria, malingering and other subjective feelings as well were not likely thought to influence proctoscopic findings.

The first assumption of this study thereafter is that the characteristics of the sample frame for asymptomatic haemorrhoids is identical to that of the national population.

Criteria for Inclusion (or exclusion) from study

Having identified the source from which all eligible patients from the study were to be picked, each patient was then individually subjected to further questioning to determine if he/she would finally be considered suitable or not.

Further criteria taken into consideration were:-

- a) All patients who already had a diagnosis of haemorrhoids and were or were not on treatment were excluded.
- b) All patients deemed suitable for the study were asked about symptoms which were likely to be associated with haemorrhoids i.e.

- rectal bleeding

- prolapse of haemorrhoids
- pruritis ani or discharge
- history suggesting thrombosis/strangulation.

One patient initially included was later excluded when she recalled an episode of rectal bleeding some time back. If however, a patient had any of the above symptoms which could be explained by their primary diagnosis (i.e. reason for admission/follow up) they were included into the study.

- c) All age groups are suitable for the study but since the wards involved in general surgery tended to be adult wards, all patients are above 15 years.
- d) Sex is not a limiting factor. As most of the admissions tended to be male patients the end results reflect this.
- e) Factors like pregnancy, or disability of any form did not exclude any patient.
- f) A patient declining proctoscopic examination was also excluded from the study. Fortunately no patient declined but a few did need some explanation of the need before consenting.

Patient consent

All patients finally selected had both a digital and proctoscopic examination done on them.

They were all informed that this was to be done and the

need for it. In this latter respect, the patients fell into three main groups:-

- a) Patients who needed a rectal examination as part of the diagnosis reaching necessities e.g. sigmoid volvulus. These in all were thirty one patients.
- b) Those patients who had diseases which were likely to be associated with haemorrhoids e.g. anal fistula and these came to 28 patients.
- c) Those patients whose condition had no relationship to haemorrhoids and these totalled 36 patients (haemorrhoids or anorectal pathology).

There was a significant amount of overlap in these three groups, for example, benign prostatic hypertrophy would fall into all three.

Patients falling into the first two groups were informed of the need for a rectal examination either to find out what was wrong with them or to make sure there was nothing wrong in their rectums.

Patients in the latter group were asked to subject themselves to a rectal examination just to make sure there was no "anorectal pathology" and this was done as part of the full physical examination.

Patients all agreed to the above examination.

This discussion will be mentioned later under ethical considerations.

Criteria for diagnosis of asymptomatic haemorrhoids

Following selection of patients for inclusion into the study, each had first a digital examination done. Both external and internal features on examination were documented tags, fissures induration, prostatic hypertrophy and any other findings. These are subsequently tabulated in the later sections.

This was followed by proctoscopic examination all of which were done in the left lateral position and a torch used as a light source.

A positive finding of haemorrhoids was considered as that in which anal cushion(s) were/was noted to prolapse into the distal end of proctoscope. A negative finding is when there is no prolapse into the scope and the mucosa is noted to taper off gradually beyond the distal end of the proctoscope.

Equivocal cases where it was difficult to decide, there was definite prolapse or not were excluded and considered as a negative finding.

During this study, no case was found of a patient who had either external haemorrhoids or who had prolapsed haemorrhoids ($2^0/3^0$) and had no complaints which related to haemorrhoids either directly or indirectly.

Other data required

On completion of analysis of the eighty patients mentioned for asymptomatic haemorrhoids further information was sought from the records office at the KNH, of how many patients were registered in 1986 with a diagnosis of haemorrhoids. This figure (mentioned later) will represent the total number of symptomatic haemorrhoids seen during that year.

Other data obtained were the total number of patients admissions into the hospital and the total number of out-patient attendances.

Using these figures analysis of figures was carried out as under the section of management.

Materials

Very little material was used to carry out the study, and consisted of a proctoscope, a torch, gloves and some sort of lubricant cream. In no patient was additional material needed.

Difficulties

The project started off well and progressed well until difficulties were encountered with obtaining gloves for the rectal examination and the study was temporarily stopped for about two months until another source of gloves was identified.

Tabulation of results.

Following collection of data, both from the prospective study as well as from hospital records, analysis was done to determine the following (presented later):

- If study sample constitutes a random sample.
- Incidence of asymptomatic haemorrhoids.
- Incidence of symptomatic haemorrhoids.
- The incidence of haemorrhoids in community (both symptomatic and asymptomatic).
- Age, sex distribution
- Mean age
- Incidence of associated factors.
- Findings on proctoscopic examination.

Having determined the above, further statistical analysis will be carried out to determine if there is any significant differences between the following:

- Age pattern of males and females for asymptomatic haemorrhoids.
- Incidence of asymptomatic haemorrhoids between males and females.
- Age differences between our figures and those of the Western world.
- Any other calculation.

It must be borne in mind that statistical conclusions are not absolutely correct, but just probably correct or most likely to be true.

Statistical calculations used to determine the level of significant differences were:

- :- chi (x^2) test.
- :- significance test between populations.
- :- Significance test between samples.

The null hypothesis at the start of the study were:-

- :- The incidence of haemorrhoids in our community (both symptomatic and asymptomatic) is comparable to that in the Western world where 40% of the population will have haemorrhoids in their life time.
- :- The incidence of asymptomatic haemorrhoids in our community is significantly high.

Ethical consideration

This patient study was done in a hospital situation and like all such studies one has to address him/herself to the ethical considerations of the study.

It is felt that proctoscopic and digital rectal examination in our community is not a procedure that is at all liked more so amongst the rural community who probably have never been exposed to the concept that it can be used as part of a diagnostic procedure.

This fact had to be kept in mind throughout this study, and this necessitated informing all patients that a rectal examination was required of them. Those patients who fell into either group (a) or (b) mentioned earlier posed no ethical problems as a rectal examination was a necessity either to arrive at the diagnosis, or to rule out any anorectal pathology and not necessarily haemorrhoids.

They were informed of the situation and the need to do the examination. As said earlier, all agreed.

Patients who fell into the group (c) who had neither diseases associated with anorectal pathology or haemorrhoids, were informed that a rectal exam was required to make sure there was nothing wrong at the end (to use layman terms).

Patients in this group (and both in group (b)) were not informed that it was specifically haemorrhoids that were being looked for specifically the following reasons:

- it may not be the only likely associated pathology, or anorectal pathology one is likely to find and so one has to be awake for any pathology.
- To avoid misunderstanding later if the patient may need another rectal examination for something else.

It may be asked whether it is ethical to subject patients in group (c) to rectal examinations. As was shown by the study (see results) a total of seven (41%) of asymptomatic haemorrhoids fell into this group. Not to say that asymptomatic haemorrhoids are a significant cause of morbidity but a rectal examination should form part of a full physical examination in order to rule out any occult pathology of whatever origin so that some form of early corrective therapy can be initiated to avoid late presentation with intractable disease as is regularly seen.

All patients who were found to have asymptomatic haemorrhoids were again asked about symptoms. If none was found using the principle of McCload (24), which states that haemorrhoids do not need treatment unless they have symptoms or the patient specifically requests treatment.

All patients were informed of the findings, the fact that no treatment was needed but advised on action to take if symptoms developed. A note of findings was also documented in the patient files.

RESULTS (PLUS ANALYSIS)

Following the above procedure, a total of 81 patients were examined (one however, being finally excluded) to bring the total number finally reviewed to 80. All were African adults (above 15 years). Tables of the results obtained are shown below.

Total number of patients seen in sample = 80

Total number of males seen in sample = 55

Total number of females seen in sample = 25

Total number of asymptomatic haemorrhoids = 17 (21.25%)

Total number of males with asymptomatic haemorrhoids = 13

Total number of female with asymptomatic haemorrhoids = 4

Table 1: Age distribution of patient sample

| Age | Total Number | Patients positive for haemorrhoids |
|---------|--------------|------------------------------------|
| 15 - 19 | 4 | 1 |
| 20 | 16 | 2 |
| 25 | 10 | 2 |
| 30 | 8 | 1 |
| 35 | 8 | 2 |
| 40 | 6 | 0 |
| 45 | 4 | 2 |
| 50 | 7 | 1 |
| 55 | 5 | 2 |
| 60 | 4 | 1 |
| 65 | 4 | 1 |
| 70 - 74 | 3 | 2 |
| 75+ | 1 | 0 |
| Total | 80 | 17 |

The number as well as the relative positions of the anal cushions was determined and their relative positions and frequencies is expressed in the table below (Positions expressed a relative to the face of a clock with the patient in lithotomy).

Table II Positions and degrees of asymptomatic haemorrhoids seen

| Position | Frequency | Degree | | |
|---------------|-----------|--------|----|----|
| | | 1° | 2° | 3° |
| 3 | | | | |
| 7 | 1 | 1 | | |
| 11 | 1 | 1 | | |
| 3, 7 | 3 | 3 | | |
| 3, 11 | | | | |
| 7, 11 | | | | |
| 3, 7, 11 | 9 | 9 | | |
| <u>Others</u> | | | | |
| 1,2 | | | | |
| 3,6,7,11 | 3 | 3 | | |
| 12,7 | | | | |

No cases of 2° or 3° degree haemorrhoids were noted which is not surprising as by this stage, the patient would most likely to have noticed his/her affliction.

All the patients were subjected to a digital exam the results of which are tabulated in table III.

Table III: Findings of digital examination

| Finding | Frequency |
|------------------------------------|-----------|
| Negative finding | 67 |
| Induration within rectum | 4 |
| Benign prostatic hypertrophy (BPH) | 5 |
| Anal tag | 2 |
| Spasm | 2 |
| Total | 80 |

The final factor to be looked into was the presenting diagnosis of all the patients. (Cause for admission to ward or for clinical follow up in the clinic). In the case of patients with more than one complaint which were unrelated to each, the main one troubling the patient was considered. As well were any associated condition (i.e. conditions other than the presenting diagnosis which were patient may have or have had in the past for which he/she was treated or healed spontaneously and might be relevant to the study.

The relevant information is presented in tables following.

Table IV

Admitting or clinic follow up diagnosis and frequency

| | | | |
|------------------------|---|---------------------------|---|
| Fistula in ano | 7 | pituitary tumour | 1 |
| V. veins | 8 | rectal bleeding | 1 |
| Ca esophagus | 5 | thyroglossal cyst | 1 |
| B.P.H. | 4 | ischerectal abscess | 1 |
| lipoma | 4 | Ca stomach | 1 |
| heady injury | 4 | constipation | 1 |
| sigmoid volvulus | 3 | Crohn's disease | 1 |
| Chr appendix | 3 | rectal prolapse | 1 |
| perforated D.U. | 2 | obstructive jaundice | 1 |
| anal fissure | 2 | Ca bladder | 1 |
| gastritis | 2 | aucaustic neuroma | 1 |
| inginal hernia | 3 | urethral trauma | 1 |
| R.T.A. with S.T.I. | 2 | epidydinal cyst | 1 |
| chronic D.U. | 1 | GIT lymphoma | 1 |
| Gastic ulcer | 1 | Abortion with septicaemia | 1 |
| anal mass (tag) | 1 | pyloric stenosis | 1 |
| paralytic ileus | 1 | fibroadenoma | 3 |
| portal hypertension | 1 | | |
| stab wound (abdomen) | 1 | | |
| C.C.F. with cellulitis | 1 | | |
| ductal Ca of breast | 1 | | |
| pneumothorax | 1 | | |
| gall stones | 1 | | |
| hydronephrosis | 1 | | |

Table V

Associated conditions and frequencies

| | |
|------------------------|-----------------------------|
| Nil | 66 |
| Discharge | 2 (both fistula in ano) |
| Osteoarthritis | 1 |
| Anal tag | 1 |
| Pyloric stenosis | 1 |
| Urethral stricture | 1 |
| Bleeding D.U. | 1 |
| D.U. with V & D | 1 |
| Helminths | 1 (only one tested for it) |
| Pregnancy | 2 |
| Recent delivery (6/52) | 1 |
| Blood in stool | 1 |

Table VI

| <u>Presenting Diagnosis</u> | | <u>Associated Diagnosis</u> | |
|-----------------------------|---|-----------------------------|-------------------|
| Fistula in ano | 3 | Discharge | 1 |
| Anal tag | 1 | Pregnancy | 1 |
| V. veins | 2 | Recent delivery | 1 (within (6/52)) |
| B.P.H. | 1 | | |
| Pneumothorax | 1 | | |
| Sigmoid volvulus | 1 | | |
| Ductal Ca breast | 1 | | |
| Perforated DU | 1 | | |
| Anal fissure | 1 | | |
| Gastric ulcer | 1 | | |
| Constipation | 1 | | |
| Urethral stricture | 1 | | |
| R.I.H. | 1 | | |
| Ca esophagus | 1 | | |

Having tabulated the figures from the survey, it was decided to analyse them statistically for the following factors:

- i) Is sample representative of total population?*
- ii) Calculate percentage of asymptomatic haemorrhoids in the population.*
- iii) Calculate the mean age and standard deviation of sample.
- iv) Calculate sex ratio and determine level of significance.
- v) Determine average age of condition in the population from sample.
- vi) Determine if any relation exists between our figures obtained above and other figures for other countries.
(* population taken to mean national population).

Final Analysis

Total sample = 80

Total males = 55

Total males with asymptomatic haemorrhoids = 13 (23.6% of males) (or 16.5% of total).

Total females in sample = 25

Total females with asymptomatic haemorrhoids = 4 (16% of females or 5% of total sample).

Male:Female ratio (asymptomatic haemorrhoids) 3:2 (23:16)

Sample mean = 39.6 years of age

Std deviation = 17.32 years.

Ex = 3165 years.

(* ratio as percentage of total sample and not absolute numbers).

Total number of patients over 50 years of age 24 patients.
 Total patients positive for asymptomatic haemorrhoids and
 over 50 years age = 7 (29.2% of all aged above 50 years
Or 8.75% of total population)

The first statistical test will be to determine whether
 the frequencies of the different age groups in the random
 sample and the expected for a random population are sig-
 nificantly great for us to reject the sample as a random
 sample. For this we shall use the x^2 test.

Age average of sample = 39.6 years.

Std. deviation of sample = 17.32 years.

Using this, we can calculate the expected values for each
 age group (E).

Table VII

| Age | $x - \bar{x}$ | $(x - \bar{x})^2$ | A(x) | E(%) | E |
|---------|---------------|-------------------|--------------|------|----|
| 10 - 14 | | | | 9.7 | 8 |
| 15 - 19 | -22.6 | -1.3 | .0968 (9.7) | 6.2 | 5 |
| 20 - 24 | -17.6 | -1.0 | .1587 (15.9) | 8.3 | 7 |
| 25 - 29 | -12.6 | -.7 | .2420 (24.2) | 10.3 | 8 |
| 30 - 34 | - 7.6 | -.4 | .3446 (34.5) | 7.6 | 6 |
| 35 - 39 | - 2.6 | -.2 | .4207 (42.1) | 11.9 | 10 |
| 40 - 44 | 2.4 | .1 | .5398 (54.0) | 11.5 | 9 |
| 45 - 49 | 7.4 | .4 | .6554 (65.5) | 10.3 | 8 |
| 50 - 54 | 12.4 | .7 | .7580((75.8) | 8.3 | 7 |
| 55 - 59 | 17.4 | 1.0 | .8413 (84.1) | 6.2 | 5 |
| 60 + | 22.4 | 1.3 | .9032 (90.3) | 9.7 | 8 |

Having calculated the expected frequencies the χ^2 test then can be applied.

Table VIII

| Age | E | O | O-E | $(O-E)^2/E$ |
|---------|----|----|-----|-------------|
| 10 - 14 | 8 | 0 | -8 | 8.00 |
| 15 - 19 | 5 | 4 | -1 | .20 |
| 20 - 24 | 7 | 16 | 9 | 11.57 |
| 25 - 29 | 8 | 10 | 2 | .50 |
| 30 - 34 | 6 | 8 | 2 | .67 |
| 35 - 39 | 10 | 8 | -2 | .40 |
| 40 - 44 | 9 | 6 | -3 | 1.00 |
| 45 - 49 | 8 | 4 | -4 | 2.00 |
| 50 - 54 | 7 | 7 | 0 | 0.00 |
| 55 - 59 | 5 | 5 | 0 | 0.00 |
| 60+ | 8 | 12 | 4 | 2.00 |

$$\chi^2 = 26.34$$

From the above table $\chi^2 = 26.34$

Degrees of freedom = 11 classes - 3 restrictions
= 8

At $p=5\%$ for 8 degrees of freedom $\chi^2 = 15.51$

As χ^2 is greater than 15.51 the null hypothesis is probably false and the sample is not truly representative of a random population.

Looking back at the age figures, this should not be surprising but in fact expected as all the wards in which study done (and clinic) were adult wards/clinics for these of 18 years and over and hence the above is to be expected i.e. sample (age wise) will not be expected to represent the total population.

However, to test if the sample truly is a random one within the age groups taken, χ^2 at 95% is used in the case this will equal 2.73.

As χ^2 is greater than this value, we can safely deduce that the sample is a random one at least amongst the adult population.

Having determined that we do have a truly random sample, we can proceed with the other determinations. These being - age and sex differences

- how our figures differ with others in the other countries.

- any other interesting statistical fact.

From annex I (Mean age of sample and population)

From the female sample, only 4 positive cases were found.

Mean age being 32.75 years (c.f. 33.4 years Ojara E.A. 1981)

Standard deviation 17.82 years (c.f. 12.6 years Ojara E.A. 1981.)

From the above standard error was calculated to be 8.91 years.

At $t_{95\%}$ (95% confidence level) to mean age range for the population from which sample taken) was 4.4 to 61.1 years.

Similar calculations for the male sample gave

mean age of 46.31 years (c.f. 39.9 years Ojara E.A. 1981)

standard deviation = 17.91 years (c.f. 14.0 years Ojara E.A. 1981)

standard error of .387

At least $t_{95\%}$ (confidence level) the mean age of the male population from which sample taken was 45.47 to 47.15 years.

What conclusions can we draw from the above:

- (i) The female mean age range is too wide for us to draw any meaningful conclusion.
- (ii) The mean age of the male population (at 95% confidence limit) lies between 45.47 years and 47.15 years). This will be noted to be slightly above the mean age of patient population at KNH studied by Ojara (28).
- (iii) It is possible that pregnancy is responsible for the slightly lower age group in the female population. Of the four patients noted above, one was actually pregnant while the other was still in the puerperium

As a result of statement (iii) above, a significance test was done to determine if there was any significant difference between the ages of the male and female population (Annex III).

It was done using significance test between populations (χ^2 abandoned as one of the cell numbers was less than five and hence leading to inaccurate results).

For 95% confidence limit, there was no significant difference between the two age groups noted and hence (from the study, at least), it appears that factors like pregnancy do not influence the mean age of haemorrhoids in the population.

Finally, is there any significant difference in the incidence of haemorrhoids in the male versus the female population.

However, despite this very significant drawback, the following information was obtained.

KNH statistics (1986)

| | |
|-----------------------------|-------------------------------|
| Total admissions KNH | = 59,480 |
| Total outpatient attendance | = 565,364 |
| new cases (OPC) | = 300,579 |
| re-attendances (OPC) | = 264,785 |
| Total cases of haemorrhoids | = 41 (31 male and 10 females) |

male:female = 3:1

Using the above study estimate of 20% of asymptomatic haemorrhoids in our population we can estimate the following:

- i) Total number of asymptomatic haemorrhoids passing through O.P.C. = 60,116 patients a year.
- ii) Total admissions with asymptomatic haemorrhoid = 11,896 patients a year.

Thus total asymptomatic cases estimated for KNH in 1986 = 72,012 patients a year.

This is a figure none of us would have expected if the information quoted in the literature is at all true.

On a national level there are 4 million asymptomatic case by extrapolation.

Due to the shortcoming of recordings of cases by diagnosis, a very significant number of cases of symptomatic haemorrhoids are no doubt missed (see later) and the figure of forty one (41) given for symptomatic cases is definitely

well below what is truly is and for this reason, it was decided by the author that:

- i) non meaningful calculations could be based on it and hence the author chose to concentrate only on asymptomatic haemorrhoids in his calculations.
- ii) It should be appreciated that as the exact number of cases of symptomatic haemorrhoids is undetermined, it is expected that all calculations of expected numbers within the population will be an underestimate of the true figures.
- iii) Further studies in this area will be needed (see shortcomings).

It should be pointed out that the figures shown do not include attendances to the male, female and paediatric filter clinics; the Infectious Diseases Hospital (IDH) and the National Spinal Injuries Hospital (N.S.I.H.) all of which are an integral part of Kenyatta National Hospital.

As far as presenting diagnosis is concerned, not much conclusion can be made, but it is of note that fistula in ano, varicose veins have a high correlation which is similar to other studies done (28).

Associated factors are not of much use and no significant conclusion can be made (the two discharges mentioned are in patients with anal fistula which could account for the discharge).

Digital examination also revealed no extraordinary findings indeed this is expected as normally haemorrhoids would not be palpated on rectal examination.

DISCUSSION AND CONCLUSION

Presented are the results of a study done at the Kenyatta National Hospital (KNH) over a nine month period with the objectives of determining the incidence of asymptomatic haemorrhoids within our local African community, from there determining the true (or a more accurate) incidence of haemorrhoids (both symptomatic and asymptomatic) in this country.

Having done the random study, the author came out with a figure of 21.25% incidence of asymptomatic haemorrhoids in our community (For further discussion a figure of 20% will be used in order to use round figures).

This is definitely a very significant figure and one well worth while taking note of. Put into absolute terms what it means is that in KNH during 1986 a total of about 72,000 (seventy two thousand) patients with asymptomatic haemorrhoids passed through KNH. Of these, it is not known how many would be classified as symptomatic if the factors listed under "factors responsible for low reporting" were considered but it would be most likely more than the forty one (41) symptomatic cases reported over the same time period.

Of the recorded cases of haemorrhoids seen at KNH in 1986 only 41 cases were reported, or 0.07% of all admissions for that year.

On further study of how this figure was derived at it was found by the author that this figure of forty one,

was a gross underestimate of the true number of cases seen for the following reasons.

All the patients seen in the outpatient departments (OPD) at this hospital are not recorded by diagnosis and hence any visit is simply recorded as a visit and no record of diagnosis is kept. What this means is that out of the 565,364 (five hundred and sixty five thousand, three hundred and sixty four) outpatient attendances, it is not known how many were due to haemorrhoids. This constitutes a significant shortcoming in our records office services as it is known that about 28% of haemorrhoids (symptomatic) will not need treatment at all and advice on diet and bowel habits will suffice (36). Of the remainder, due to the difficulties with beds, the majority are treated with suppositories at our OPD (personal observation) but unfortunately the author has no figure of the final number admitted but it is definitely very small especially if about four patients with haemorrhoids are seen per clinic. (It was not possible to go through the five hundred and seventy thousand outpatient files to determine how many were haemorrhoids).

In view of this shortcomings with our data collection, it is not worthwhile to utilise this figure of forty one in our discussion and it is thus ignored, however, it is to be borne in mind that all subsequent statements are based only on asymptomatic haemorrhoids and so are underestimates of the true expected.

Having said this, there are still other factors which are

responsible (or are likely to be) for a low incidence of haemorrhoid reporting in our community and these came up during the enquiries made of the patients about haemorrhoid related symptoms before they were subjected to rectal examination. These, for the sake of discussion will be divided into:

- patient factors
- factors due to medical personnel
- statistical factors

Patient factors

Rectal bleeding is one of the first clinical features to be noticed by the patient. It tends to be painless unless a secondary condition has complicated the clinical picture and occurs in small amounts which is described as "splash in the pan" by some authors to signify the small amount noted in a toilet basin after defecation.

In our community in this country, up to eighty per cent of the community lives in the rural areas where the pit latrine is the main mode of faecal disposal and it is unlikely they will see any rectal bleeding even if it was present. From discussion with a few members of the local community most do not even examine what they use as toilet paper either. Just how many cases of rectal bleeding (due to any cause) pass undetected due to the use of a pit latrine is difficult to determine and it is of the author's opinion that it not only is very significant but will have to be looked into as it may also explain why patients with colorectal pathology or other cause of rectal

bleeding present late for treatment.

The pit latrine is an integral part of the rural community in this country and even if the objective of providing each family with easy access to tap water by the year 2000 is achieved, the author does not foresee the demise of pit latrine for a long time to come.

On the contrary to the above, within the major urban areas water borne faecal disposal is widely used. This is both the western type of toilet (mainly in private homes, schools, hotels (major ones) and similar places and the eastern type of toilet (mainly found in muslim communities, public toilets, domestic staff facilities and a few smaller hotels).

With the water borne mode of faecal disposal, the muslim community with their habit of anal hygiene whereby water and not toilet paper is used after defecation may account for a few more who will not notice rectal bleeding.

Other factors which may account for a lesser incidence of haemorrhoids are, faith in local traditional healer, the attitude that the anal area is a secretive area and so will not go and seek treatment, misdiagnosis by the patient on himself, e.g. to assume that he has schistosomiasis in a schistosomiasis infested area etc.

Here again, the author has no statistics to back up his statements in terms of absolute figures, but he feels that the above will constitute significant causes for under reporting.

Factors due to medical personnel

Incidence figures are very dependent on the diagnostic ability of the medical personnel and a misdiagnosis goes down on statistical records as a false positive or negative.

Though haemorrhoids would look like an easy condition to diagnose there have been a few cases of misdiagnosis noted by the author usually due to failure to do a rectal examination (personal observation). Some of the possible causes of misdiagnosis are:

- a) Low index of suspicion by the medical personnel. As has been indicated in the earlier section a lot of medical personnel were previously led to believe that haemorrhoids is a rare condition amongst the African community, and so will probably not suspect it.

Most of our health facilities are not run by medical doctors, but by nurses and clinical officers who in their training more so than doctors may not even have seen haemorrhoids.

- b) Lack of proctoscopes in rural dispensaries/health centres and even in district hospitals for doing rectal examination.

Statistical factors

Good data collection is an important part of any organization. Data collection is useful both in planning as well as evaluating the effectiveness of any organization

in order to achieve its goal. Unfortunately, as mentioned in an earlier section, there is a shortcoming as far as data collection in the OPD goes and it is hoped that with time, this will be corrected.

It will be mentioned again that as the figure given for symptomatic haemorrhoids is well below that expected in this discussion, the figure of 20% will be used to discuss haemorrhoids in general.

Incidence

Having carried out the study and determined that the prevalence of haemorrhoids is at least 20% in the population, it becomes obvious that the condition is not a rare affliction. Our null hypothesis were:

- a) The incidence of asymptomatic haemorrhoids is significant in our community. This has been shown to be the case, and if one out of every five people seen has asymptomatic haemorrhoids, it is definitely a health problem to which our attitudes will have to change. It is not a foreign disease.

- b) Our incidence of haemorrhoids compares with those seen in the western world where 40% of the population will have haemorrhoids within their life time. Here again, it has been demonstrated that with a prevalence rate of 20%, even though the condition is not as common, it is about half the level in the western world. (It is still not clear how this would be if accurate statistical data was maintained). This will constitute

valuable information to our medical personnel who will thus be stimulated to become more familiar with the condition as well as its management, and also to appreciate the amount of morbidity both to the people and the economy that may occur as a result.

Public awareness will also be another angle to the problem which will have to be looked into as if management is initiated early, the effects of morbidity will no doubt be reduced.

Ratios

Asymptomatic haemorrhoids are more likely to occur within the population than symptomatic cases. Goligher (15). It had been hoped to either prove or disprove this by carrying out this study, but due to the shortcomings mentioned this is not possible.

The author has not been able to find any literature that gives a definite ratio anywhere between symptomatic and asymptomatic cases of haemorrhoids, no doubt a useful figure to determine the true number of cases in any community.

(It is to be borne in mind that asymptomatic cases may be subjective to a certain extent and what one person may notice may pass unnoticed by another).

In this particular study, the ratio between asymptomatic to symptomatic was calculated as (72,000:41) or 1756:1, a figure that is of no use and will not be discussed further.

Age distribution

The mean age calculated for haemorrhoids in this study was calculated as:

32.75 \pm 17.8 years for females
46.31 \pm 18 years for males
43.1 \pm 18 years for total sample.

These figures compare fairly well with those obtained by Ojara (28) of 37.4 years mean age for a five year study. Calculating from his figures given the mean age, the sexes are:

33.4 years \pm 12.6 for females
39.9 years \pm 14.0 for males.

Again a fairly young adult, but reasonably comparable age group.

If we are to consider Goligher's statements that the incidence of haemorrhoids increases with age and that half of all adults over fifty years are affected by haemorrhoids (15), then even though he does not quote an average age for haemorrhoids, it will definitely be above fifty years of age.

What this means is that, in general, our population tends to get haemorrhoids at a younger age than in the Western world. It will also be noticed that females tend to be affected at a younger age. This latter point will be discussed later.

For what reason is it that our population tends to be

affected at a younger age and likewise only 30% of adults over 50 years being affected as opposed to 50% in the West.

Is it possible that this is just merely a reflection of our younger population in general whereby our life expectancy is less than that in the West (35) (Kenya 51.2 for males, 54.7 for females versus 70.5 males and 77.0 for females).

This is likely to be the explanation for an average age lower than those quoted elsewhere..

Other possibilities include the older age groups still having a lot of their traditional beliefs they were brought up with, and hence tend to attend traditional healers services or decline to present their anal complaints to young doctors who could well be their children or grandchildren.

As far as the age distribution of haemorrhoids is concerned, apart from the fact that our community tends to be younger with a shorter life expectancy and very few people below fifty, there is no other conclusion of significance the author can put forward.

Sex ratio

In this study, the male to female sex ratio was 3:2 (working on a percentage basis to compensate for less female in the random sample than males).

This was calculated Annex III and it is noted that there is a significant difference between the two populations and the incidence seems to be higher amongst the male population.

Why this should be so is not clear. A similar finding was noted in the report of Ojara (28).

It is stated by Goligher (15) that 50% of all adults above the age of 50 years have haemorrhoids in the United Kingdom. In this study, it is noted that only seven (7) out of (24) twenty four patients above that age were found with haemorrhoids. This was a significant difference from the British figure (Annex IV) And it seems that the age incidence in the United Kingdom is significantly higher than that of ours.

Additional information from records

Unfortunately, not all the required additional information could be obtained from our records office as required and this will probably need to be looked into by the hospital administration, in order to improve our hospital records.

In all outpatient clinics, no record is kept of the patients diagnosis. So all records by diagnosis are only for patients admitted. What does this mean in relation to this study?

We will look into this under the heading of conclusion and discussion.

Ojara, in his study, calculated a larger figure (3:1).

In patient statistics for haemorrhoids for 1986 at KNH also gave a similar figure (3:1).

Goligher, in his book gives a ratio of 2:1 for males to females.

It seems that in our series, the male to female ratio is slightly lower than those quoted for the United Kingdom. The significance of this is not immediately clear. But what is immediately striking is that the incidence of haemorrhoids in females (especially asymptomatic) should be less in the female population than the male population in the first place.

Pregnancy is said to be the most significant cause of abdominal tumour and as a result of obstruction and increased vascularity, haemorrhoids are extremely common in the later stages of pregnancy, at the conclusion of which regression occurs but not always to normal (15). These women are frequently left with small to moderate haemorrhoids which become progressively worse with subsequent pregnancies. Pregnancy may thus be considered the most common factor to the production of haemorrhoids in women.

If women are equally exposed to all the risks factors as their male counterparts (which indeed they are), then there should be no reason for their incidence to be lower than that of men and it should in fact be higher (for both symptomatic and asymptomatic cases). This was not the findings obtained in this study where 23.6% of males were

affected against only 16% of the females.

Secondaly, if we assume that with subsequent pregnancies, the haemorrhoids formed with previous pregnancies will progressively worsen the age pattern should corresspond to this. What this means is that for asymptomatic case, the female population would be expected to be younger while for the symptomatic cases females would tend to be older.

AS far as the first part is concerned, the age of the female group is indeed younger for asymptomatic haemorrhoids however, if we look at Ojara's study (28), the female population for symptomatic cases is still less. (Ojara's sample used as opposed to 1986 figures as it contained a larger sample to compare with).

What this means is that either haemorrhoids do not progress with subsequent pregnancies as stated by Goligher, and in fact pregnancy has no effect or there is some protection afforded to females as opposed to males in the development of haemorrhoids.

Looking at the ratios of haemorrhoids of males to females in the two groups (European/study sample), the author is not suprised that our ratio is less than those in the West. Likely cases for this are as follows:

- a) The average Kenyan woman is 4.8 times more at risk of pregnancy than her counterpart, say in the United Kingdom. (average number of children are 1.7 and 8.1 respectively) (35)) and as a result, more exposed to

abdominal tumours.

- b) To add on to the above in Kenya, 27.1% of women will marry before their twentieth birthday as opposed to 0.7% in the United Kingdom (18).
- c) The average Kenyan woman is a "peasant" farmer who does most of the labour on the farm(s) herself as opposed to housewife with domestic appliances to do most of the household chores in the United Kingdom. More study will be needed to look into the male: female ratio of this condition (to be discussed later).

Comparision of Kenya/U.K. figures

This topic has been discussed briefly under age distribution, ratios and sex ratios and what was mentioned, there will not be repeated here.

It has been determined that our prevalence of haemorrhoids is about 21%. (ignoring the symptomatic case). Those cases are usually more than the symptomatic haemorrhoids (15,27): in our set up by exactly how much is not yet determined.

This figure although about half what was quoted by Hawley, is a fairly comparable figure and had more reliable figures and a better patient detection rate existed, it is the author's opinion that it would be very much more than 21%, by exactly how much may be determined later.

Without doubt, haemorrhoids is a big problem that we have and worse so in that there are probably many patients who are affected and do not seek treatment or may do, but due to lack of awareness, and hence misdiagnosis by medical personnel are not treated.

Whether this disease has been with for a long time, or just came about after independence, is not clear but it is felt that this condition has been with us for long, but due to the biased medical services offered before independence, no studies were done in the rural communities and due to certain limitations, rural communities were not exposed to doctors as they are today. This is likely to have accounted for the type of figures given in the literature by previous authors.

The major problem with haemorrhoids is associated with its morbidity which fortunately for the asymptomatic group is not a problem. Affected patients are subjected to a lot of discomfort and have a very unpleasant life both in their social life as well as in their work places. Discharge, pruritis ani alone will often restrict ones activities to a great extent and may be even more in patients who are prescribed liquid paraffin (in good faith). Thrombosis and strangulation further complicate the situation with great pain and the need for in patient hospital care taking up beds which could be better used for caring for other more serious diseases like diarrhoea, malaria, tuberculosis etc.

In view of this morbidity, we will have to address our attention more and more to the management of haemorrhoids as well as educate our medical personnel on how easy it is to manage the condition on outpatient basis without any need for admission. It is in fact known that up to 90% can be managed on out patient basis (or only 24 hours observation in the case of maximal anal dilatation) without the need for a formal haemorrhoidectomy and a weeks stay in hospital. This statement should be taken seriously as a lot of our medical personnel are not familiar with the management of haemorrhoids (personal observation) and they are not alone as the same condition exists in the West (11).

What we need is an intensive continuing education programme for our rural personnel in order to inform new members as well as keep up to date old members not only the management of haemorrhoids but any significant health problem within their catchment areas, how best to manage them and which cases to refer and which to deal with or their own.

They should be informed how to detect the condition and how with participation of the patient (or community) to reduce morbidity due to it.

This process will however, have to be a two way process whereby some authority will supply them with necessary equipment and do regular evaluation of their work.

If this proforma is followed, more and more patients will be detected with better management programmes offered which

will go a long way to cement the faith of the public in our rural health facilities.

For the Future

It is now hoped that a clear picture was presented as to the situation that exists as far as asymptomatic haemorrhoids are concerned and it should not be looked at as a rare condition. The study was carried out at the Kenyatta National Hospital which acts as a national referral hospital for the whole country and an assumption was made that the hospital population is representative of the national picture, this view was reflected through the discussions as well.

It is hoped that a similar study can be carried out within the rural areas to see if the results are truly representative and if not to determine why.

Another area which should be looked at in for more detail is the incidence of, and prevalence of this condition within the female population especially as relates to pregnancies, and if regression is noted after delivery to what extent, does this occur. More understanding is needed to determine why the incidence should be lower in females than males.

Finally, with improved reporting, it is hoped that one day in the future, it will be possible to state a definite relationship between the asymptomatic and symptomatic haemorrhoids in absolute figures.

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Annex I

Determination of population mean ages

a) Female from sample

Age 55 Ex = 131
 21 \bar{x} = 32.75
 39 SD = 17.82
 16 Standard
 error = 3.91

degrees of freedom = 3

$E_{95\%}$ = 3.182

mean age of population at 95%

$$\begin{aligned} \text{confidence limit} &= \bar{x} \pm E_{95\%} \times \text{S. error} \\ &= 32.75 \pm 31.82 \times 8.91 \\ &= \underline{4.4 - 61.1 \text{ years}} \end{aligned}$$

b) Males from sample

Ages 65 Ex = 602
 45 \bar{x} = 46.31
 70 SD = 17.91
 55 standard error = .387
 25

35 degrees of freedom = 12 (13-1)

74 E_{95} = 2.179

30

46 mean age of population at 95% confidence

25 = $\bar{x} \pm E_{95} \times .387$

50 = 46.31 \pm .840

22 = 45.47 - 47.15 years.

60

Annex II

Hypothesis:- The male population is significantly older than the female population.

| | | | | | |
|------------------|---|-----------|-------------------|---|-----------|
| male population | = | x_1 | female population | = | x_2 |
| mean \bar{x}_1 | = | 46.5 yrs. | mean \bar{x}_2 | = | 32.75 yrs |
| SD | = | 17.9 yrs | SD | = | 17.82 yrs |

Standard error=

$$\begin{aligned} \bar{s}_1 &= \frac{s_1}{\sqrt{n}} & \bar{s}_2 &= \frac{s_2}{\sqrt{n}} \\ &= \frac{17.9}{\sqrt{17}} & &= \frac{17.8}{\sqrt{4}} \\ &= 4.34 & &= 8.9 \end{aligned}$$

Standard error between means \bar{s} (means)

$$\begin{aligned} &= \sqrt{(\bar{s}_1)^2 + (\bar{s}_2)^2} \\ &= \sqrt{(4.34)^2 + (8.9)^2} \\ &= \sqrt{98.05} \\ &= 9.9 \text{ years.} \end{aligned}$$

As this is a one tailed test level of significance of 95%

$(100 + \text{level significance for two tailed})/2$

$(100+x)/2$

$x = 90\%$ significance level.

At 90% significance level allowed number of deviations

$$= 1.65$$

These limits will be $1.65 \times 9.9 \text{ years} = 16.1 \text{ years}$

Differences of means = $46.3 - 32.75 = 13.55 \text{ years.}$

As this lies within the 95% confidence limit, the age difference is not significant and could have arisen by chance so our null hypothesis is rejected and no significant difference exists between the age.

Annex III

Hypothesis:- The incidence ratio between the two sexes are similar and no different from each other (Test at 95% level of significance).

male ratio $13/55 = .236$

female ratio $4/25 = .160$

$$\begin{aligned} \text{Standard error} &= \sqrt{\left(\frac{p_1 q_1}{n_1}\right)^2 + \left(\frac{p_2 q_2}{n_2}\right)^2} \\ &= \sqrt{\left(\frac{.236(1-.236)}{55}\right)^2 + \left(\frac{.16(1-.16)}{25}\right)^2} \\ &= \sqrt{\left(\frac{.236 \times .764}{55}\right)^2 + \left(\frac{.16 \times .84}{25}\right)^2} \\ &= \sqrt{(3.28 \times 10^{-3})^2 + (5.38 \times 10^{-3})^2} \\ &= \sqrt{1.07 \times 10^{-5} + 2.89 \times 10^{-5}} \\ &= \sqrt{3.96 \times 10^{-5}} \\ &= 6.3 \times 10^{-3} \end{aligned}$$

At 95% confidence = 90% for two tailed test

$$t_9 = 1.65 t_{95} \times \text{S. error} = .0104$$

$$\begin{aligned} \text{difference between means} &= .236 - .160 \\ &= .076 \end{aligned}$$

As the difference between means is greater than the t_{95} level there is a significant difference and hypothesis is rejected and so the two ratios differences did not arise by chance but is significant.

Annex IV

Is there a significant difference between adults over 50 years of age for haemorrhoidal incidence (Assumption the incidence of asymptomatic haemorrhoids is the same as for the symptomatic group).

British ratio = 50/50

Kenyan ratio = 7/24

| | +ve | -ve | |
|---------|------------|------------|-----|
| British | 50 (23) | 50 (67) | 100 |
| Kenyan | 7 (11) | 17 (13) | 24 |
| | 57 | 67 | 124 |

expected rate = 45.97%

expected induced in brackets.

| | A | E | A-E | A-E ² | (A - E) ² /E |
|---------|----|----|-----|------------------|-------------------------|
| British | | | | | |
| +ve | 50 | 23 | 27 | 729 | 13.70 |
| -ve | 50 | 67 | -17 | 289 | 4.30 |
| Kenyan | | | | | |
| +ve | 7 | 11 | 4 | 16 | 1.45 |
| -ve | 17 | 13 | 4 | 16 | 1.23 |

20.67

Degrees of freedom = 1

χ^2 at 95% single degree of freedom = 3.841

significant difference exists between the two populations as far as incidence is over 50 years.