

**A COMPARATIVE STUDY ON VARIOUS TREATMENT  
PROCEDURES IN THE MANAGEMENT OF  
HEMORRHOIDS - BANDING, SCLEROTHERAPY AND  
HEMORRHOIDECTOMY**

**DISSERTATION SUBMITTED FOR THE DEGREE OF**

**M.S .GENERAL SURGERY (BRANCH – I)**

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**THE TAMILNADU**

**DR.M.G.R MEDICAL UNIVERSITY**

**CHENNAI , TAMILNADU**

## **BONAFIDE CERTIFICATE**

This is to certify that the Dissertation entitled “**A COMPARATIVE STUDY ON VARIOUS TREATMENT PROCEDURES IN THE MANAGEMENT OF HEMORRHOIDS – BANDING, SCLEROTHERAPY, AND HEMORRHOIDECTOMY**“ is a bonafide Record work done By DR. R. KALPANA under my direct supervision and guidance, submitted to The Tamilnadu DR. M.G.R. Medical University in partial fulfillment of University regulation for M.S.General Surgery , Branch I.

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## **DECLARATION**

I, **Dr.R.Kalpana** solemnly declare that the dissertation Titled “ **A COMPARATIVE STUDY ON VARIOUS TREATMENT PROCEDURES IN THE MANAGEMENT OF HEMORRHOIDS – BANDING , SCLEROTHERAPY , AND HEMORRHOIDECTOMY** “ has been prepared by me. I also declare that this bonafide work or a part of this work was not submitted by me or any other for any award, degree, diploma to any other university board either in India or abroad.

This is submitted to the Tamilnadu DR.M.G.R. Medical University, Chennai in partial fulfilment of the rules and regulation for the award of **M.S. (General Surgery ) Branch – I** to be held in **April 2013**.

PLACE: Madurai .

**DR. R. KALPANA.**

DATE:

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## **CONTENTS**

<b>S.No</b>	<b>TITLE</b>	<b>PAGE .NO</b>
1.	INTRODUCTION	1
2.	AIM OF THE STUDY	3
3.	REVIEW OF LITERATURE	4
4.	MATERIALS & METHODS	41
5.	RESULTS OF THE STUDY	58
6.	DISCUSSION & ANALYSIS	83
7.	SUMMARY & CONCLUSION	94
8.	BIBLIOGRAPHY	
9.	PROFORMA FOR DATA COLLECTION	
10.	MASTER CHART	
11.	ETHICAL CLEARANCE APPROVAL	
12.	ANTI PLAGIARISM CERTIFICATE	

## INTRODUCTION

A large proportion of world's population are troubled by haemorrhoids related perhaps to the inconsistency of the human diet and to the social obligations demanded by civilisation.

The term haemorrhoid is derived from the Greek word meaning bleeding (HAEMA- BLOOD, RHOOS – FLOW) which emphasizes the most prominent symptom in majority of the cases. It was probably Hippocrates (460 BC) who was the first to apply this name to the flow of blood from the veins of the anus. The term piles ( LATIN –PILA., means “A BALL” indicating the most common sign hemorrhoidal disease, was widely used by the public till today.

Hemorrhoidal disease is treated by many modalities. Earlier days with the insertion of suppositories & application of leeches, and topical application of nitric acid(Riviere 1657)

Surgery has also been practised from the earliest time. Hippocrates recommended surgery in his writings.

All patients with hemorrhoids cannot be treated with only one procedure. Each of them to be evaluated separately by clinical examination & investigations & treated accordingly.

In this study, we are evaluating patients with haemorrhoids , treated with various treatment modalities like banding, sclerotherapy and surgery ( open & closed hemorroidectomy) and comparing efficacy of each of them.

## **AIM OF THE STUDY**

In our study, the various presentation of haemorrhoids , their treatment and complications of various modalities of treatment for haemorrhoids ( like banding, sclerotherapy, and hemorroidectomy) are studied and compared.

- To study the age incidence of haemorrhoids.
- To study the sex ratio of haemorrhoids.
- To analyse the incidence of various clinical presentation of haemorrhoids.
- To study the suitable method of treatment for each degree of haemorrhoids.
- To study the complication for each method of treatment.
- To analyse the efficacy & outcome of each mode of treatment.

### **Techniques analysed in this study:**

- Injection sclerotherapy
- Rubber band ligation.
- Open & closed hemorrhoidectomy.

## **REVIEW OF LITERATURE**

### **ANAL CANAL ANATOMY:**

Anal canal is the distal most portion of the alimentary canal which extends for a distance of about 4 cm from the anorectal junction to the hairy skin of the anal verge. The surgical anal canal is longer in men than women, which is directed downwards and backwards, situated below the level of pelvic diaphragm. (1)

Its epithelial lining and musculature along with the pelvic floor apparatus contributes significantly to the regulation of defecation and continence. Its borders include the coccyx posteriorly , on either side being the ischiorectal fossa and its contents, perineal body and vagina in women and urethra in men anteriorly. Anus is the surface opening of anal canal situated 4 cm below and in front of tip of coccyx. The surrounding skin is pigmented and thrown into radiating folds and contains a ring of large apocrine glands.(1)

The epithelium that lines the anal canal differs at various levels. The dentate line is made up of anal valves anatomically which demarcates the cranial pleated anal mucosa from the caudal smooth anoderm mucosa. The proximal mucosa is corrugated into a series of 12 – 14 columns of

morgagni with corresponding anal crypts emptying its secretions in between each fold. (6)

Proximal to the dentate line, the anal mucosa is pinkish in color which is lined by columnar epithelium. Distally, it is lined by squamous epithelium with hair and glands incorporated in it similar to skin in any other part of the body.(6)

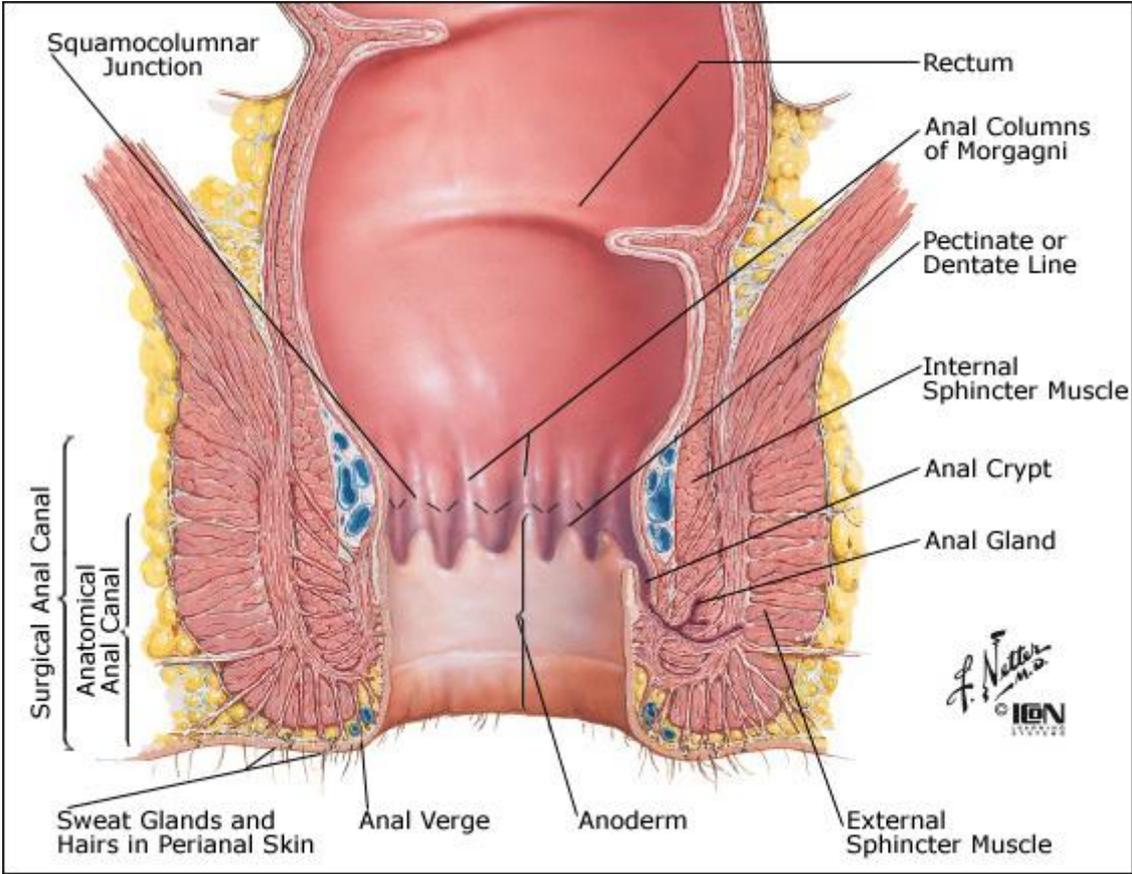
There is a gradual change between columnar to squamous epithelium extending for about 1-1.5 cm forming the transitional zone which lies at the level of dentate line . It looks purplish in color and consists of layers of cuboidal cells interspersed with tongues of columnar epithelium.

Embryologically, the rectum and upper part of anal canal is formed from the endoderm, the dorsal portion of cloaca. The lower part of anal canal is formed from ectoderm of anal pit or proctodaeum formed by heaping up of mesoderm around anal membrane. The dentate line represents the junction between ectoderm and endoderm.(2)

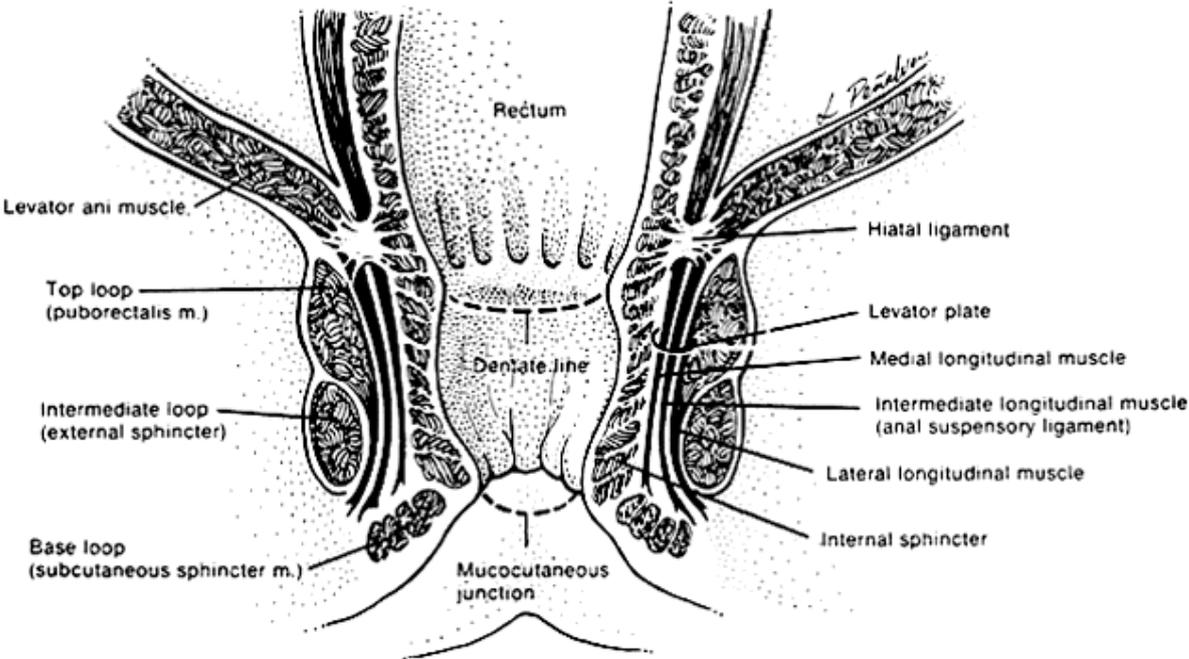
### **ANAL CANAL MUSCULATURE:**

Anal canal is surrounded by its specialised musculature acting as sphincters which keep the lumen of anal canal closed in the form of anteroposterior slit. It is arranged as two tubular structures overlying each other around the passage. The inner part is the smooth circular layer of the

**ANAL CANAL ANATOMY:**



**ANAL CANAL MUSCULATURE:**



rectum forming the internal sphincter that ends 1.5 cm below the dentate line, slightly above the external sphincter.

The outer component is a continuous sheet of striated muscle constituting the pelvic floor which comprises the levator ani muscle, external sphincter and puborectalis muscle. The external sphincter is divided into subcutaneous, superficial and deep portions.

External sphincter is elliptical in shape surrounding the whole length of anal canal and terminates as subcutaneous portion. The superficial and deep portion of the external sphincter is continuous above with puborectalis & levator ani. Perineal body is formed by the confluence of external sphincter, bulbospongiosus and transverse perineal muscles at the centre of perineum. (1)

The internal sphincter, which is innervated by the autonomic nervous system is independent of voluntary control, whereas the external sphincter is supplied by the inferior rectal branch of internal pudendal nerve and the perineal branch of fourth sacral nerve is under voluntary control.

The anorectal ring is present at the anorectal junction, formed by the fusion of puborectalis, deep external sphincter and the internal sphincter. This ring is easily felt on digital examination, less marked

anteriorly where the fibres of puborectalis is absent. Surgical division of this ring results in anal incontinence.(1)

### **BLOOD SUPPLY:**

The anal canal is supplied by branches from the superior , middle and inferior hemorrhoidal arteries. The most important is the superior hemorrhoidal artery whose left branch supplies the left half of the canal by a single terminal branch, while its right branch has two terminal branches. All the arteries contribute to a rich submucous and intramural plexus, so that interruption of the arterial supply from above by division of the superior and middle rectal arteries does not deprive the anus of its blood supply.(1)

### **VENOUS SUPPLY:**

The anal veins are distributed in similar fashion to the arterial supply. Superior and middle hemorrhoidal veins drains the upper part of the anal canal empties into superior rectal vein which finally ends in portal circulation via inferior mesenteric vein. Inferior hemorrhoidal veins drain the lower half of anal canal and the subcutaneous perianal plexus of veins, which finally enters the systemic circulation via external iliac vein on each side.(1)

## **LYMPHATIC DRAINAGE:**

Lymph from the upper half of the anal canal flows upwards to drain into the pararectal lymphnodes and through inferior mesenteric chain in to the para-aortic nodes. Lymph from the lower half of the anal canal drains on each side first in to the superficial and then in to the deep inguinal group of lymph nodes.

## **PHYSIOLOGY OF THE ANAL CANAL:**

The function of the anal canal and pelvic floor muscles are, in addition to containing the loads of the rectum, it is also essential for effortless unimpeded voiding at defecation. Interference with the integrity of the anatomy and physiology of the muscles of the anus and pelvic floor can lead to extremes of intractable constipation or incontinence.(4)

The physiology of the anal canal is a highly complex mechanism, but with the advent of sophisticated investigations like manometry, defecography, electromyography, evacuability testing has improved our understanding. Under normal situation, anal canal allows the person to control the retention and evacuation of gaseous, liquid, solid fecal material. The rectum serves as a reservoir for fecal contents, and the anal canal regulates continence and defecation via synchronization of events regulated by complex interactions between sympathetic and

parasympathetic nerves, striated and smooth muscle, and environmental factors.(4)

When fecal matter enters the rectum, there occurs three phases:

### **ACCOMMODATION:**

The rectum slowly expands but both the internal and external sphincter retains their tone. Rectal distention and electrical stimuli induce relaxation of the internal anal sphincter with a resultant lowering of the resting pressure. The internal anal sphincter recovers within one minute from small volumes of air or stool.

A reflex contraction of the external anal sphincter (inflation reflex or rectoanal excitatory reflex) is seen at the time of the internal anal sphincter relaxation except during sleep. This inflation reflex is lost at high rectal volumes (400 ml).(4)

### **SAMPLING:**

Rectal contents come into contact with the sensory lining of the anal canal after temporary relaxation of the internal sphincter. Stool or flatus entering into the rectum causes a reflex relaxation of the internal anal sphincter.

The length of the functional high-pressure zone of the anal canal decreases and this allows contact of the rectal contents with the highly

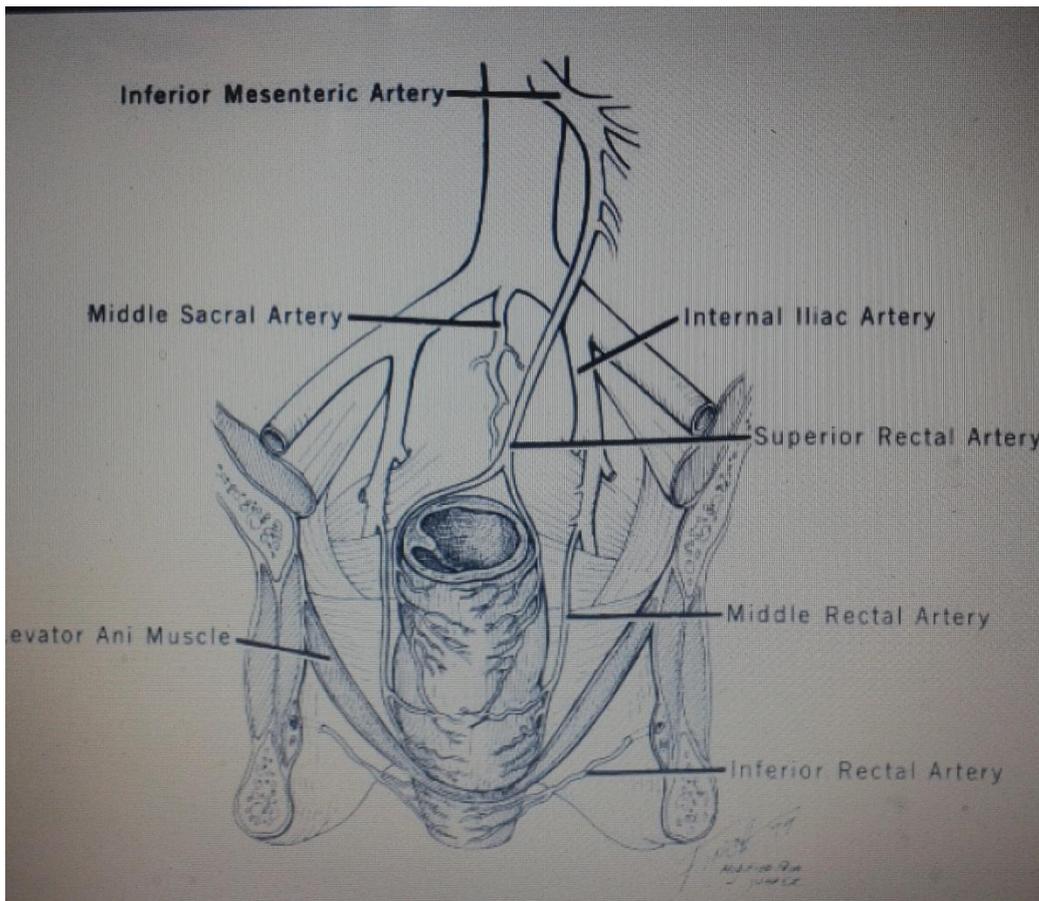
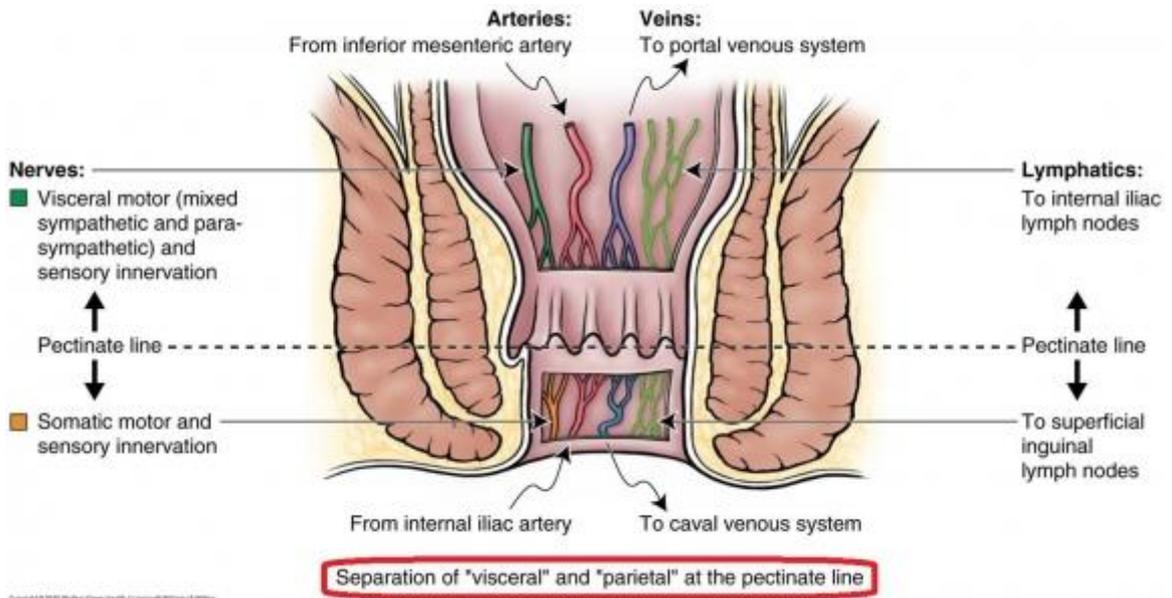
sensitive anal canal. A deficit in this sensory function can be a contributing factor in patients with fecal incontinence in the absence of motor deficits. Biofeedback can improve rectal balloon distention thresholds.(3)

## **DEFECATION:**

The awareness of the need to defecate or urinate occurs in the superior frontal gyrus and anterior cingulate gyrus. Rectal distention stimulates internal anal sphincter relaxation and the sampling reflex. If defecation is to be deferred, voluntary contraction of the external anal sphincter and levator ani muscles occurs.

Accommodation refers to the relaxation of the rectal ampulla after an initial increase in pressure. At the appropriate time for defecation or when rectal pressure is high, the levator ani muscle, puborectalis muscle and external anal sphincter relaxes. Rectal anal inhibitory reflex involves inhibitory neurons in myenteric plexus which innervates the internal sphincter, is responsible for relaxation of internal sphincter when the rectum contracts. Pelvic floor relaxation, along with a squatting position, straightens the anorectal angle. An increase in abdominal pressure along with colonic and rectal contractions allows expulsion of a fecal bolus. Increased effort is necessary to expel a smaller bolus than an optimal 2-cm fecal bolus.(3)

## VASCULAR SUPPLY OF ANAL CANAL:



Although this is under voluntary control to a certain extent, when the volume of the rectal contents reaches a critical point, the urge to defecate becomes overpowering and the tone of the external sphincter is inhibited.

The anal canal with the mean length of 4 cm lengthens when external sphincter contracts and shortens with straining. The tone of the internal sphincter at rest is about 90 cm of water. This is called *the resting pressure*, which exerts resistance to leakage of stools at rest. It is comparatively lower in women and older patients.(8)

*Squeeze pressure* is the maximum voluntary pressure which the patient can exert to close the anal canal. It is generated by the contraction of the external anal sphincter, puborectalis muscle along with gluteal muscles, and more than doubles the intra anal canal resting pressure, prevents leakage of stools when it enters anal canal at inappropriate times. The main mechanism that provides continence is difference in the pressure between rectum(6 cm H<sub>2</sub>O) and anal canal (90 cm H<sub>2</sub>O). Further, the normally located anal vascular cushions contribute to continence by mechanically blocking the anal canal.(8)

The anorectal angle measuring about 80 degree is produced by the anterior pull of the puborectalis muscle. Manoeuvres that sharpen this angle augment continence whereas those that straighten it, favours defecation.

## **EXAMINATION OF THE ANAL CANAL:**

A good couch and a good light in a private place is mandatory. It should be adequately equipped with instruments needed for complete pelvic examination. Essential things are head light / torch, gloves, lignocaine jelly, cotton wipes, proctoscope and minor instruments. General and systemic examination should always be done before this to rule out secondary treatable causes of haemorrhoids.

Examination can be done in either left lateral, lithotomy, knee-elbow position. Lithotomy position is less satisfactory for an elderly patient and can cause social embarrassment for a young woman. The Sims left lateral position is the simplest position and does not require special couch.(9)

## **INSPECTION:**

With the buttocks opened, the anal canal opening and surrounding region is inspected. Note is made on any lesions like inflammatory skin changes, skin tags, external pile masses, fissures, or fistulous opening. Patient is asked to strain down before concluding inspection to rule out mucosal prolapse.

## **DIGITAL RECTAL EXAMINATION:**

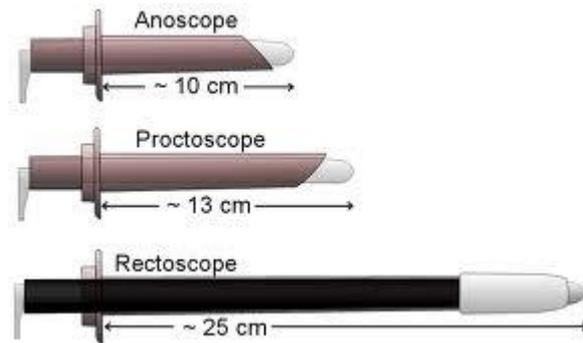
For most of the patients, the digital rectal examination remains the least tolerable segment of the complete physical examination. It may cause discomfort and embarrassment to the patient, but if done properly, it should not be truly painful in most circumstances. Omission of this examination carries a risk of missing an asymptomatic carcinoma. It is important that the procedure should be properly explained to the patient and gentle slow movement of the finger inside the anal canal is the key for successful examination. (9)

The patient is asked to lie on his left side with his buttocks close to the edge of the examining table, and should flex his legs at hips and knees. Appropriate draping and light adjustments are essential for good visualization of the anus and surrounding area.

After explaining the patient about the procedure, the gloved index finger is well lubricated . As the patient strains, the finger is kept over the anal opening and as the sphincter relaxes, the fingertip is gently inserted into the anal canal, in a direction pointing towards the umbilicus.(10)

If there is a feeling of sphincter tightening , it is essential to pause and when in a moment the sphincter relaxes, it can be proceeded. In

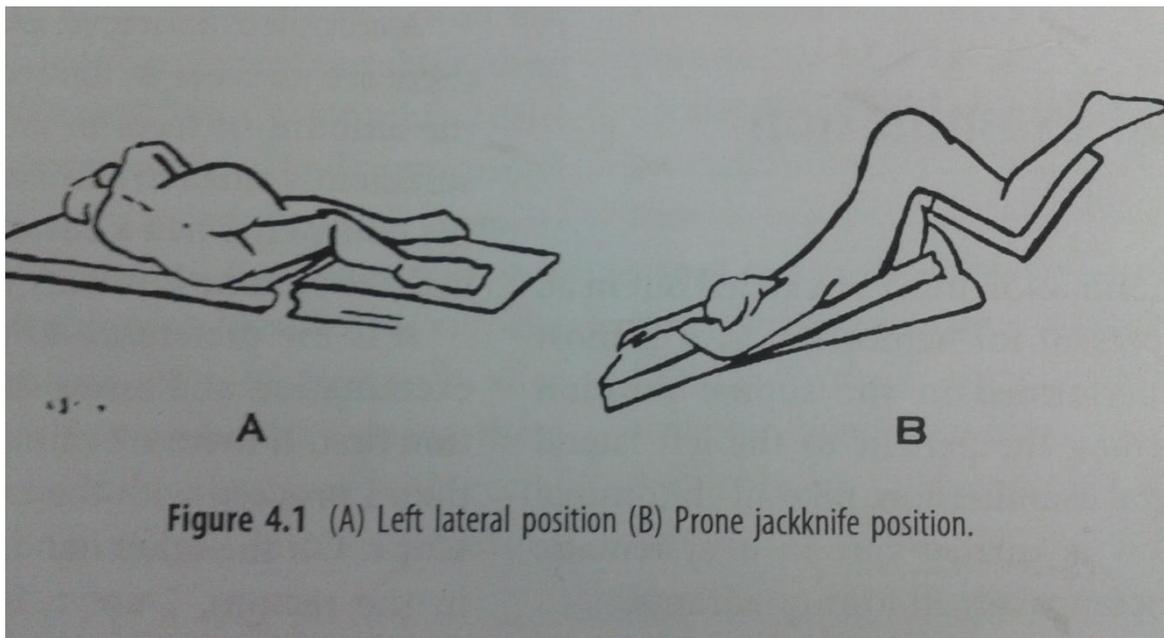
## INSTRUMENTS USED FOR RECTAL EXAMINATION:



## COLONOSCOPE:



## POSITION FOR RECTAL EXAMINATION:



acutely inflamed anus like fissure / abscess, it is advised not to force it and can be postponed once the acute inflammation subsides.

It is difficult to feel an uncomplicated early hemorrhoidal tissue because, they are soft vascular cushions which usually collapse easily under pressure of the examining finger.(10)

The lithotomy position may be helpful to reach any suspicious lesion high in the rectum. By placing the other hand on the patient's abdomen, a bimanual examination can be done , thus delineating a pelvic mass causing secondary anal canal changes.(9)

### **Irregularities or Nodules.**

By inserting the finger farther into the rectum ,it is advised to palpate all the surfaces of rectum, the right lateral, posterior, and left lateral surfaces, for any nodules or irregularities. Then the anterior surface of anal canal with the underlying prostate gland is palpated for the size, shape, and consistency of the prostate, any nodules or tenderness.

Rectal lesions just beyond the fingertip can be made felt by asking the patient to strain down during palpation. This maneuver should not be forgotten if there is any suspicion of cancer. Any peritoneal nodularities are noted.(12)

After completing thorough examination, the finger is gently withdrawn and the anus is wiped off with cotton. Any altered color of the fecal matter on the stained glove is noted and stool for occult blood is asked for if necessary.

In a female, it should not be forgotten to do vaginal examination and it is done before inserting finger into the rectum.

### **ANOSCOPE:**

It is an instrument used in visualisation of anal canal and minor procedures can be done. It has 2 cm diameter, and should never be inserted without obturator in place. The lubricated instrument is inserted into the anal canal, the obturator is withdrawn and rotated 90 degrees to allow proper inspection of all quadrants of anal canal.(9)

### **PROCTOSCOPY:**

It can be done in the Sims or lithotomy position. Rigid proctoscope is 25 cm long and 10-20mm diameter attached with fiberoptic light for illumination. It has an obturator and a sheath, good lubricant is necessary. The instrument is introduced at first in the direction of axis of anal canal, upwards & forwards towards the umbilicus and then directed to enter into rectum. The obturator is withdrawn, lower third of the rectum, the anorectal junction and the anal canal can be inspected as the instrument is

withdrawn slowly with pumping small amount of air to keep the rectum from collapsing, any pile mass can protrude out . The patient should be asked to strain during withdrawal. As by doing so, an internal intussusceptions may be made visible.(12)

### **SIGMOIDOSCOPY:**

In an elderly patient, sigmoidoscopy is done to rule out any other cause for secondary hemorrhoidal masses. The instrument is 35 cm long and allows surgeon to examine the distal colon. Both the rigid and flexible scopes are used for the same, has its own advantages and disadvantages . After introducing the lubricated sigmoidoscope along the curvature of anal canal, the rectum entered and examined thoroughly by circumduction movement. The entry into pelvic colon is more difficult and by gentle inflation of the bowel under direct vision, the lumen can be opened out in advance of the instrument.(14)

### **COLONOSCOPY:**

Complete colon examination should be performed in all patients with unusual symptoms to exclude associated serious conditions. It helps to examine the entire colon by visual inspection from the anal canal upto the caecum. Colonoscopy requires adequate bowel preparation for proper evaluation.(12)

## **HEMORRHOIDS:**

Hemorrhoids are a very common anorectal condition, defined as the symptomatic enlargement and distal displacement of the normal anal cushions, clinically manifesting as swelling around the anus or in the lower rectum. The abnormal dilatation and distortion of the vascular channel in anal cushion, together with destructive changes in the supporting connective tissue, is a classical finding of hemorrhoidal disease.(11)

It is one of the most misunderstood problem by all people , because patients attribute almost any of their anorectal problem from pruritis ani to malignancy as haemorrhoids only. They affect millions of people around the world, and represent a major medical and socioeconomic problem. Multiple factors have been claimed to be the etiologies of hemorrhoidal development, including constipation and prolonged straining.

Although the exact incidence of haemorrhoids is not known, because patients with such complaints have a tendency to use self-medication rather than to seek proper medical attention, about 90% of population will show evidence of hemorrhoids at some point of their lives. In United kingdom, it is estimated that hemorrhoidal disease has a prevalence rate of 4.4%. In both sexes, peak occurs between 45-65 years of age and it is found unusual to have hemorrhoids before the age of 20

years. Higher socioeconomic status individuals were affected more frequently than those of lower socioeconomic status, may be attributed to their diet habits.(4)

### **PATHOLOGICAL ANATOMY:**

Haemorrhoids are vascular cushions that are located in the submucosa covered with mucosa, bulge in to the lumen of the anal canal . They contain tissues with high number of arterio venous anastomoses without interposed capillary networks, and connective tissue rich in elastic fibres & collagen , lined by cylindrical epithelium. They are present from birth and forms part of normal anatomy which contributes upto 20% resting anal canal pressure , playing a major role in continence.(9)

### **PATHOPHYSIOLOGY:**

Hemorrhoidal disease is the pathological condition when these anal cushions containing vascular plexus are excessively distended, stretching the overlying mucosa and anoderm, loosening their attachments to the muscle of the anal canal, causing discomfort and other problems to the patients normal daily activities(9) . Although there are various theories described for hemorrhoidal disease for centuries, the most accepted theory explains , when there is chronic increase in intraabdominal pressure leads to engorgement of these normal anal vascular cushions. Further chronic

straining can cause small tears and ulcerations of the insensitive mucosa leading to occasional bleeding per rectum. Over time, with continuing altered physiological mechanisms, chronically enlarged hemorrhoidal cushions becomes lax, leading to prolapse.(9)

The submucosal hemorrhoidal plexus of the superior rectal vein is involved as the main content and also include a small branch of superior rectal artery plus areolar tissue. Microscopically, haemorrhoids are sinusoids i.e., vascular structures without muscular walls. Bleeding from the hemorrhoidal tissue is mainly arterial, arising from the presinusoidal arterial plexus as evidenced by its bright red colour and having arterial pH.(9)

Several enzymes or mediators that are responsible for the degradation of supporting connective tissues in the anal cushions have been studied recently. Among these, matrix metalloproteinase (MMP), a zinc-dependent proteinase, is one of the most potent enzymes, that is capable of degrading extracellular proteins such as elastin, fibronectin, and collagen. MMP-9 was found to be over-expressed in hemorrhoids. Activation of MMP-2 and MMP-9 resulted in the disruption of the capillary bed and promotion of angioproliferative activity of transforming growth factor  $\beta$  (TGF- $\beta$ ). (4)

Recently, hemorrhoidal tissue was found to contain increased microvascular density, suggesting that neovascularization might be another

important phenomenon of hemorrhoidal disease. In 2004, Chung et al reported that endoglin, one of the binding sites of TGF- $\beta$  and a proliferative marker for neovascularization, was expressed in more than half of hemorrhoidal tissue specimens compared to none taken from the normal anorectal mucosa. (4)

### **AETIOLOGY:**

The following are attributed as the causative factors in the development of haemorrhoids..(16)

- 1) With a definite organic obstruction to the venous return from the superior hemorrhoidal veins .,
  - a) Abdominal tumors, pregnancy. – pregnancy cause increased pelvic vasculature, laxity of tissue and increased venous congestion from the fetal pressure, haemorrhoids are common.
  - b) Carcinoma middle 1/3<sup>rd</sup> of rectum – congestion of the superior hemorrhoidal veins may occur , a feature of an encircling mass of mid- rectum.
- 2) Obesity.
- 3) Cirrhosis of liver with portal hypertension
- 4) Constipation and prolonged straining.

- 5) Ageing and hereditary.
- 6) Idiopathic haemorrhoids where no evidence of organic venous obstruction is present.

### **CLASSIFICATION OF HEMORRHOIDS:**

Hemorrhoids may be internal or external to the anal orifice.(14)

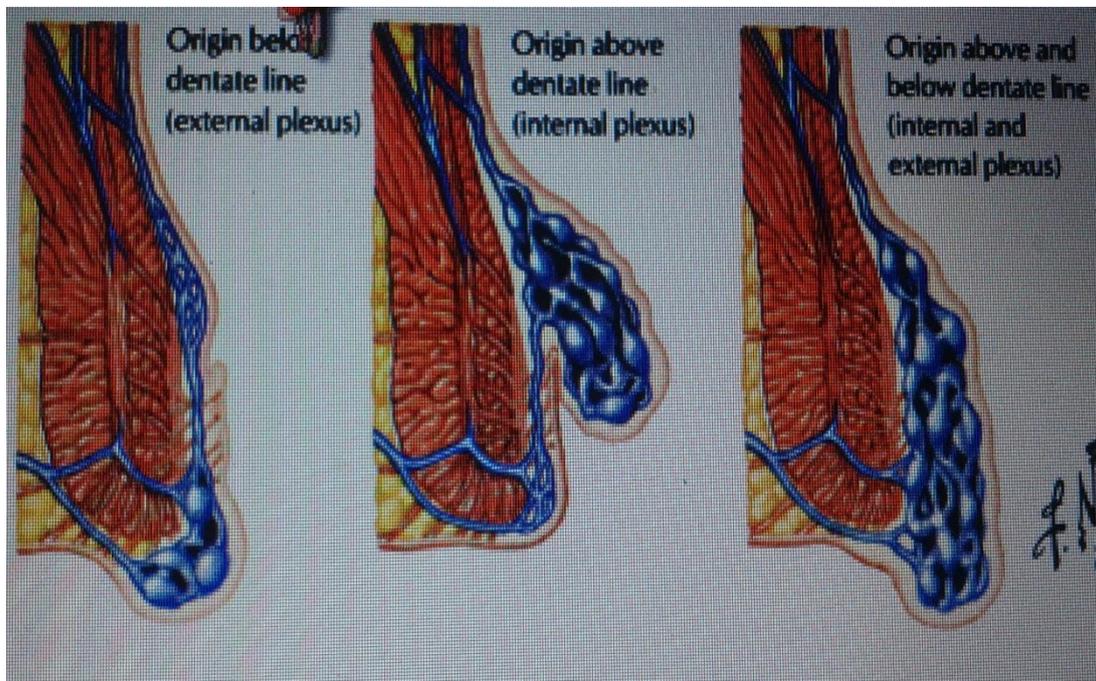
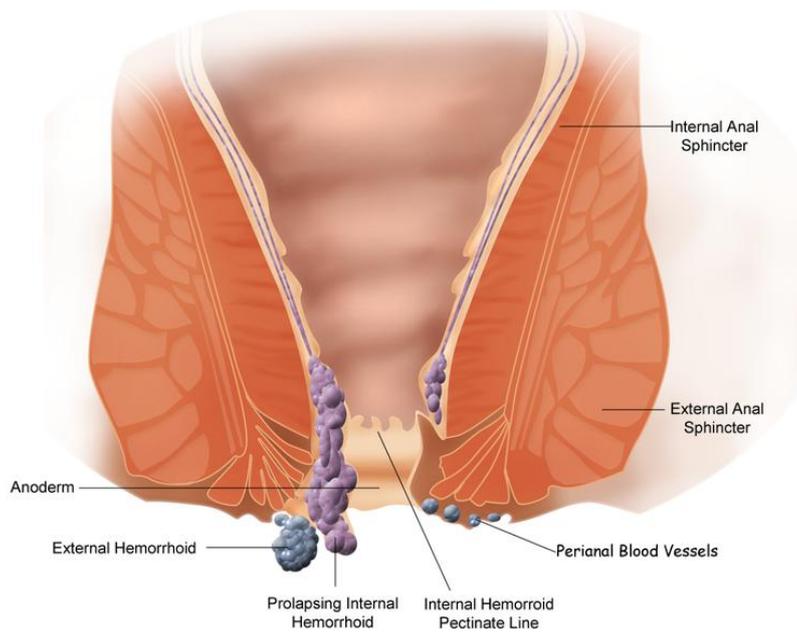
#### **EXTERNAL HEMORRHOIDS:**

External hemorrhoids are located distal to the dentate line under the skin around the anus, arising from the squamous epithelium lining the lower 1/3<sup>rd</sup> anal canal or at the anal orifice itself. They may swell causing discomfort and poor hygiene, pain occurs when it is thrombosed.

#### **INTERNAL HEMORRHOIDS:**

Internal hemorrhoids develop in the lower rectum, arising in the upper 2/3<sup>rd</sup> of the anal canal which is lined by columnar epithelium. Internal hemorrhoids cause painless bright red bleeding during defecation, can sometimes protrude or prolapse outside through the anal opening. Most of the prolapsed pile mass shrink back into the rectum on their own and some remains outside when associated with edema and thrombosis.

## TYPES OF HAEMORRHOIDS:



## **INTERNO-EXTERNAL HEMORRHOIDS:**

When the above two varieties are associated , they are known as interno- external haemorrhoids. Because of the communications between internal & external plexuses, if the former become engorged , the later is liable to become involved.

## **NUMBER & POSITION OF INTERNAL HAEMORRHOIDS:**

Three main hemorrhoidal mass is situated at the right anterior, right posterior, and left lateral position at 11,7,3,o'clock position corresponding to normal position of anal cushions. Additional haemorrhoids may be present between these pile masses. The arrangement of piles was due to the difference in the termination of the right & left main branches of the superior rectal artery, the left branch continuing essentially as a single vessel, while the right branch splits in to an anterior & posterior branch. Consequently, when the associated radicles of the superior rectal vein become varicose, two sets of haemorrhoids from the right side and one on the left side occurs. When the patient is put in lithotomy position , they correspond to 3, 7 , 11 ' o clock position which are called primary piles. When some pile mass develop in between the primary ones, they are referred to as secondary piles.

## COMMON POSITIONS OF HAEMORRHOIDS:

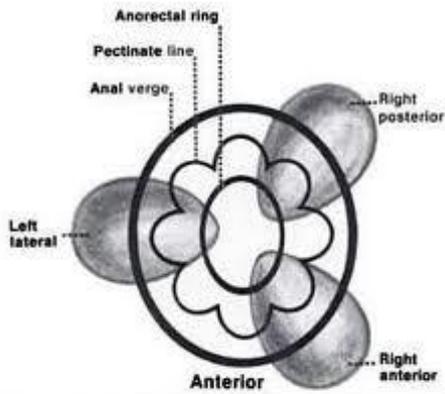
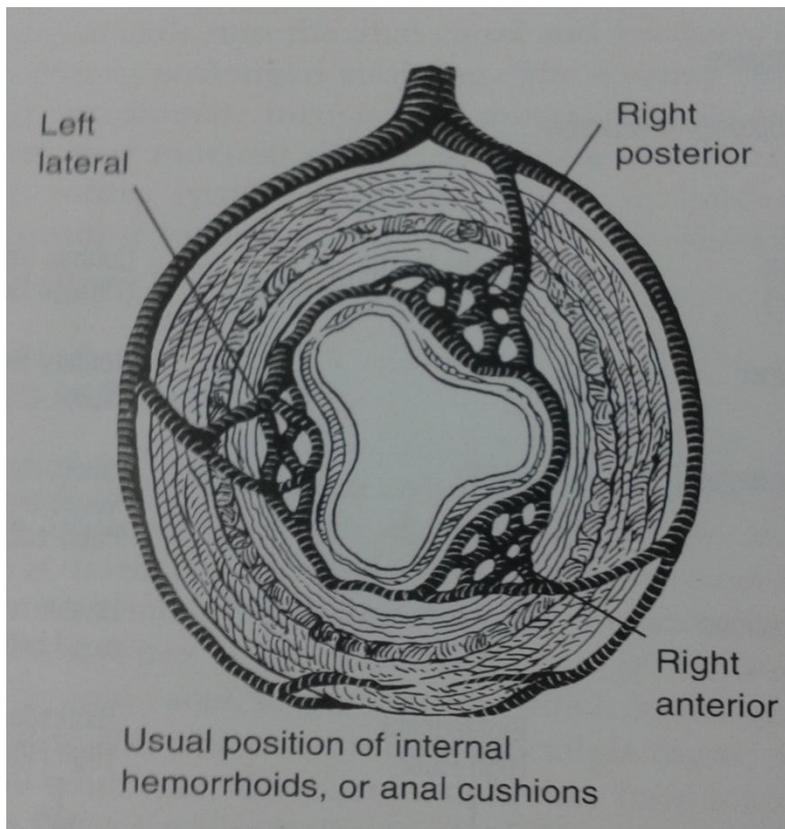


FIGURE 8-7. The three primary hemorrhoidal groups.



## **PARTS OF HEMORRHOIDS:**

Each principal haemorrhoids can be divided in to three parts:

**PEDICLE:** is situated at the anorectal ring. It is covered with pink mucosa when seen through a proctoscope.

**INTERNAL HEMORRHOID:** commences just below the anorectal ring. It is bright red in colour and covered by mucous membrane.

**EXTERNAL HEMORRHOID:** lies between the dentate line and the anal margin , covered by skin.

## **DEGREES OF HEMORRHOID FORMATION** (14)

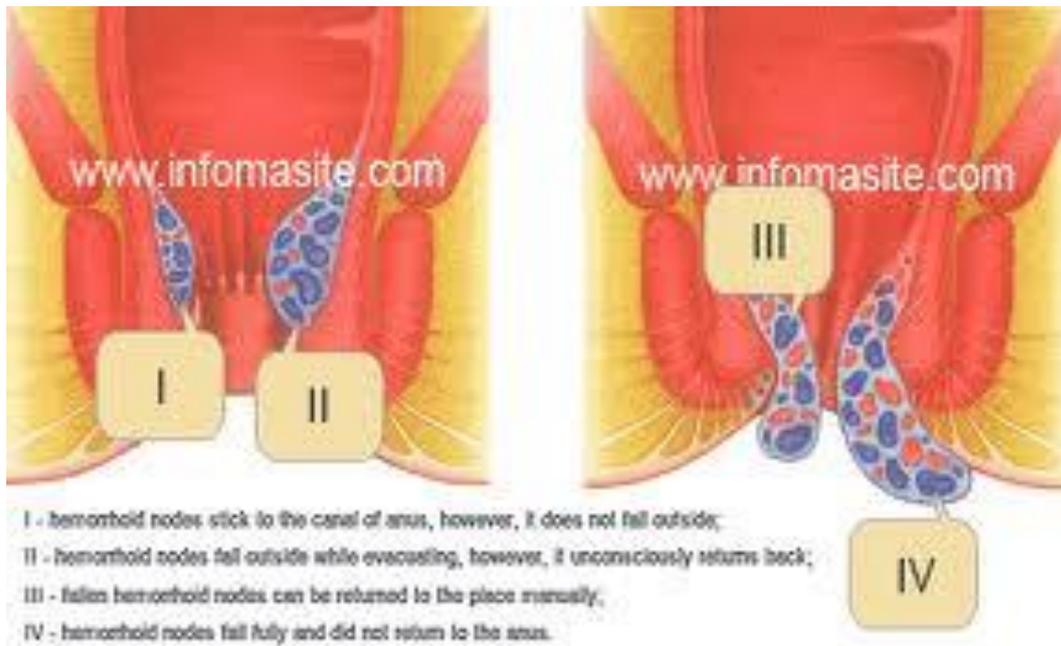
### **I DEGREE:**

Only bleeding is present. Dilated anal cushion does not descend below the dentate line on straining.

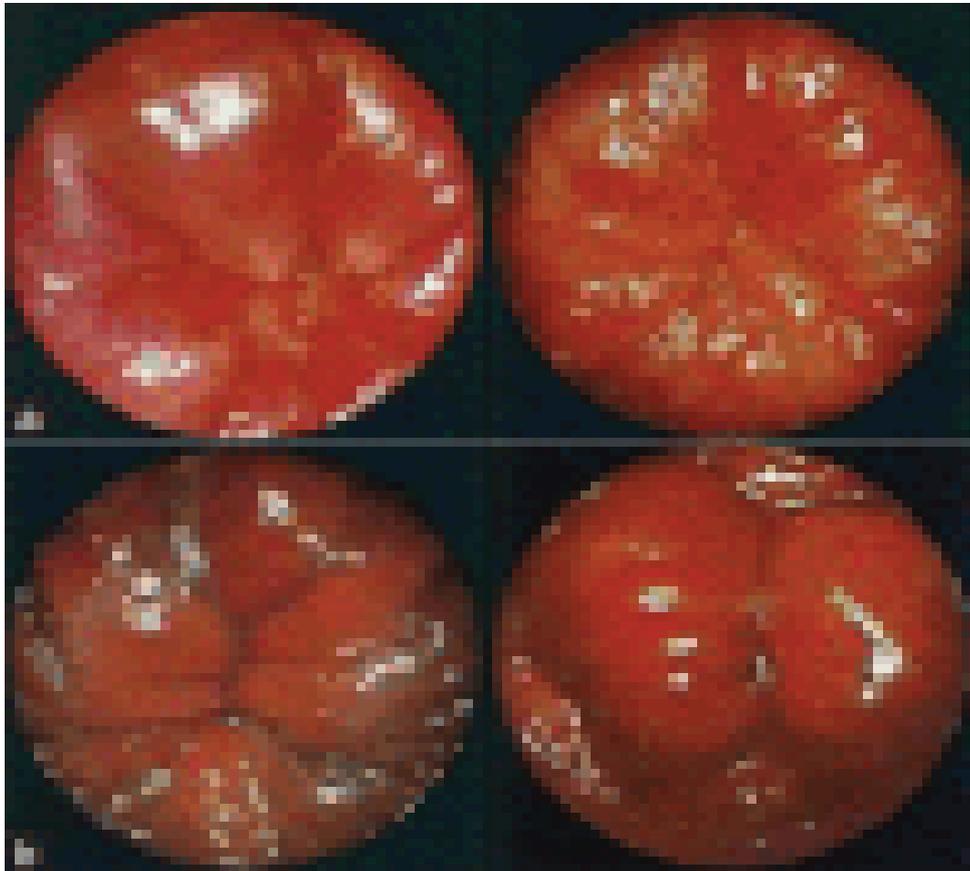
### **II DEGREE:**

Mass can be seen at the exterior on straining and disappears after straining.

## DEGREES OF HAEMORRHOIDS:



## PROCTOSCOPIC APPEARANCE OF VARIOUS DEGREES OF HAEMORRHOIDS:



### **III DEGREE:**

Mass descends to the exterior on straining and remain outside unless they are digitally replaced into the anal canal where they remain until the next act of straining.

### **IV DEGREE:**

Mucosa covered internal cushions that are remaining permanently outside the anal verge , because of inability to get back inside anal canal either due to edema/ thrombosis.

### **CLINICAL PRESENTATION:**

There are two cardinal features of haemorrhoids – bleeding and prolapse. Pain is not usually the symptom, however the h/o of minimal pain during defecation can be elicited.(9)

### **BLEEDING:**

Painless bleeding is usually the first symptom and occurs initially as a slight streak of blood on the motion or toilet paper , especially when the patient is constipated. At this stage , it can be easily treated by securing regular bowel habits. Blood dripping or squirting in to the bowl , not mixed with stools at the end of defecation is highly suggestive of

haemorrhoids . Sometimes , patients may suffer severe haemorrhages emphasized the blood leak from haemorrhoidal mass is bright red in colour and therefore it is arterial , rather than venous bleed. On the other hand, some large prolapsing pile mass do not bleed because their exposed mucosa becomes thick and callosed. Bleeding unrelated to defecation should always raise the possibility of some other pathology.

### **PROLAPSE:**

As a rule, onset of prolapse is late in haemorrhoids. It occurs initially during defecation, the pile mass appears at the anal orifice during the height of expulsive effect and slip back to its position immediately afterwards. Later, the pile mass lead in to a prolapsed position after passing motion, and patient finds it has to be replaced manually . Later, it become permanently prolapsed outside due to edema and may get ulcerated due to friction & contact with undergarments .

### **CONSTIPATION:**

It is the most common non- specific symptom associated with many other colonic diseases, but commonly attributed as haemorrhoids. Any patient presenting with history of altered bowel habits should be thoroughly evaluated with further investigations to rule out inflammatory diseases or malignancy.

## **DISCHARGE:**

Mucus is produced by the secretory columnar epithelium above the dentate line. A mucoid discharge from the rectum can occur in any case with prolapsing piles, because the columnar mucosa gets exposed to outside and irritated, thus secreting mucus. But, it is more severe in permanently prolapsed piles. Soiling of the undergarments becomes a troublesome symptom.

## **ANAL IRRITATION:**

Irritation of the perianal region due to its becoming moist and sodden from discharge is almost an accompaniment of III & IVth degree haemorrhoids.

## **SECONDARY ANAEMIA:**

It is important to remember that bleeding from haemorrhoids can be a secondary cause of anaemia. In addition to the local symptoms, patient may complain of breathlessness, dizziness, lethargy & pallor due to anaemia.

## **MANAGEMENT:**

Therapeutic treatment of hemorrhoids ranges from lifestyle and dietary modification to radical surgery, depending on degree and severity of symptoms. Various modalities of treatments are available with medical & surgical management. Many patients with minimally symptomatic haemorrhoids require no intervention except for dietary and life style modifications. The objective of any form of treatment to haemorrhoids include that it must either reduce the size and vascularity of the hemorrhoidal cushions or to reduce the laxity between anal canal epithelium and the muscle to prevent the mucosal prolapse. These objectives can be achieved by most of the recently available treatment options for haemorrhoids.(20)

### **AT-HOME TREATMENT:**

Diet and lifestyle changes can relieve hemorrhoidal symptoms in early cases. Consumption of high-fiber diet makes the stools softer and easier to pass, thus reducing the pressure on hemorrhoids during straining.(11)

Fiber is a substance found in plants which cannot be digested by the human body and remains in the digestive tract contributing to the bulk of stools, thus preventing constipation. Fruits, vegetables, and whole grains

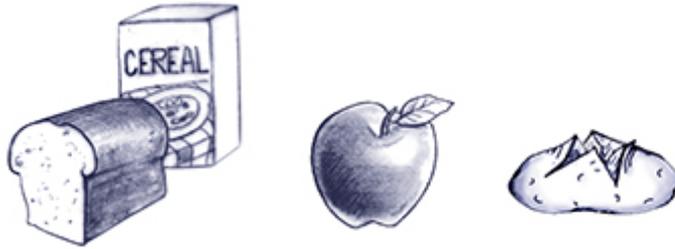
are good sources of fibre. The American Dietetic Association recommends 25 grams of fiber per day for women and 38 grams of fiber per day for men. In some clinical studies ,it is found that fiber supplements reduced the risk of bleeding by approximately 50%, but did not improve the symptoms of prolapse, pain, and itching. Fiber supplement is therefore regarded as an effective treatment in non-prolapsing haemorrhoids, but it is important to wait for atleast 6 wks for a significant improvement to be manifest.(4)

A bulk stool softener or a fiber supplement like psyllium (Metamucil) or methylcellulose (Citrucel) can be taken as a routine to prevent constipation.

Other changes that may help relieve hemorrhoid symptoms include

- drinking six to eight 8 glasses of water or other nonalcoholic fluids each day.
- sitting in a tub of warm water for 10 minutes several times a day after passing stools.
- exercising to prevent constipation
- not straining during bowel movements

## DIET MODIFICATION FOR TREATMENT:



### Fiber

Food sources of fiber include whole wheat, bran, fresh or dried fruits, and vegetables



Over-the-counter creams and suppositories may temporarily relieve the pain and itching of hemorrhoids. These treatments should only be used for a short time because long-term use can damage the skin.(24)

Examples of foods that have fiber include.,

Breads, cereals, and beans

Whole-grain cereal,

Fruits & Vegetables

Here the medical management was not included in this study. The surgical management was divided into non-surgical and surgical management.

#### **NON- SURGICAL METHODS:**

- 1) Injection treatment (sclerotherapy).
- 2) Rubber band ligation.
- 3) Manual dilatation.
- 4) Cryotherapy.
- 5) Infrared coagulation.

## **SURGICAL METHODS:**

- 1) Milligan – Morgan open hemorrhoidectomy.
- 2) Ferguson closed hemorrhoidectomy.
- 3) Stapler hemorrhoidectomy.

## **NON- SURGICAL METHODS:**

### **A)INJECTION TREATMENT (SCLEROTHERAPY):**

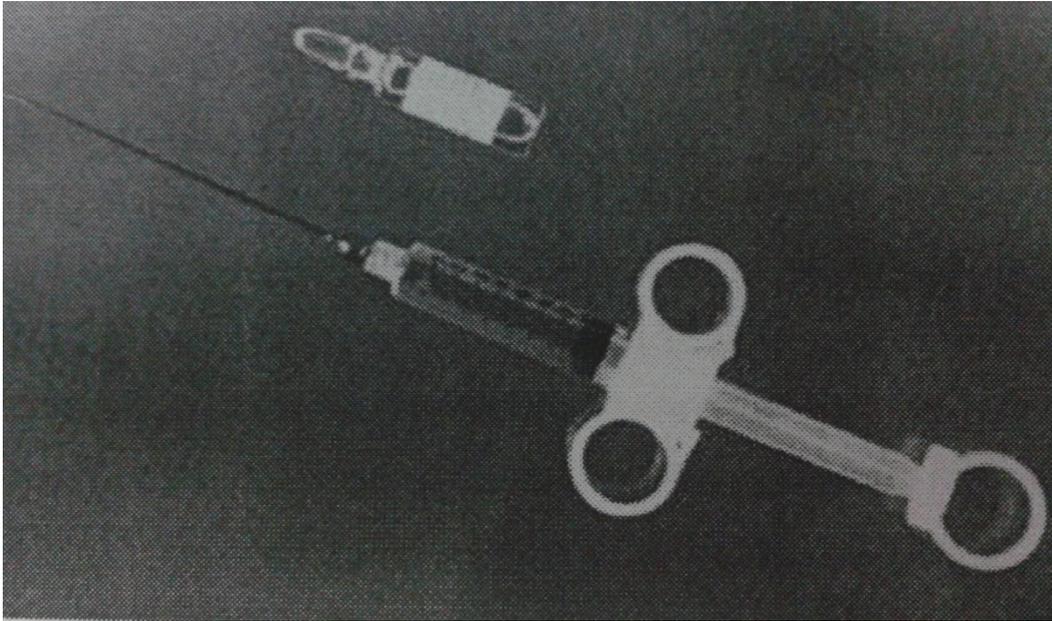
The first person to practice injection of haemorrhoids was Morgan of Dublin in 1869, who treated the symptomatic internal pile mass with an injection of persulphate of iron.

Mitchell of Illinois treated piles with an injection consists of one part carbolic acid and two parts olive oil, in 1871.

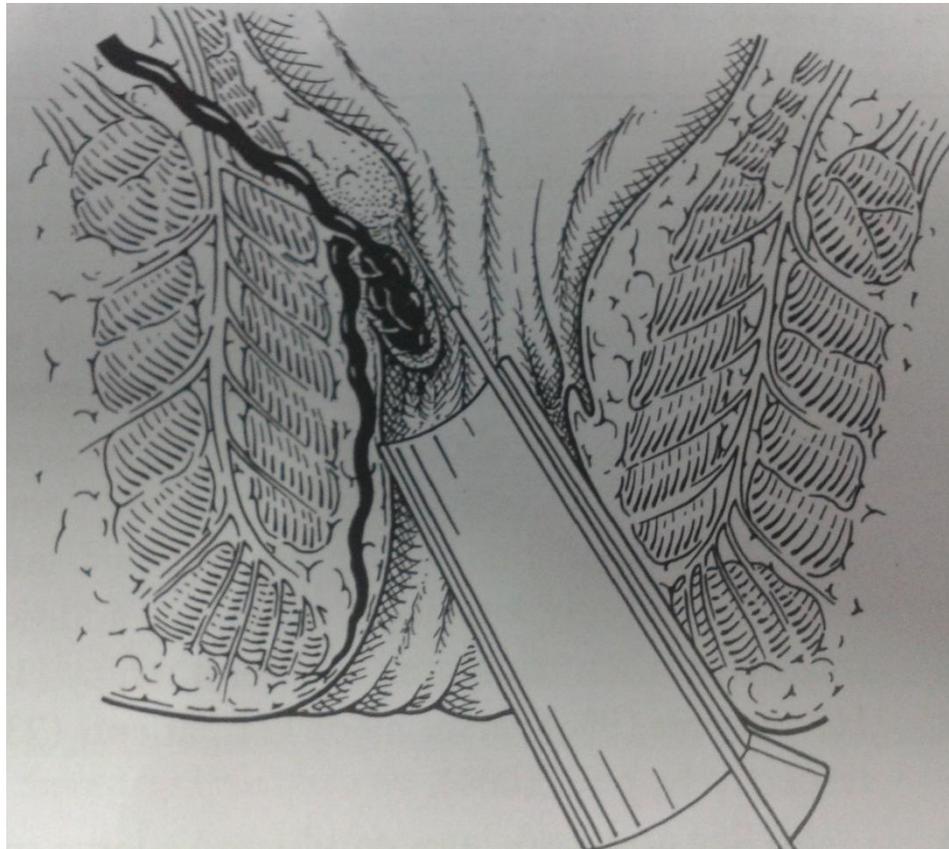
The objective of injection treatment of haemorrhoids is quite different from that of similar treatment for varicose veins of the lower limbs, where the aim of the injection is to damage the tunica intima and produce intravascular thrombosis.

No such effect is sought with injection of haemorrhoids, one reason for this is because, it is extremely difficult to inject into the veins of haemorrhoids. Even with the vigorous thrust of the needle into the centre

**TRADITIONAL GABRIEL SYRINGE AND NEEDLE:**



**SCLEROTHERAPY:**



of the pile , the point usually ends up between the veins , not in their lumen.

In practice, the injection is given in to the areolar tissue of submucosa at the base of the hemorrhoid, in which the dilated veins lie and the effect of the irritant solution is to produce an inflammatory reaction leading to fibrosis and contraction of the submucosal anal cushion fixing it in its normal position ,by relieving the congestion of venous plexus.(9)

Injection sclerotherapy can be done in single or multiple sessions as preferred by patient requirements and practitioner decision . It is advisable to re-examine patients after 3-6 weeks after the injection or earlier when symptoms persists. There is no evidence to support the importance of single or multiple session injection. Further multiple injections do not prove to be significantly increase the cure rate after the first one which is approximately 60%.(27)

#### HISTOLOGICAL FEATURES:

After 24 hrs of injection, there appears marked edema of the perivenous tissues, with infiltration by leucocytes, RBCs and many large mononuclear cells often arranged as clusters around the vessels. Proliferation of fibroblasts occurs in the successive days causing increase in the fibrous elements in the submucosa. At this stage, there was no

thrombosis of the vessels, but clotting became increasingly evident after 5<sup>th</sup> day.

### **RUBBER BAND LIGATION:**

This procedure was developed by Barron. The objective of the band ligation is to promote fibrosis of the submucosa and subsequent fixation of the anal epithelium to the underlying sphincter, thus impeding the downward displacement of the anal cushions. The principle of the method is to apply a rubber ring ligature through a proctoscope to the mucosa covered part of the internal pile mass. Over the period of seven to ten days, this elastic band gradually cuts through the tissues and the pile sloughs off spontaneously.(9)

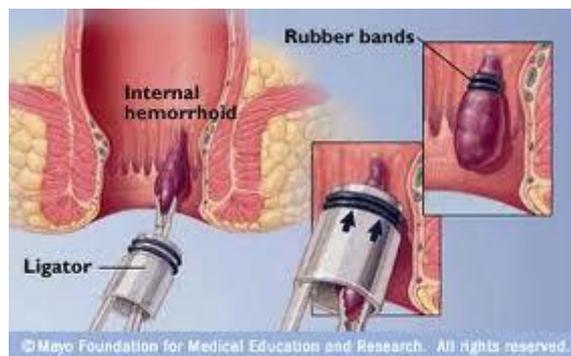
An assistant is required to hold the proctoscope, while the surgeon is holding the tissue forceps and ligator. To obviate this, two recent instrumental innovations designed. One is the VAN HOORN LIGATING PROCTOSCOPE , which is capable of applying the rubber band to the pile mass, without the need to introduce a separate ligator.

Since the diameter of the proctoscope is largest compared to the applicator, proctoscope functions as the drum of the ligator, larger amount of tissue is included in the rubber band. Diameter of the distal end is

## INSTRUMENTS FOR RUBBER BAND LIGATION:



## RUBBER BAND LIGATION:



1.8cm., and conventional ligator has 1.1cm with which the surgeon can perform a ligation with out an assistant.

#### DISADVANTAGE:

Little tougher and uncomfortable to the patient. The other new device is the Thompson modification of the conventional barron ligator. No anaesthetic is required for rubber band ligation. Virtually it is a painless procedure. More than one pile mass can be dealt at the same time.(30)

Next procedure done after an interval of three weeks or so.

#### ANAL DILATATION:

It is a initial form of treatment reserved for patients with symptomatic haemorrhoids that would justify hemorrhoidectomy, developed by Lord in 1969. Stretching the fibrotic bands in the anal sphincter muscle reduces the ano-rectal pressure that would relieve the venous engorgement and help in improvement of symptoms. Anal dilatation is done at the sides , 3 & 9 'o clock position because the anal sphincter is thinner and weaker in front and back. (17)

It is important to dilate the anal canal gently and gradually rather than forcefully and abruptly, so that the sphincter muscle is preserved from damage and the anoderm should not be torn. Complications like incontinence , hematoma & minor anodermal tears can occur in minor

percentage people. One study of the Lord procedure to treat second- and third-degree internal haemorrhoids with a median follow-up of 17 years found a nearly 40% recurrence rate and a 52% rate of incontinence.(5)

### **CRYOTHERAPY**

In this technique, the cryoprobe which is a device used to apply extreme cold to contacting tissues with a coolant like liquid nitrogen or carbondioxide , is applied to the pile mass for about 3 minutes which causes liquefaction of frozen tissue, over the ensuing 2-3 weeks. Cryotherapy freezes all tissue it comes into contact, thereby destroying the hemorrhoidal plexus. Once a popular treatment, its use has declined because this painful procedure can cause foul smelling profuse discharge due to the necrosis of tissue and healing may be also be prolonged.(19)

### **INFRARED PHOTOCOAGULATION**

This technique uses the principle of application of infrared rays to coagulate the contacting tissue, leading to fibrosis. The device is applied to the desirable area of mucosa for about 1.5 seconds in two or three sites proximal to hemorrhoidal plexus. Reported results for first- and second-degree haemorrhoids are comparable to those for RBL or sclerotherapy. A study showed a 10% relapse rate at 3 years in patients with third-degree hemorrhoids and were treated with RBL at recurrence.(5)

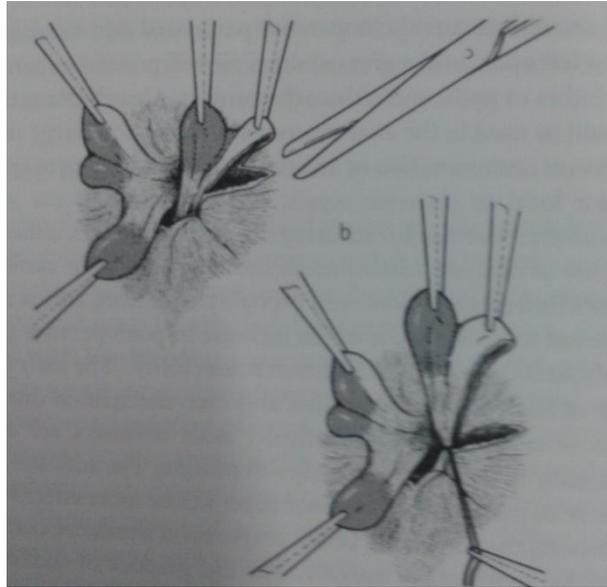
## **SURGERY**

Lateral internal sphincterotomy occasionally is performed, if patients have an associated fissure with hemorrhoids at the time of surgery to decrease the anal tone, which also treats the associated constipation.

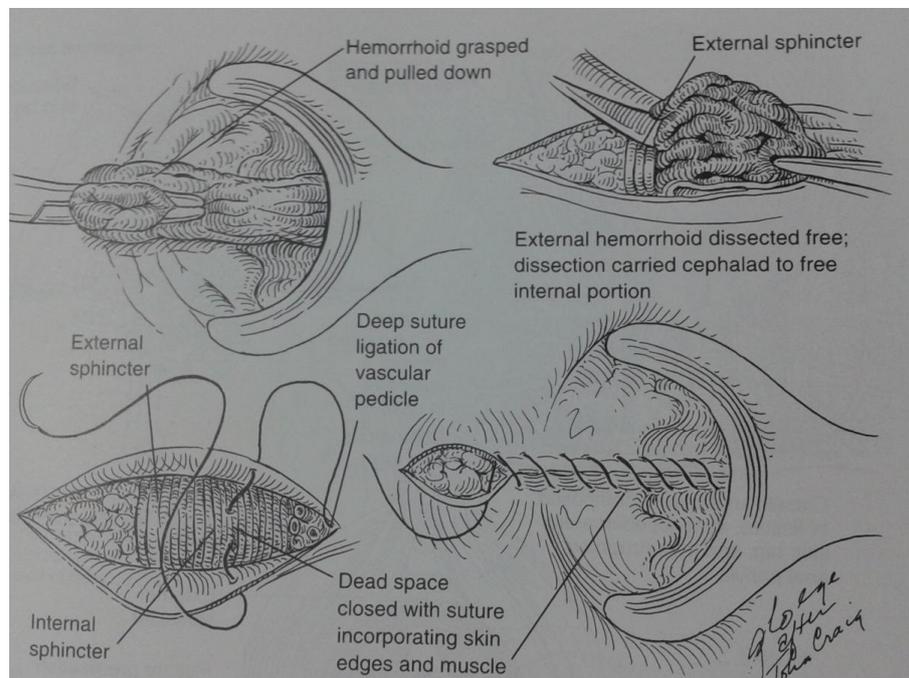
Hemorrhoidectomy still remains the gold standard surgical procedure for fourth-degree and some third-degree hemorrhoids and occasionally done in cases of first- or second-degree haemorrhoids. Hemorrhoidectomy should be done under general or regional anesthesia. After excision, the cut edges of the mucosa are either closed or left open is a matter of preference, as results in terms of postoperative pain and outcome are similar with both approach. One study reported after hemorrhoidectomy, recurrence were found in 26% , but only 11% of patients needed a secondary procedure.(5)

Postoperative pain is the major drawback of hemorrhoidectomy. In an effort to reduce postoperative pain, topical and oral metronidazole have been used with success, although the mechanism of this action is not known. Additionally, a new procedure was introduced in 1998 by Longo, in which a circular stapler is used to fix the anal cushions in their correct positions. The mucosa is excised circumferentially just above the anorectal ring, thereby also interrupting the vascular supply to the cushion. This

## MILIGAN MORGAN OPEN HEMORRHOIDECTOMY:



## FERGUSON CLOSED HEMORRHOIDECTOMY:



procedure is called the *procedure for prolapse of hemorrhoids*(PPH). It is usually used for third- and fourth-degree haemorrhoids.

Results of the randomized multicenter U.S. experience, which compared PPH with the traditional excisional hemorrhoidectomy, showed that PPH-treated patients experienced significantly less pain and perhaps had better overall long-term results. Another study comparing PPH with RBL found patients reported more pain and an increased risk of postoperative bleeding with PPH. However, more patients in the RBL group required excisional hemorrhoidectomy for persistent symptoms.

PPH can have significant postoperative complications, of which bleeding and urinary retention are the most common. Severe persistent postoperative pain can occur in one third of patients and may be related to placing the staple line too close to the dentate line. Additionally, defecation urgency can be persistent in up to 28%. Perhaps the most feared complication is pelvic sepsis leading to death. In summary, more data may be needed, but it appears that in some individuals PPH is superior to traditional hemorrhoidectomy in limiting postoperative pain.(5)

### **WHITE HEAD HEMORRHOIDECTOMY:**

When haemorrhoids are seen circumferentially all around the anus, all of the congested vascular plexus and deformed connective tissues

that are formed between the dentate line and anal epithelial-cutaneous junction were excised in the past which is called Whitehead hemorrhoidectomy. But, this procedure is no longer used because, serious complications such as fecal incontinence, anal stenosis and mucosal eversion can occur. Later, this procedure is modified to avoid these complications, where only submucosal excision of secondary haemorrhoids was done, The conventional hemorrhoidectomy is accepted as a gold standard treatment by most surgeons but it is essential to remember that the excessive excision of hemorrhoids to prevent recurrence may lead to complications such as anal stricture or secondary bleeding.(8)

#### EXTERNAL HEMORRHOIDS:

Reassurance and proper anal hygiene are generally adequate for external haemorrhoids. Resection of the external hemorrhoid is rarely required , because of the swelling that follows any surgical excision, redundant tissue may persist after wound healing. Patient may feel the redundant tissue and become upset thinking about the “recurrence.” When surgical excision is undertaken for internal haemorrhoids as discussed earlier, any external component is usually is excised at the same time.(5)

Thrombosed hemorrhoids are treated when they are acutely symptomatic. The pain associated with the acute thrombosis subsides with

time. Sitz baths and analgesics are prescribed for the moderate pain . Because of the high rate of recurrence with simple enucleation alone, some authorities recommend excising the entire thrombosis and overlying skin.(5).The skin edges may be left open to heal by secondary intention.

Another successful therapy has been found to be topical application of 0.3% nifedipine cream. (5)It is speculated that the success of this cream in reducing pain from thrombosed haemorrhoids results from anti-inflammatory and smooth muscle relaxing properties. It is used to relieve the initial pain and preclude the need for surgery.

#### **ANAL SKIN TAGS:**

These may cause irritation and difficulties with hygiene and patient may request excision. The removal of small tags can be disappointing as a new tag sometimes forms on healing. Narrow stalked tags can be simply excised under local anaesthesia, but careful preoperative assessment is essential. The tag may be a sentinel pile marking an underlying anal fissure or it may be the broad based external component of an associated internal haemorrhoid. Treatment should then be of the underlying pathology which is more likely, than the tag itself to be the cause of symptoms. (9)

## **DOPPLER-GUIDED HEMORRHOIDAL ARTERY LIGATION:**

This new technique is based on doppler-guided ligation of the terminal branches of the superior hemorrhoidal artery it was first introduced in 1995 as an alternative to hemorrhoidectomy. Doppler-guided hemorrhoidal artery ligation (DGHAL) has become increasingly popular in Europe. The rationale of this treatment include that in patients with haemorrhoids, the terminal branch of the superior rectal arteries found to have increased caliber and arterial blood flow. Hence, ligating the arterial supply to hemorrhoidal tissue by suture ligation may improve symptoms. DGHAL is most effective for second- or third-degree haemorrhoids, but may not improve prolapsing symptoms in advanced hemorrhoids. Studies show that short-term outcomes and 1-year recurrence rates of DGHAL did not differ from those of conventional hemorrhoidectomy. Given the fact that there is the possibility of revascularization later and recurrence of symptoms, further studies on the long-term outcomes of DGHAL are still required.(4)

## **STAPLED HEMORRHOIDOPEXY:**

Stapled hemorrhoidopexy (SH) has been introduced since 1998. The principle is that a circular stapling device is used to excise a ring of redundant rectal mucosa proximal to hemorrhoids and this helps in fixing the hemorrhoidal cushions back within the anal canal. Apart from lifting

the prolapsing hemorrhoids, it also helps in interrupting blood supply to hemorrhoidal tissue. A recent meta-analysis comparing outcomes between SH and hemorrhoidectomy, showed that SH was associated with less pain, earlier return of bowel function, earlier return to normal activities, and better wound healing. Considering the higher recurrence rate, cost of stapling device and possible serious complications including rectovaginal fistula and rectal stricture, SH is reserved for patients with circumferential prolapsing hemorrhoids and having more than 3 lesions of advanced internal hemorrhoids.(5)

## **MATERIALS & METHODS**

This study was conducted at government rajaji hospital , Madurai between the period October 2010 to October 2012. About 120 patients presented with the clinical features of primary haemorrhoids to the department of General surgery , were included in the study. It includes data of all patients with haemorrhoids treated with some form of treatment under study and their effects on their symptoms and outcome are analysed.

An informed written consent was obtained from all the patients before being included in the study. Proper pre operative counselling was done regarding the nature of their illness, disease complications, and the necessity for treatment . Various treatment options for haemorrhoids were discussed elaborately with the patients including the effectiveness and chances of failure of each form of treatment. Patient general health condition was thoroughly examined before subjecting to the study to avoid untoward complications.

Equal number of cases (40) are allotted to each form of treatment under study and the data were recorded in a master chart. Analysis of the data was done by comparing all the details in the form of tables and charts and the results are analysed on the basis of effectiveness, complications and outcome.

## **STATISTICAL TOOLS :**

The information collected regarding all the selected cases were recorded in a Master Chart. Data analysis was done with the help of computer using **Epidemiological Information Package (EPI 2010)** developed by Centre for Disease Control, Atlanta.

Using this software range, frequencies, percentages, means, standard deviations, chi square and 'p' values were calculated. Kruskal Wallis chi-square test was used to test the significance of difference between quantitative variables and Yate's chi square test for qualitative variables. A 'p' value less than 0.05 is taken to denote significant relationship.

## **SELECTION OF PATIENTS:**

Proper selection of patients is very important to avoid any untoward complications during the study. After thorough pre-operative work- up and ruling out secondary causes of haemorrhoids, patients are allotted to each study group.

## **CONTRAINDICATIONS:**

There are certain contraindications to each procedure which are carefully excluded for all patients before being included under the study group.

### **CONTRAINDICATION FOR RBL:**

- Patients on anticoagulants.
- Very large painful prolapsed haemorrhoids.
- Hypertrophied anal papilla.
- Chronic anal fissure, any anorectal sepsis.

### **CONTRAINDICATIONS FOR SCL:**

- Inflammatory bowel disease with anorectal sepsis.
- Immunocompromised states.
- Large grade III & IV haemorrhoids.
- Thrombosed and external piles.

### **CONTRAINDICATION FOR HEMORRHOIDECTOMY:**

- Very minimal haemorrhoid.
- Excess scar from previous disease or surgery.
- Unusually thin tight anoderm.
- Anal incontinence.
- Irritable bowel disease.

## **PERI-OPERATIVE PREPARATION:**

Stool softeners and bulk agents are given to patients preoperatively so that patient avoids straining at bowel movements. Pre-operative enema on the day before is usually given to keep the rectum empty during the procedure. However, these are essential for hemorrhoidectomy but not so in cases of band ligation and sclerotherapy, but can be given for ease of the procedure. After the procedure, sitz bath is advised to keep the anal area clean and hygienic to prevent infections and reduce pain. The patient should also advised to avoid heavy weight lifting or strenuous activities for 3-4 days.

## **INJECTION TREATMENT: (SCLEROTHERAPY):**

In this study, cases are allotted to sclerotherapy group includes grade I, II and early small grade III & IV are also included for effective comparison. Eventhough, Third and fourth degree haemorrhoids cannot be completely cured by injection treatment, it is included for the study to assess the outcome.

### **Practical details of injection sclerotherapy:**

The Albright method of high injection in to the submucosa just above the anorectal ring was used.

### **Instruments used:**

- 1) Proctoscope
- 2) IM disposable syringe
- 3) Inj.Sodium tetradecyl sulphate 1% ( 2-4 ml.)

Other sclerosing solutions that can be used are,(9)

- 5% phenol in almond oil.
- 5% quinine & urea hydrochloride.
- 23.4% hypertonic saline.
- Sodium morrhuate.
- Aluminium potassium sulphate.

### **TECHNIQUE OF INJECTION:**

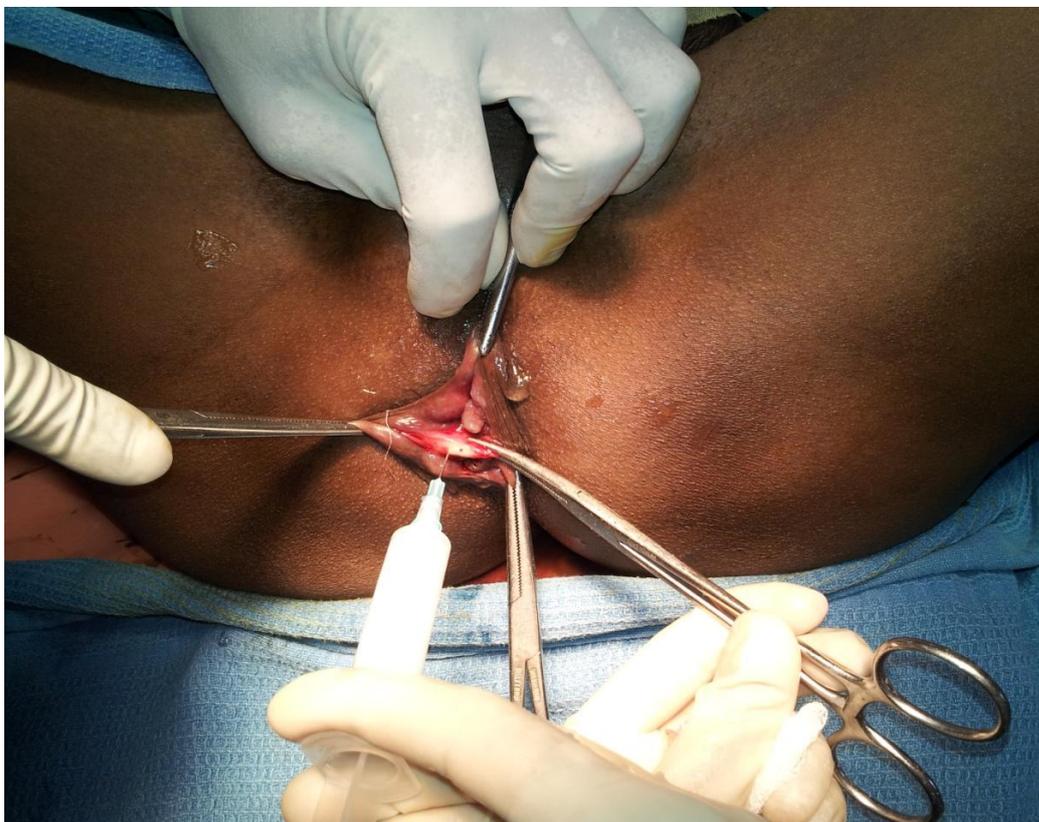
Injection treatment is an outpatient procedure. It requires no special preparation of the patient or the bowel and can be carried out even when the rectum is loaded. But if possible, patient should be encouraged to have a bowel movement or be given an enema prior to the procedure , thus avoiding passage of firm stools shortly after injection.

The traditional Gabriel syringe is probably best suited for sclerotherapy, as the three ring construction allows for injection of viscous oil-based solutions against resistance. The important principle is to ensure the needle is of adequate length and calibre to facilitate injection. The sclerosing solution should be packaged in sterile individual container and drawn up in to the syringe in sufficient quantity just prior to beginning of the procedure.

The patient is positioned in the left decubitus or modified prone position. Adequate lighting for visualisation of the entire anal canal is essential. After sterile preparation of the local area, Well lubricated proctoscope is introduced & anorectal ring is identified, easily by projection of puborectalis posteriorly.

The next step is to bring the proposed site of injection at or just above the anorectal ring clearly into view. To do this, side-viewing proctoscope is brought to bear more directly on the bowel wall in the appropriate quadrant and the pile mass is allowed to fall in to the open slot. The mucosa at risk of injection is swabbed clear with a pledget of cotton wool and then the needle is inserted obliquely through the mucosa. The base of the haemorrhoid is identified and the needle is advanced in to the submucosal tissue along the vertical plane for approximately 1-2 cm. Prior to injection, brief aspiration will help in avoiding injection into vein.

## SCLEROTHERAPY:



During the withdrawal, a very small amount of fluid about 3- 5 ml is injected cautiously and the reaction is noted. If the injection is too superficial, the mucosa will become tense and blanched, hence remove and re insert in different plane to avoid mucosal necrosis. If the mucosa immediately balloons up in an oedematous wheal with vessels, so called ‘striation sign” the surgeon knows that the fluid is spreading in the sub mucosal plane. If no wheal is produced, the injection needle might be placed so deeply. Cautious attention to the depth of the needle advancement and angle of approach will help to ensure proper depth . Particular attention is recommended when injecting anterior wall haemorrhoids , because of the adjacent urologic structures in male patients and the female vagina.

On withdrawal of the needle, there is sometimes a little bleeding and escape of the solution from the punctured mucosa which invariably stops on its own accord. Very rarely, it is necessary to touch the bleeding point with a stick of silver nitrate to arrest bleeding.

The amount of fluid to be injected at each site depends upon the submucosa, but will not be less than 3-5 ml in a new case. In patients who have had previous injections, the submucosa becomes so much fibrosed, that it will accept only small amount of fluid . So, we have to seek more effect with the first set of injections and to make these as large as possible.

As a rule, no special treatment is required after injections. Patient may go to their normal activities, but for mild discomfort in the anal region/ rectum that evening. After each defecation for a few days, the patient should take particular care to replace any prolapsing piles.

### **IMMEDIATE EFFECTS OF INJECTION:**

#### **A) PAIN & DISCOMFORT DURING INJECTION:**

High injection of haemorrhoids are quite painless. Usually pain is absent in competent hands. Pain most commonly occurs due to abrupt tissue expansion or infiltration of the solution towards the dentate line. A slow and consistent injection of appropriate volume will usually help to avoid this discomfort. If pain persists, it indicates fault in technique or low injection. But dull pain and discomfort is usual for about 2 days, due to quantity of the sclerosant.

#### **B) FAINTNESS & COLLAPSE:**

This is usually due to psychological and physical make up of the patient. Accidental injection of sclerosant into a hemorrhoidal vein has been linked to transient epigastric and precordial chest pain along with an unpleasant taste. Fortunately, this condition is not life threatening and passes quickly with supportive care.(9)

C) RAPID CESSATION OF SYMPTOMS:

Within 24-48 hours, bleeding stops. But improvement in prolapse of pile mass takes time.

D) REACTION TO INJECTION IN RECTAL WALL:

Within 2-3 days, the areas of injections becomes indurated above the anorectal ring. Induration is more prominent in 2-3 weeks but gradually it fades. The mucosa is adherent to the underlying fibrosed submucosa. The induration feels like malignant tumour spreading to submucosa. So elicitation of previous h/o of sclerotherapy in suspected cases of carcinoma rectum is essential.

E) PELVIC SEPSIS:

A rare but severe life-threatening complication , which can occur 3 to 5 days after injection and usually is manifested by any combination of perianal pain or swelling, watery anal discharge, urinary retention, fever, leukocytosis, and other signs of sepsis. Prompt surgical intervention and intravenous antibiotics are mandatory.

Patient should be encouraged to avoid straining at bowel movements and instructed to begin use of high fibre diet and a short course of oral laxative to prevent constipation. Approximately 75%

of patients with first and second-degree haemorrhoids improve after injection therapy. (5)

### **RUBBER BAND LIGATION:**

In this study, we selected cases for rubber band ligation including all degree of haemorrhoids and the results are analysed.

#### Instruments used:

- 1) Proctoscope
- 2) Haemorrhoid grasping forceps.
- 3) Barron's banding apparatus
- 4) Rubber bands.
- 5) Light source and instruments

#### **Barron special instruments:**

Barron's instrument consists of hollow drum of 11mm in diameter. Two black rubber bands of 2-3 mm in diameter are placed over the drum by means of a loading cone.

A second drum moves over the outer surface of the first drum and pushes the rubber bands into the desired position. The two drums are mounted on a handle fitted with a trigger device. Holding forceps holds the

pile mass into the hollow drum. The trigger is pulled slowly & steadily. As the outer drum moves, the rubber bands are pushed to the base of the pile mass. (9)

#### Technique of ligation:

It is an outpatient procedure. No special preparation of the patient or bowel is required.

It can be done in left lateral (sim's) position or lithotomy position. Properly performed ligation is painless, but for convenience, it is advised to inject 1 ml of lidocaine at the submucosa of the anal canal with a fine needle on the area where banding is to be applied, to facilitate grasping the mucosa. A proctoscope is passed inside gently, and the patient is asked to strain a little to display the pile masses. An assistant is asked to hold the handle of the proctoscope. The loaded ligator is taken in the left hand and sizing forceps taken in the right hand. The forceps passed through the hollow drums and jaws are fastened on the haemorrhoid. The base of the pile mass is drawn in to the hollow drum. Grasping or suctioning the pile mass by its middle point can produce laceration and bleeding. A check ensures that the rubber ring will not grip the sensitive anal skin below the dentate line.

## RUBBER BAND LIGATION:



By closing the handles of the ligator, the ring pushes off the drum and instantly close on the base of the pile mass. The resulting nub of the strangulated tissue is usually about the size of the small cherry. It is preferable to treat all the haemorrhoids in one single session. Sequential single banding can be done but atleast 21 days should elapse between the sessions.

The procedure is painless, but it may cause mild discomfort. The patient is advised to take bedrest for a day and warned about the possibility of bleeding after one or two weeks of ligation. It is important to avoid putting the bands very close to one another when banding all the piles in single session because this can produce bleeding or ulcer when the rubber ring is eliminated. Patient can be reviewed after a week.

### **EFFECTS OF LIGATION:(9)**

- 1) DISCOMFORT AND TENESMUS: It is common to be noticed in 27% of patients after banding because of some tight sensation. A little enema of 10ml lidocaine after finishing all banding procedures avoids this side effect.
- 2) PAIN: can occur in 14% of patients ,which is usually relieved by warm sitz baths, mild analgesics and avoidance of hard stool by taking mild laxatives or bulk-forming agents.

- 3) **BLEEDING:** minimal early bleeding is common to observe in 13% of patients but severe bleeding occurs in 0.1% of patients due to mucosal necrosis and ulceration at the site of bleeding.
- 4) **PERIANAL SEPSIS:** can occur in minority of patients which needs to be attended immediately by surgical debridement to prevent fatal sepsis.

### **HEMORRHOIDECTOMY:**

We have selected patients for this procedure, with 2<sup>nd</sup> degree haemorrhoids with skin tags and most of the patients with 3<sup>rd</sup> & 4<sup>th</sup> degree haemorrhoids. Since, hemorrhoidectomy is difficult in very minimal haemorrhoid like grade 1 hemorrhoid, it is excluded for this group. Surgical procedure can be accomplished readily with spinal anaesthesia.

### TECHNICAL DETAILS:

#### MILLIGAN MORGAN OPEN HEMORRHOIDECTOMY:

This is the method developed by Dr. Miligan and morgan in united kingdom in 1937 which is the most commonly used technique and is widely considered to be the most effective surgical technique for treating hemorrhoids. In this method, the hemorrhoidal tissue is excised radially at one or more sites and each excision includes the external skin component of the hemorrhoidal complex in continuity with the strip of anal mucosa

and the underlying hemorrhoidal plexus. Adequate bridges of skin and mucosa must be left intact between the excisions to prevent stenosis developing during healing. The dissection is in the deep submucosal plane between the hemorrhoidal plexus and the internal sphincter muscle which must be identified and preserved.(8)

The procedure is done under regional anaesthesia. With the patient in lithotomy position and buttocks projecting well beyond the end of the table, the anal region is cleaned and draped with sterile towels & instrument table are arranged. A proctoscope is inserted and when slowly withdrawn allows the haemorrhoids to prolapse.

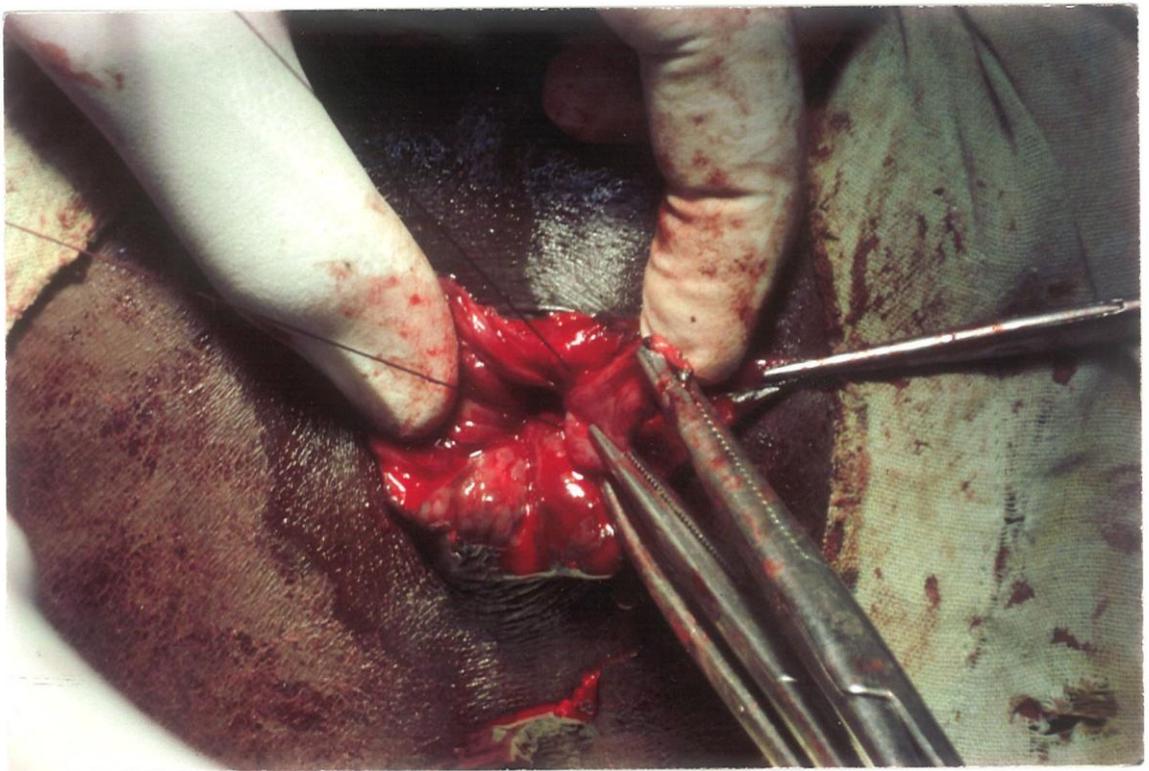
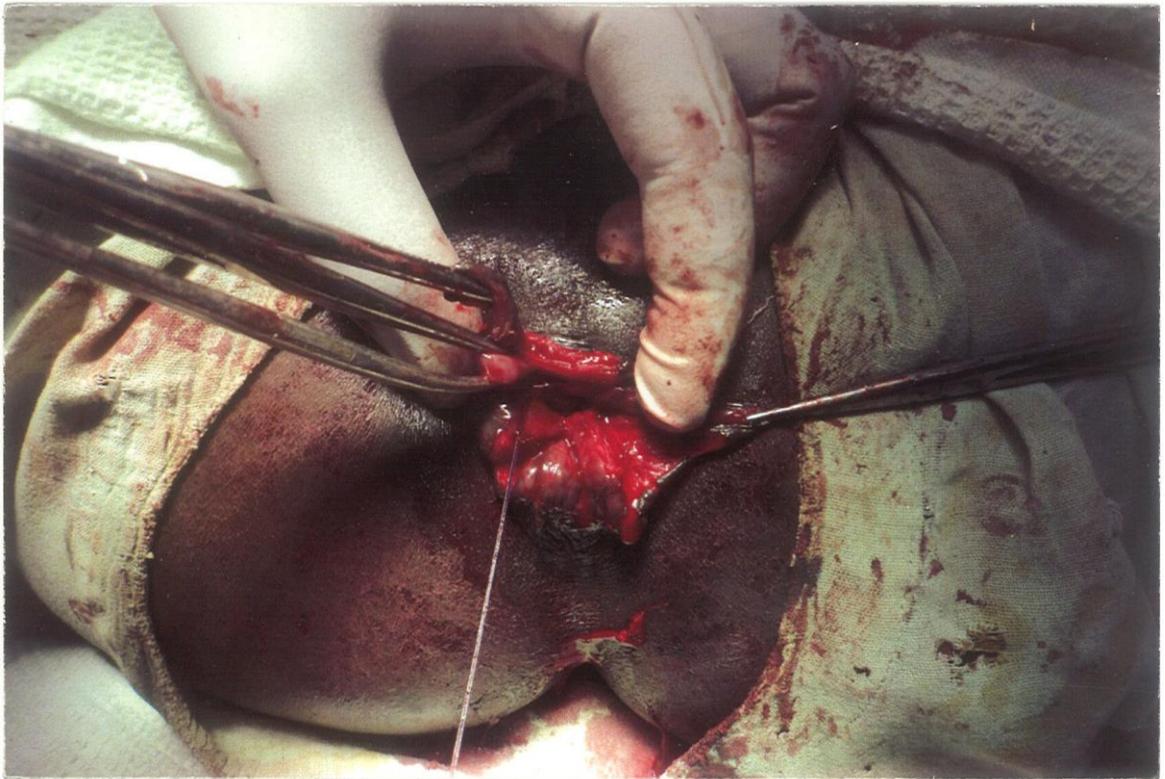
#### **Application of skin forceps:**

The skin component of the main piles are seized with forceps and retracted outwards. This causes the pile mass to protrude out to carrying extent.

#### **Application of mucosa forceps:**

The purple anal mucosa is seized and drawn outwards. This pulls the piles well out of the anus and brings into view of the pink rectal mucosa at its upper pole. A crown which is put in the apex of the pile mass using 2-0 chromic catgut is kept as stay suture.

## HEMORRHOIDECTOMY:



It is often easier to mark all the incisions in the anal canal to ensure adequate skin and mucosal bridges between the excisions, before proceeding with the removal of first haemorrhoid. After traction of the skin & mucosa forceps, a V- shaped cut is made in the perianal skin. The point of V being 2.5 – 3 cm away from the muco-cutaneous junction. The dissection is deepened under the V-cut to develop the plane outside the hemorrhoidal tissue , but great care must be exercised to ensure that this dissection is inside the internal sphincter. The muscle fibres should be clearly visualised and preserved.

The hemorrhoidal tissue is dissected off the underlying internal sphincter up in to the anal canal until it is attached by its pedicle of mucosa and the feeding vessels of plexus. Pedicle is transfixed & the pile mass is cut 2-3mm distal to the ligature. Hemostasis is achieved with diathermy coagulation and so painful anal pack is avoided. The other primary & secondary pile masses are ligated & excised in the same manner. The surgeon is often concerned by the residual hemorrhoidal tissue left in situ under the bridges of stretched and prolapsed mucosa and anoderm. In almost every patient healing with scar contraction draws this tissue back in to the anal canal and reattaches it to the muscle coat.(8)

### **Assess the size of the anal canal:**

After the excision and ligation, finger is passed to determine the size of the anal canal and any tightness can be stretched adequately.

To reduce the pile pedicles completely, a dry gauze is inserted. After that loose skin edges are trimmed to have better wound healing. There is no pain immediately after surgery because of anaesthesia. As the drug effect wears off, pain starts requiring sedation. Patient allowed to take normal but high fibre diet on the same evening.

### **COMPLICATIONS:**

- 1) Hemorrhage.
- 2) hematoma
- 3) Pain.
- 4) Retention of urine.
- 5) Wound infection.
- 6) Stenosis
- 7) Fistula formation.
- 8) Fecal incontinence, rarely.

## CLOSED FERGUSON HEMORRHOIDECTOMY:

This is a surgical method developed by Drs. Ferguson and Heaton in 1952, which is a modification of Milligan-Morgan method described above. On completion of excision of pile mass, the cut edges of the skin and mucosa are approximated with absorbable sutures. It has no advantage in terms of wound healing because of the high rates of suture breakage during immediate bowel movement.(8).

## **RESULTS OF THE STUDY**

In this study, we have included 120 cases of haemorrhoids who attended government rajaji hospital, Madurai during the two year period 2010-2012.

### **THE STUDY GROUPS:**

Group I : Sclerotherapy

Group II : Rubber band ligation

Group III : Hemorrhoidectomy

### **AGE INCIDENCE:**

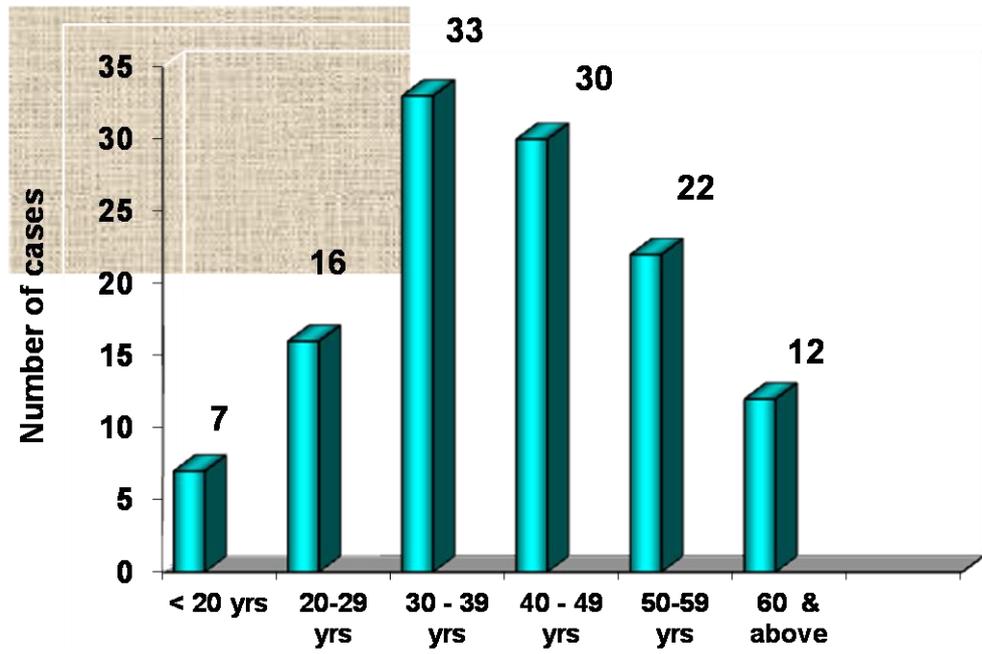
In this study the range of age included are 17-70 yrs and the majority of cases are between 30 -50 yrs of age. The incidence of haemorrhoids apparently increases with age.

## A : CHARACTERISTICS OF CASES STUDIED

**Table 1 : Age distribution**

<b>Age group</b>	<b>Cases</b>	
	<b>No</b>	<b>%</b>
Upto 20 years	7	5.8
20- 29 years	16	13.3
30-39 years	33	27.5
40- 49 years	30	25
50 – 59 yrs	22	18.3
60 yrs & above	12	10
Total	120	100
Range	17 - 70 years	
Mean	40.8 years	
SD	12.7 years	

## AGE DISTRIBUTION:

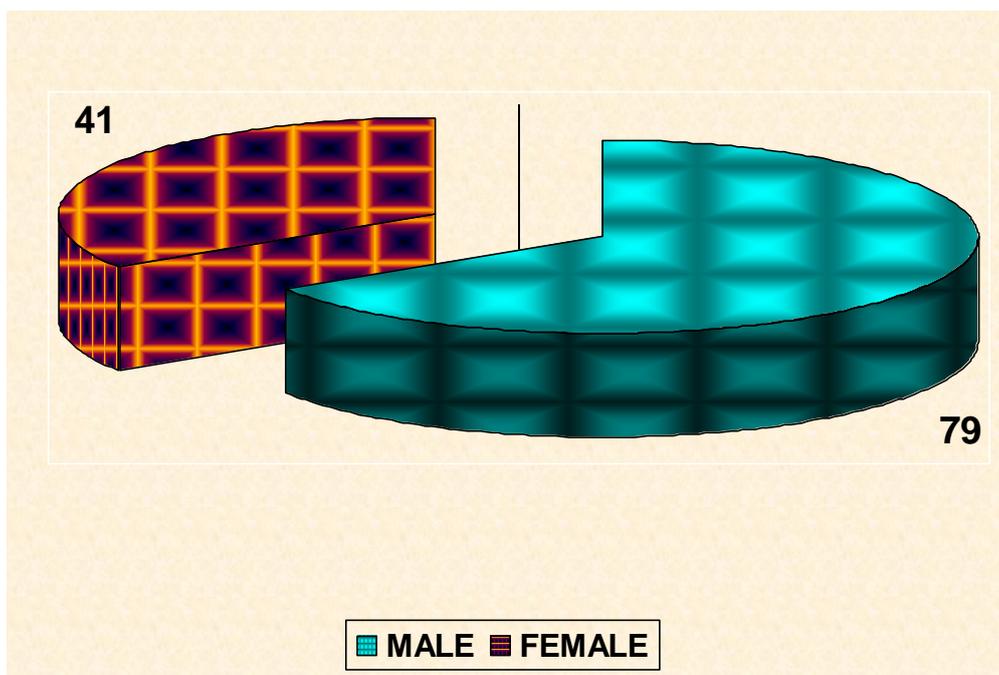


## SEX INCIDENCE:

It is found in this study, that the incidence is higher in males than females.

**Table – 2: Sex Distribution**

Sex	Cases	
	No	%
Male	79	65.8
Female	41	34.2
Total	120	100



## **FAMILIAL PREDISPOSITION:**

In this study group, only three patients had family h/o of haemorrhoids. In those cases, their father had h/o surgical treatment taken for haemorrhoids. It is not usually hereditary, may be related to the common diet habits.

## **CLINICAL PRESENTATION:**

In this study, the symptoms more prevalent are bleeding , prolapse and constipation..

**BLEEDING:** It is the most common presenting feature in most of the cases. Among 120 cases, 70 had presented with bleeding.

**CONSTIPATION:** It is common associated symptom in patient presenting with haemorrhoids. In this study, 69 cases had this symptom.

**PROLAPSE:** This is the annoying symptom for which most of the patients turn up for treatment . It is present in 42 no of cases.

**MUCOUS DISCHARGE :** This is often associated with prolapsed of pile mass. It is noted in 20 no of cases.

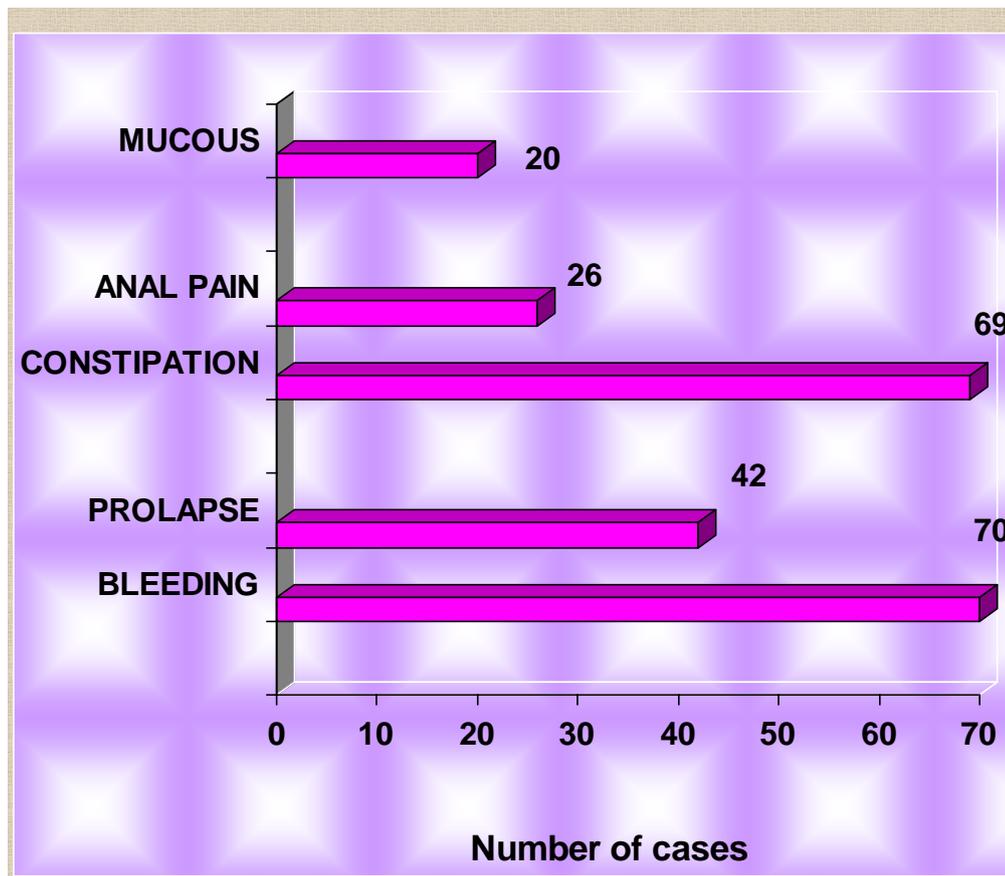
**ANAL IRRITATION:** In this study , this symptom was present in 26 no of cases.

Table – 3

**CLINICAL FEATURES.**

**Table 3 : Clinical presentations**

<b>Clinical presentations</b>	<b>Yes</b>		<b>No</b>	
	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>
Bleeding	70	58.3	50	41.7
Prolapse	42	35	78	65
Constipation	69	57.5	51	42.5
Anal Pain	26	21.7	94	78.3
Mucous	20	16.7	100	83.3

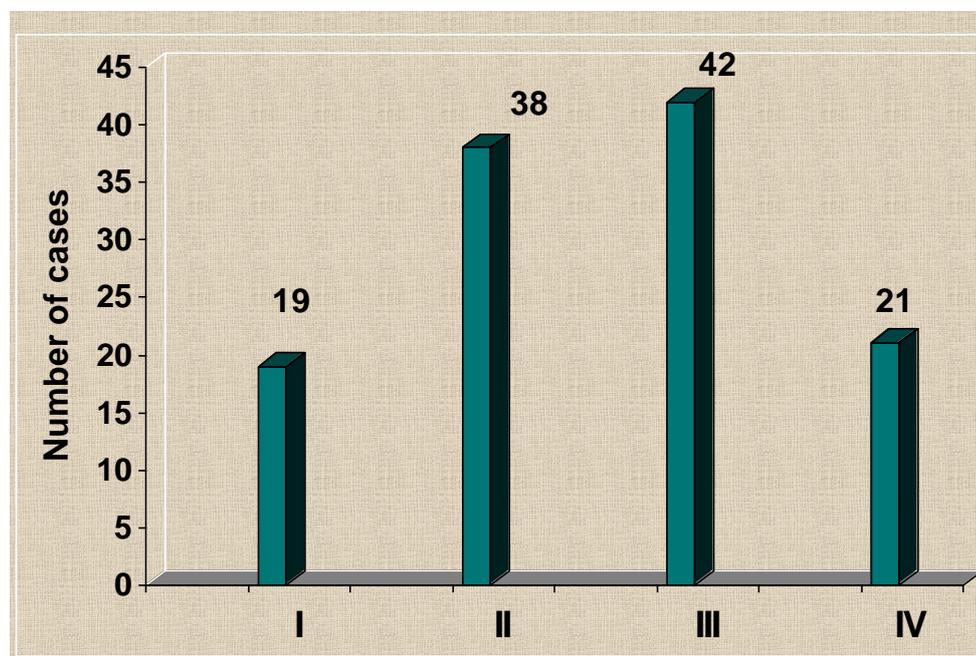


## PROCTOSCOPY:

It is done all cases and the degree of haemorrhoids are noted and all the treatment under study are applied to each degree of haemorrhoids and the results are compared. The cases in this study mostly belongs to II and III degree haemorrhoids.

**Table 4 : Degree of Haemorrhoids**

Degree of Haemorrhoids	Cases	
	No	%
I	19	15.8
II	38	31.7
III	42	35
IV	21	17.5
Total	120	100



## **COLONOSCOPY:**

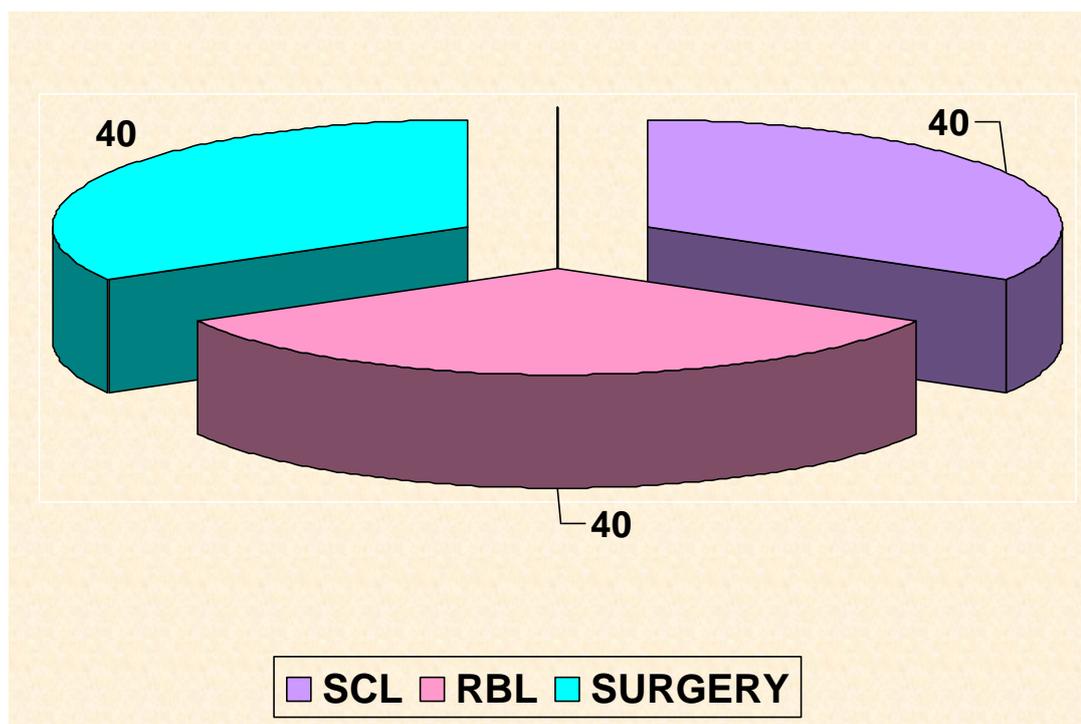
Colonoscopy was done in all cases presented with bleeding per rectum and sigmoidoscopy was done in other cases of haemorrhoids to rule out any secondary abdominal pathological causes of haemorrhoids. All cases included in this study underwent this investigation and found to be normal and concluded to have primary haemorrhoids only.

## INTERVENTIONS DONE:

Among 120 cases , equal no of cases are included in each study group.

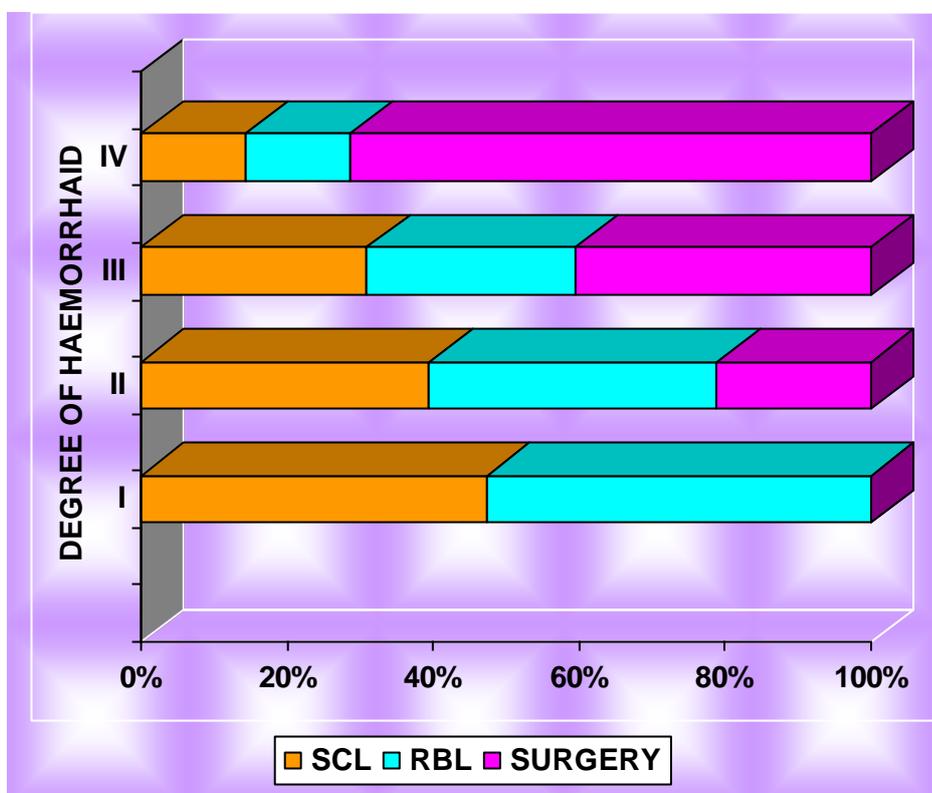
**Table 5 : Treatment**

Treatment	Cases	
	No	%
Injection Sclerotherapy(SCL)	40	33.3
Rubber Band Ligation(RBL)	40	33.3
Open & closed haemorrhoidectomy (Surgery)	40	33.3
Total	120	100



**Table –6 : Mode of treatment and degree of haemorrhoids**

Degree of Haemorrhoids	No. of cases	Mode of Treatment					
		SCL		RBL		Surgery	
		No.	%	No.	%	No.	%
I	19	9	47.4	10	52.6	-	-
II	38	15	39.5	15	39.5	8	21.1
III	42	13	31	12	28.6	17	40.5
IV	21	3	14.3	3	14.3	15	71.4



## **INJECTION SCLEROTHERAPY:**

In this study, 40 cases are subjected to sclerotherapy. Among them 9 cases are first degree haemorrhoids, 15 cases are second degree haemorrhoids, 13 cases are third degree and 3 cases are fourth degree haemorrhoids. Cure is achieved in 23 number of patients. During the follow up, 2 cases are treated with second injections.

## **OUTCOME FOR SCL**

Among the 40 patients who are treated with injection sclerotherapy, recurrence was recorded in 0 case in first degree, 5 cases in second degree, 9 patients in third degree and all 3 patients in fourth degree. Recurrence was then treated with hemorrhoidectomy. Overall cure rate is found to be 57.5%. It is also noted that sclerotherapy gives best results (success rate 88%) in first degree haemorrhoids.

## **RUBBER BAND LIGATION:**

40 patients are subjected to rubber band ligation. Among them, 10 cases belong to first degree, 15 cases are second degree, 12 cases are third degree, 3 cases are fourth degree haemorrhoids. Cure is achieved in 30 number of patients

## **OUTCOME FOR RBL**

Among 40 cases who are treated with rubber band ligation , recurrence was noticed in 4 patients in first degree, 1 case in second degree , 2 patient in third degree and all 3 patient in fourth degree haemorrhoids. The overall cure rate was found to be 72.7% and best success rate was achieved in second degree haemorrhoids.

## **HEMORRHOIDECTOMY:**

40 patients are treated with hemorrhoidectomy, both open and closed method. Since surgical excision is not feasible in first degree haemorrhoids, they are not included. This Study group has 8 number of cases in second degree, 17 cases in third degree, 15 cases are fourth degree. Cure is achieved in 36 number of patients.

## **OUTCOME FOR SURGERY:**

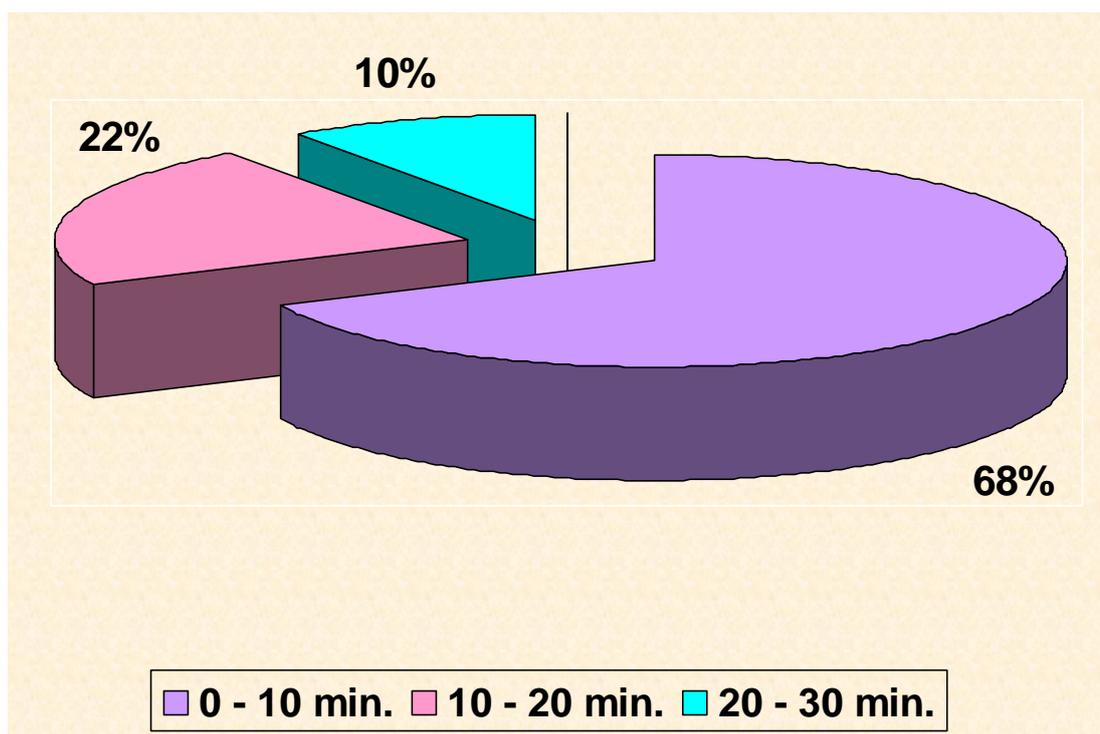
Among 40 patients who are treated with surgery , recurrence was noticed in 1 case of second degree, 2 cases with third degree, and 1 case with fourth degree haemorrhoids. Recurrent pile mass were treated later with surgery. Overall cure rate was found to be 97.5%

## TAKEN FOR EACH PROCEDURE

The duration of time taken for the procedure is approximately less than 30 min. Sclerotherapy and band ligation being a simple outpatient procedure, they take less than 10 to 20 min. Surgery can take little longer time, but mostly not more than 30 min in our study.

**Table 7 : Time taken**

Time taken ( in minutes)	Cases	
	No	%
0 – 10	81	67.5
10 – 20	27	22.5
20 – 30	12	10
Total	120	100



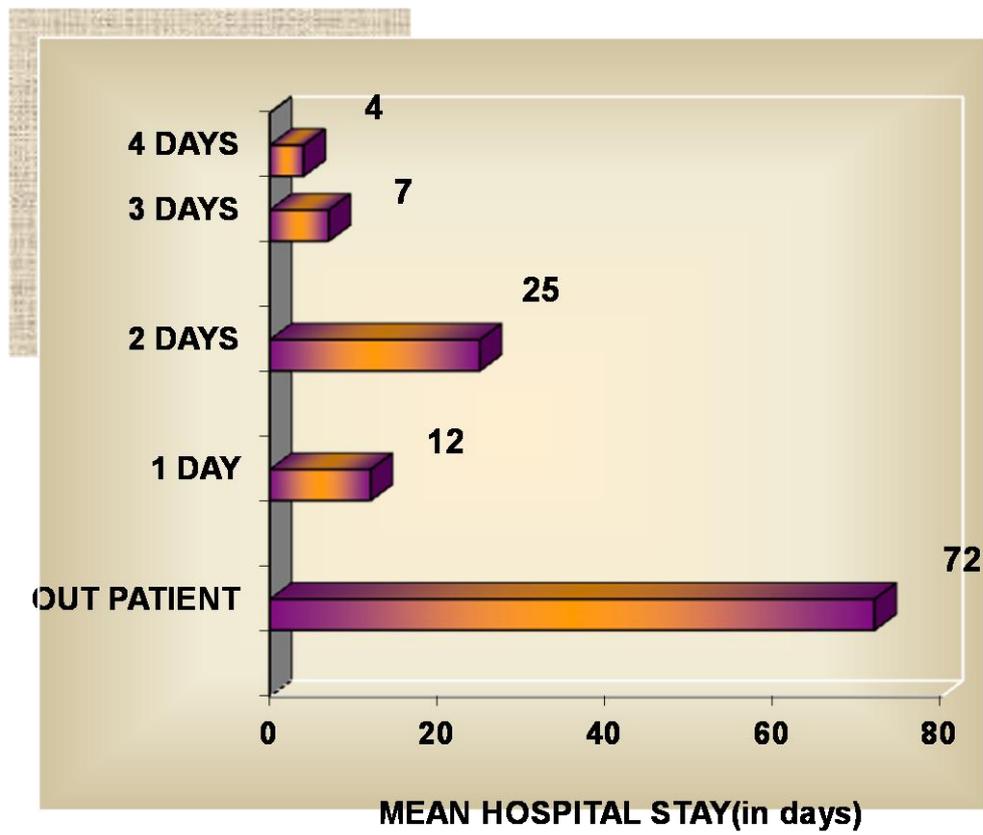
## **POST- OPERATIVE HOSPITAL STAY.**

Non- surgical procedures like sclerotherapy and band ligation are generally done as out patient procedure under local anaesthesia whereas surgery has to be done under regional anaesthesia and it is essential that the patient has to be observed. In our study, 3 patients of RBL group and 6 patients of SCL group required observation for 1-2 days, all others are treated on outpatient basis. All the patients under surgery group are treated as inpatients for a range of 1-4 days.

**Table 8 : Hospital stay**

<b>Hospital stay ( in days)</b>	<b>Cases</b>	
	<b>No</b>	<b>%</b>
Out patients	72	60
1 day	12	10
2 days	25	20.8
3 days	7	5.8
4 days	4	3.3
Total	120	100

## HOSPITAL STAY:



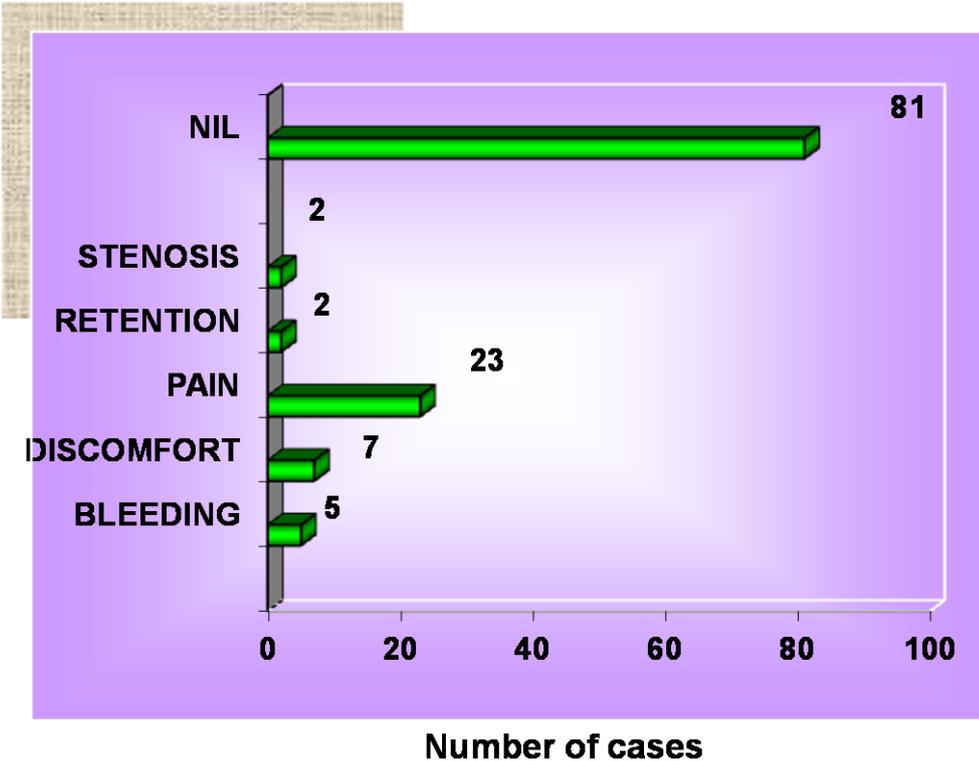
## COMPLICATIONS AFTER THE PROCEDURE:

Complications after each procedure are studied under the following parameters. Among all patients pain most commonly occurred after surgery, bleeding observed in 1 patients in surgery group, 2 patients in RBL group, and 2 patients in SCL group. Stenosis was observed in 2 patients on follow up in patients of hemorrhoidectomy group. Retention occurred in 1 case each in surgery & RBL group.

**Table 9 : Complications**

Complications	Cases	
	No	%
Bleeding	5	4.2
Discomfort	7	5.8
Pain	23	19.2
Retention	2	1.7
Stenosis	2	1.7
Total cases with complications	39	32.5
Total cases without complications	81	67.5
Total	120	100

**COMPLICATIONS:**

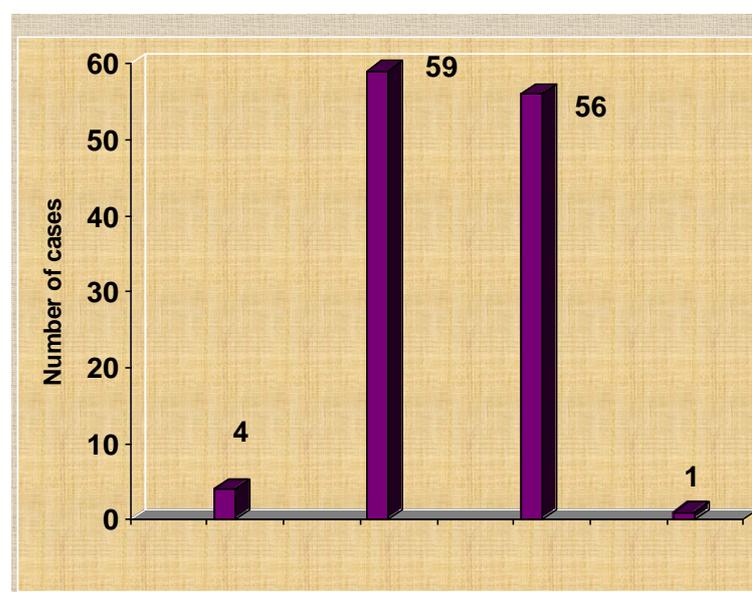


## FOLLOW UP

All the patients are mostly followed up for an average of 10 months and any complications occurring in the follow up period are noted.

**Table 10 : Follow up**

Follow up ( in months)	Cases	
	No	%
Upto 6 months	4	3.3
7 – 9 months	59	49.2
10 – 12 months	56	46.7
> 12 months	1	0.8
Total	120	100
Range	6 – 14 months	
Mean	9.7 months	
S.D.	1.7 months	

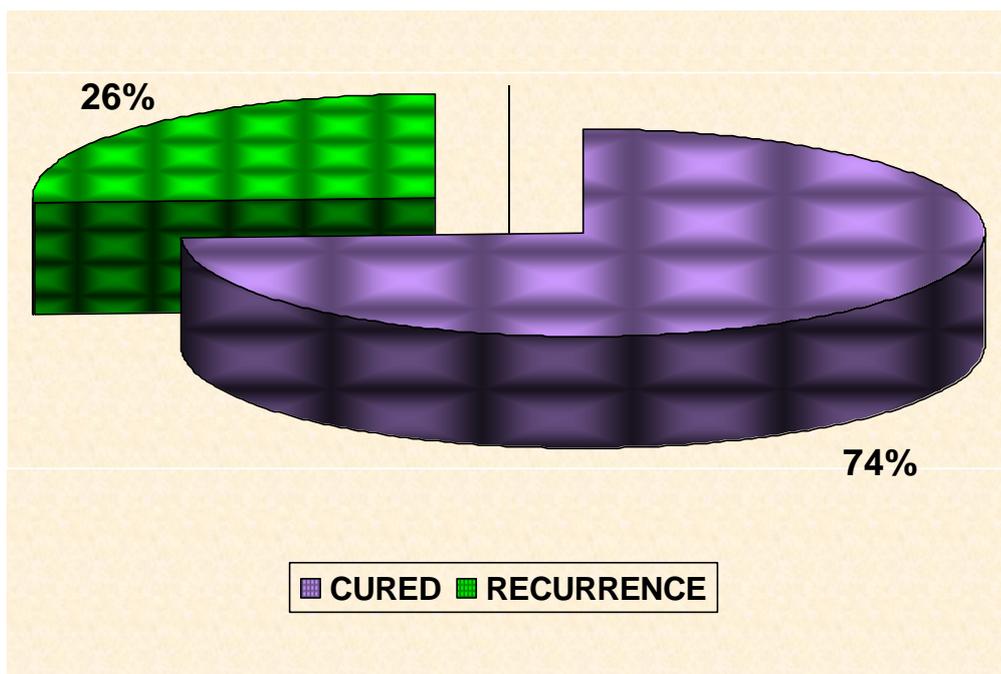


## OUTCOME FOR EACH PROCEDURE:

Almost 74% of cases treated with some form of treatment under study are cured of their symptoms and disease. Recurrence in each case is treated with alternative modalities.

**Table 11 : Outcome**

Outcome	Cases	
	No	%
Cured	89	74.2
Recurrence	31	25.8
Total	120	100

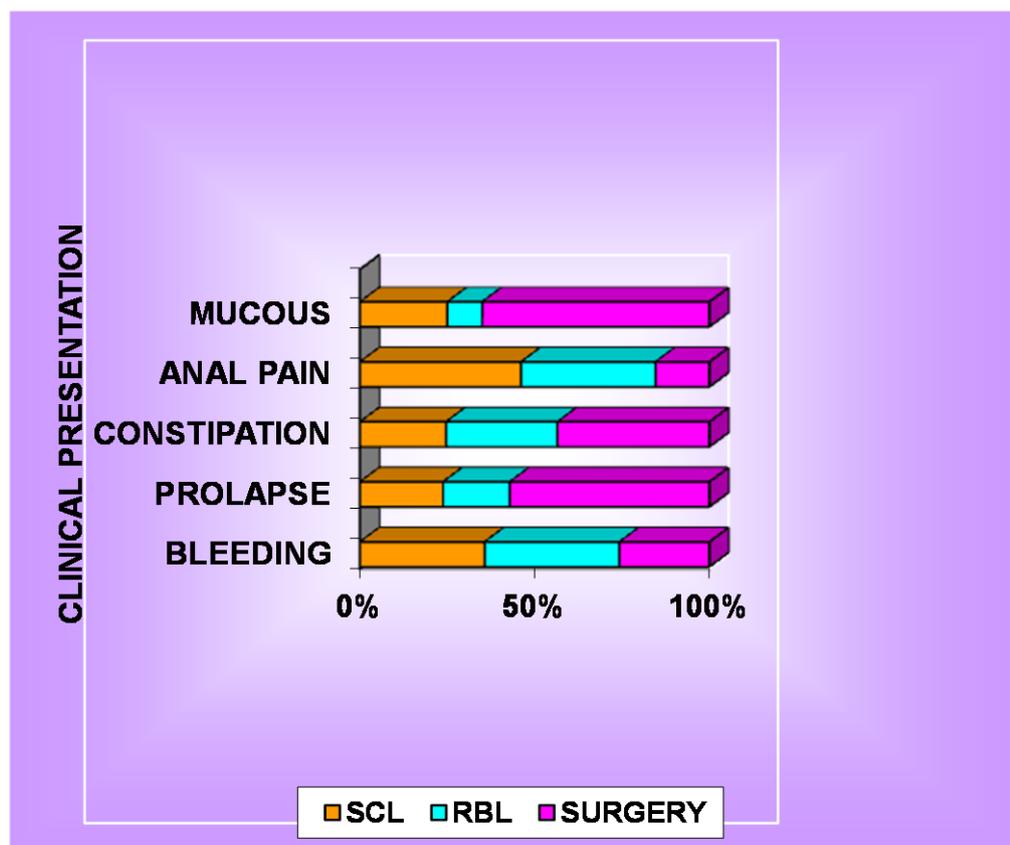


## B : EFFICACY OF VARIOUS MODES OF TREATMENT

**Table 12 : Clinical presentation and mode of treatment**

Clinical presentation	Total number of cases	Mode of treatment					
		SCL		RBL		SURGERY	
		No.	%	No.	%	No.	%
Bleeding	70	25	35.7	27	38.6	18	25.7
Prolapse	42	10	23.8	8	19.0	24	57.1
Constipation	69	17	24.6	22	31.9	30	43.5
Anal pain	26	12	46.2	10	38.5	4	15.4
Mucous	20	5	25	2	10	13	65

# CLINICAL PRESENTATION AND MODE OF TREATMENT

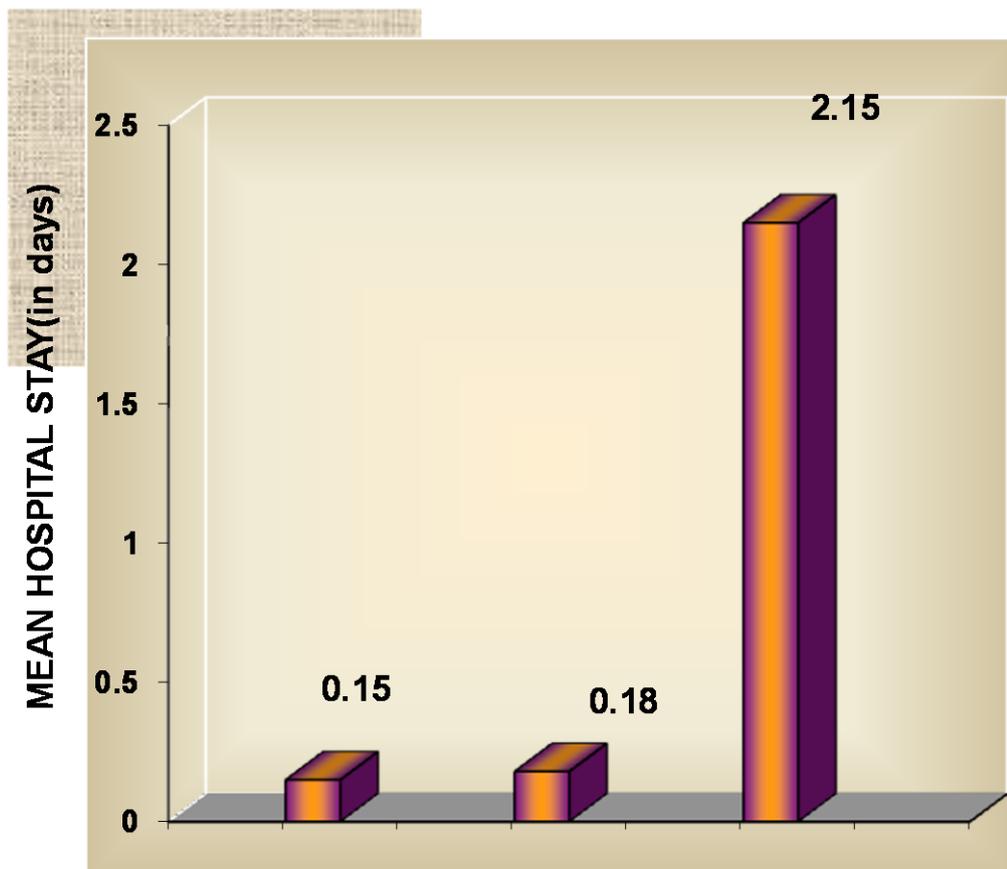


**Table 13 : Mode of treatment and Hospital stay:**

It is found that longer hospital stay is required for surgery group which is statistically significant, which can be attributed to the need of anaesthesia and observation for related complications.

<b>Mode of treatment</b>	<b>Hospital stay ( in days)</b>		
	<b>Range</b>	<b>Mean</b>	<b>SD</b>
SCL	0 – 1	0.15	0.36
RBL	0 – 2	0.18	0.5
Surgery	0 - 4	2.15	0.98
<b>'p'</b>	<b>0.0001</b> <b>Significant</b>		

**MODE OF TREATMENT &  
HOSPITAL STAY.**

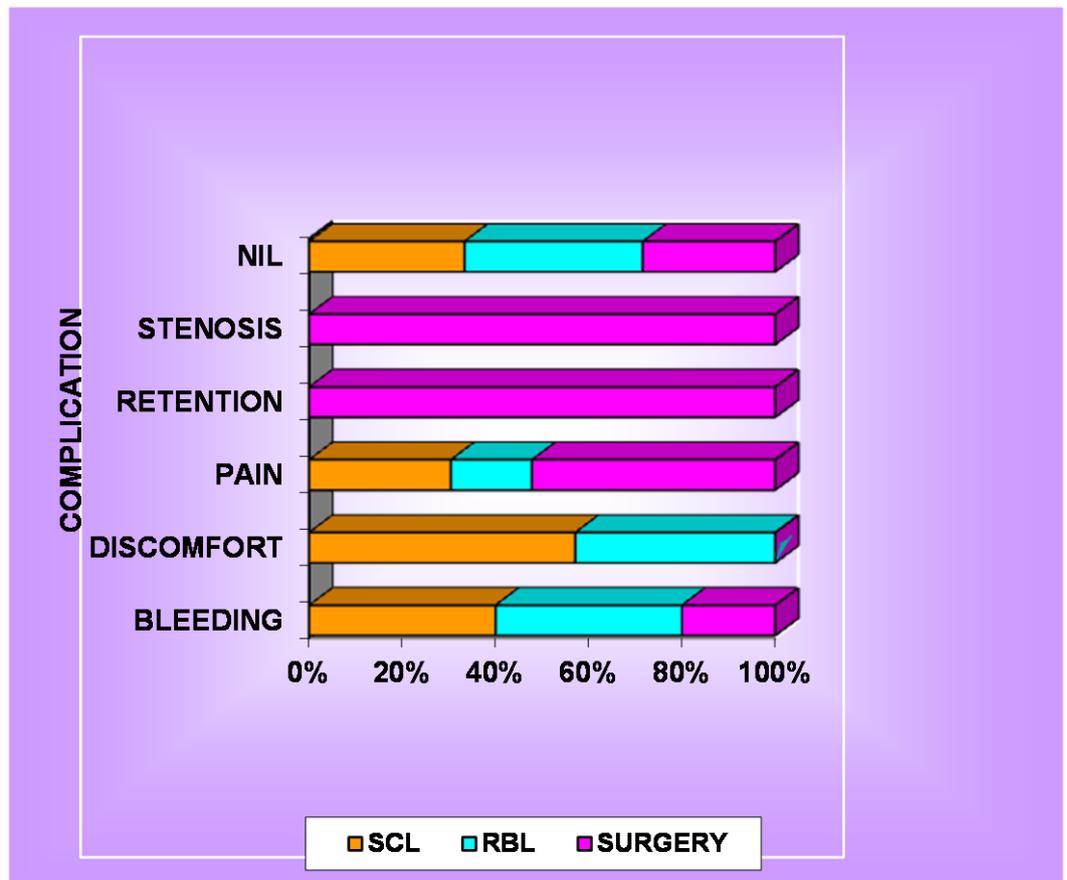


**Table 14 : Mode of treatment and complication:**

It is found in the study, that postoperative pain most frequently occurs after surgery. Other groups are associated with minimal percent of discomfort.

Complication	No. of cases	Mode of Treatment					
		SCL		RBL		Surgery	
		No.	%	No.	%	No.	%
Bleeding	5	2	40	2	40	1	20
Discomfort	7	4	57.1	3	42.9	-	-
Pain	23	7	30.4	4	17.4	12	52.2
Retention	2	-	-	-	-	2	100
Stenosis	2	-	-	-	-	2	100
Nil complications	81	27	33.3	31	38.3	23	28.4

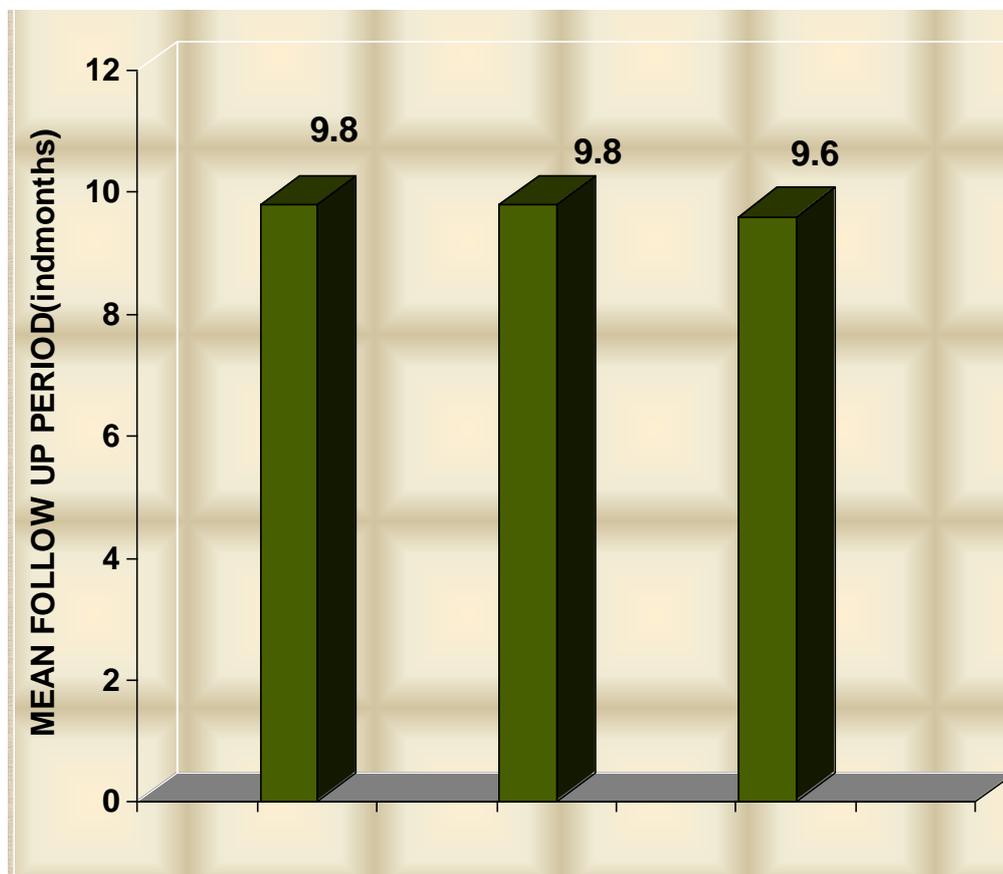
## MODE OF TREATMENT & COMPLICATIONS .



**Table 15 : Mode of treatment and Follow up period:**

All the patients in each group are followed up for an average of 10 months for effective comparison of outcome.

Mode of treatment	Follow up period ( in months)		
	Range	Mean	SD
SCL	7 – 12	9.8	1.5
RBL	6 – 12	9.8	1.9
Surgery	6 – 14	9.6	1.9
‘p’	0.7019 Not Significant		

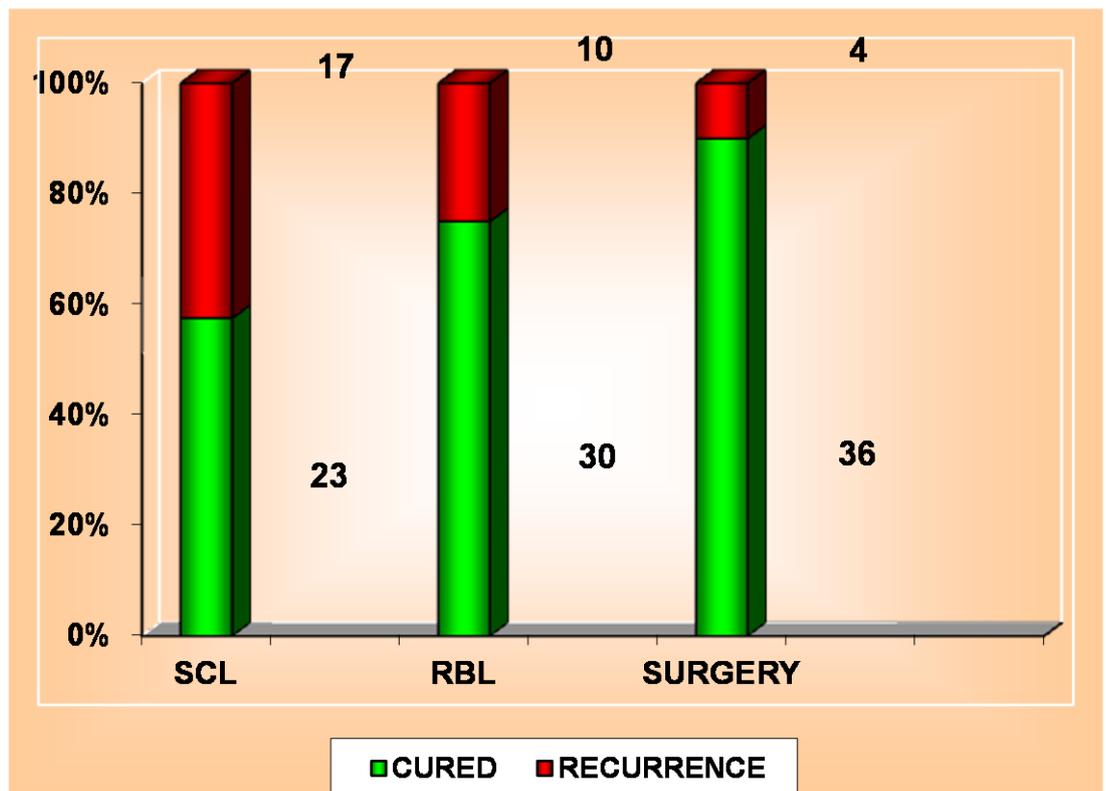


**Table 16 : Mode of treatment and Outcome in total cases:**

It is found that the surgery remains the best treatment option considering the overall cure rate in all degrees of haemorrhoids and it is statistically significant.

Mode of treatment	No. of cases	Outcome			
		Cured		Recurrence	
		No	%	No	%
SCL	40	23	57.5	17	42.5
RBL	40	30	75	10	25
Surgery	40	36	90	4	10
'p' value between SCL & RBL Groups		0.156 Not Significant			
<b>SCL &amp; Surgery Groups</b>		<b>0.0023 Significant</b>			
RBL & Surgery Groups		0.1412 Not Significant			

**MODE OF TREATMENT &  
OUTCOME IN TOTAL CASES.**

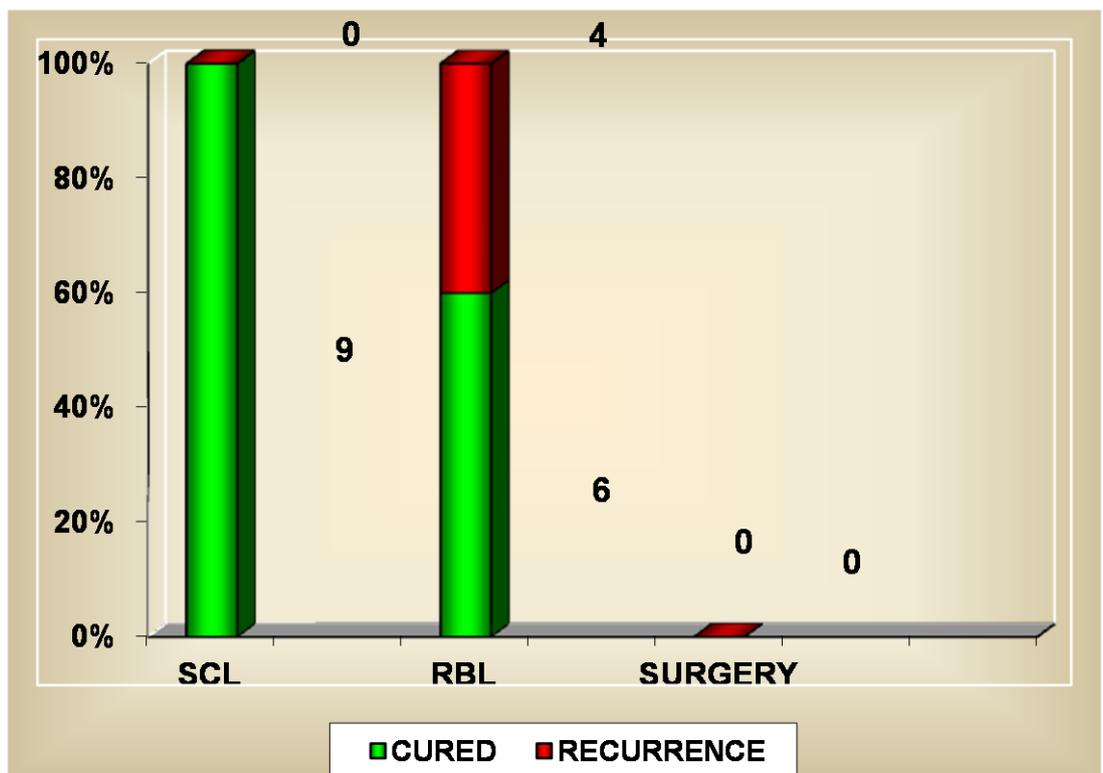


**Table 17 :Mode of treatment and Outcome in I Degree Haemorrhoids:**

Sclerotherapy gives best results compared to band ligation in first degree haemorrhoids which is statistically significant.

Mode of treatment	No. of cases	Outcome			
		Cured		Recurrence	
		No	%	No	%
SCL	9	9	100	-	-
RBL	10	6	60	4	40
Surgery	-	-	-	-	-
‘p’ value between <b>SCL &amp; RBL Groups</b>		<b>0.0377 Significant</b>			

**MODE OF TREATMENT &  
OUTCOME IN I DEGREE HAEMORRHOIDS.**

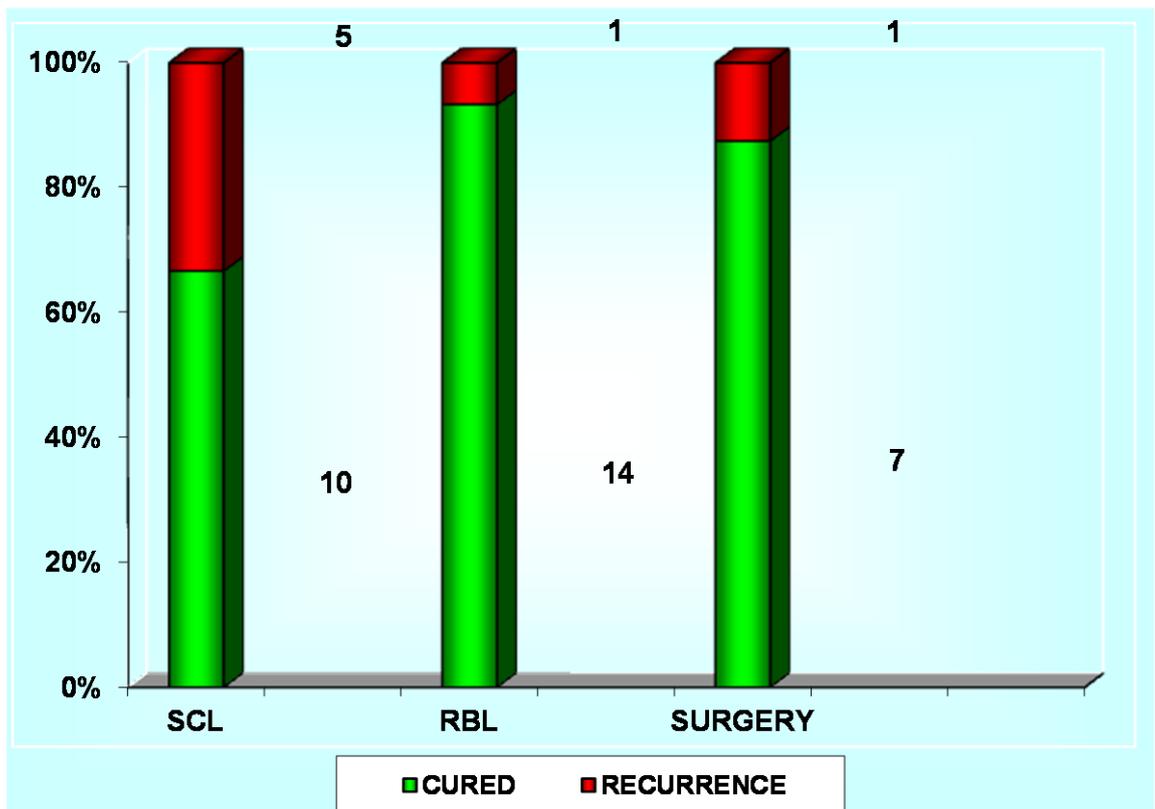


**Table 18 : Mode of treatment and Outcome in II Degree Haemorrhoids:**

In this study, band ligation gives higher cure rate in patients with second degree haemorrhoids, but it is not statistically significant.

Mode of treatment	No. of cases	Outcome			
		Cured		Recurrence	
		No	%	No	%
SCL	15	10	66.7	5	33.3
RBL	15	14	93.3	1	6.7
Surgery	8	7	87.5	1	12.5
‘p’ value between					
SCL & RBL Groups		0.0843 Not Significant			
SCL & Surgery Groups		0.2876 Not Significant			
RBL & Surgery Groups		0.585 Not Significant			

**MODE OF TREATMENT &  
OUTCOME IN II DEGREE HAEMORRHOIDS.**

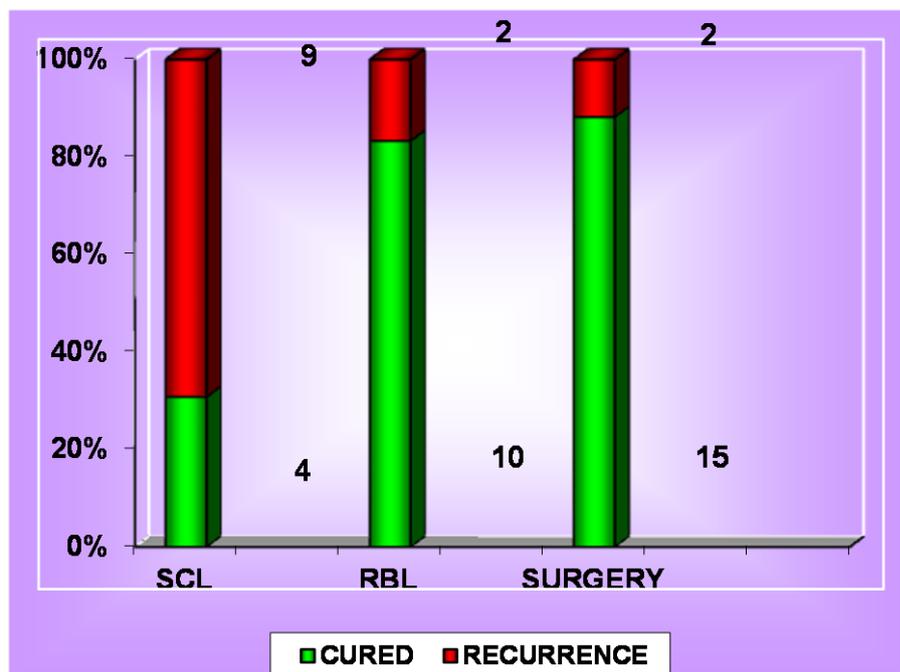


**Table 19: Mode of treatment and Outcome in III Degree Haemorrhoids:**

In patients with III degree haemorrhoids, surgery gives best cure rates compared to other forms of treatment.

Mode of treatment	No. of cases	Outcome			
		Cured		Recurrence	
		No	%	No	%
SCL	13	4	30.8	9	69.2
RBL	12	10	83.3	2	16.7
Surgery	17	15	88.2	2	11.8
‘p’ value between					
SCL & RBL Groups		0.025 Significant			
SCL & Surgery Groups		0.0019 Significant			
RBL & Surgery Groups		0.5562 Not Significant			

**MODE OF TREATMENT &  
OUTCOME IN III DEGREE HAEMORRHOIDS.**

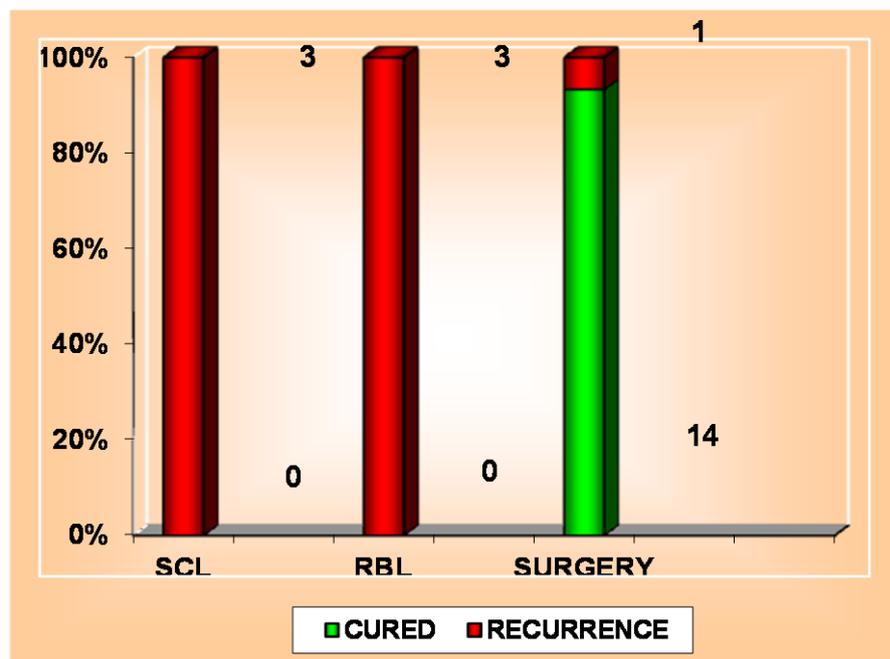


**Table 20: Mode of treatment and Outcome in IV Degree Haemorrhoids:**

In patients with prolapsed haemorrhoids , surgery is the best curative therapy which is found to be statistically significant.

Mode of treatment	No. of cases	Outcome			
		Cured		Recurrence	
		No	%	No	%
SCL	3	-	-	3	100
RBL	3	-	-	3	100
Surgery	15	14	93.3	1	6.7
'p' value between SCL & RBL Groups		-			
SCL & Surgery Groups		<b>0.0049 Significant</b>			
RBL & Surgery Groups		<b>0.0049 Significant</b>			

**MODE OF TREATMENT &  
OUTCOME IN IV DEGREE HAEMORRHOIDS.**



## **DISCUSSION & ANALYSIS**

The primary cause for haemorrhoids are erect posture and valveless hemorrhoidal veins. This is supported by the fact that the piles are rare among children and pain relieved by horizontal posture.

The haemorrhoids may be secondary to portal hypertension, pregnancy, intraabdominal tumours and other colonic pathologies. But in our study, we never included secondary haemorrhoids.

In this study, we compare our results with various other studies comparing various treatment options for haemorrhoids done at different parts of the world and analysis is done.

## AGE INCIDENCE:

Hemorrhoids are most commonly noted in 45-65 yrs of age(5). Our study had the result that it is most commonly seen in age group of 30-50 yrs which correlates well with the literature review.

AGE	BHUIYA ET AL(2010)	THIS STUDY(2012)
<20YRS	-	5.8%
21-30 YRS	48%	13.3%
31-40 YRS	33%	27.5%
41-50 YRS	14%	25%
51-60 YRS	3%	18%
>60YRS	1%	10%

## **SEX INCIDENCE:**

In sex incidence, our study coincides with the experience of authors in that male incidence is more than females.

AUTHORS	MALE	FEMALE
GOLIGHER(1969)	66%	33%
EMIN –A-CARAPETTI(1998)	60%	40%
JANI ET AL (2005)	74%	26%
BHUIYA ET AL (2010)	75%	25%
THIS STUDY(2012)	65.8%	34.2%

## CLINICAL PRESENTATION:

In different studies as listed below, bleeding and prolapse were the cardinal symptoms in haemorrhoids. This study also concluded the same. It is also found that constipation is commonly associated symptom.

Authors	Bleeding	Prolapse	Constipation	Discharge	Irritation
Clark et al(1969)	62%	70%	-	34%	24%
U.k.jain(1989)	96%	75%	-	6%	17%
Emin – A- carapett(1998)	70%	68%	-	28%	26%
Bhuiya et al(2010)	100%	-	88%	-	11%
This study(2012)	58%	35%	57%	16%	21%

## **MANAGEMENT:**

### **NON- OPERATIVE METHODS:**

#### **SCLEROTHERAPY:**

According to the authors, sclerotherapy was suitable for first degree haemorrhoids which also coincides with our study. In other degrees , it is less effective and patient may need further procedures for recurrence.

Authours	Cure rate	Cure rate
	1 <sup>st</sup> degree	2 <sup>nd</sup> degree
Milligan	98.3%	68%
Greca et all(1981)	96%	56%
Chang et al(1981)	92%	62%
This study(2012)	100%	66%

## **COMPLICATIONS OF SCLEROTHERAPY:**

### 1) Necrosis & formation of injection ulcers:

In the evolutionary phase of injection treatment, when very strong solutions and other chemicals are used extensive sloughing occurs , sometimes with 5% phenol, but necrosis is rare. Most patients can tolerate 5 ml at each site without risk of necrosis. If necrosis occurs , it leads to formation of ulcers. This is often entirely symptomless and discovered only during follow-up. It may produce mild purulent discharge and pyrexia. No local treatment is necessary for this condition and it resolves spontaneously.

2) Submucosal abscess is a rare complication of the injection treatment.

3) Hematuria & prostatic abscess may result due to deep injection of right anterior pile mass.

4) Stricture formation: The inflammatory reaction to injection in the rectal wall is sometimes excessive and may almost completely surround the bowel to form a stricture and encroach the lumen. But this gradually subsides in few weeks without any treatment.

COMPLICATION		This study(2012)
PAIN	40% (gurley et al)	30%
BLEEDING	-	40%
RECURRENCE	30% (scott et al))	42%
PELVIC SEPSIS	-	nil

In our study, we have not come across any major complication except pain in 30% cases, mild bleeding in 40%cases. Recurrence rate is 42% comparable to other studies.

#### **RUBBER BAND LIGATION:**

According to various authors & this study, rubber band ligation was suitable for second degree haemorrhoids. The criticism of this method is that it does not remove the skin covered component of the piles. So, it is not suited for third degree & external haemorrhoids.

AUTHOURS	CURE RATE
Murie et al (1980)	79%
Stein berg et al (1975)	89%
Wrobleschi et al (1980)	80%
Greca et al (1981)	64%
Splanazani et al (1997)	91%
Shanmugam et al (2005)	90%
Sleisenger 2007	75%
This study(2012)	72%

Another objection is that this method may be followed by secondary hemorrhage, which could be alarming and dangerous when occurring to the patient at home.

Complication		This study(2012)
pain	32% (pradeep et al)	17%
bleeding	1-5% (scott et al)	40%
retention	1% (Schwartz)	Nil
recurrence	30-40 % ( scott et al)	27%

In this study, we have encountered mild late bleeding in 40%cases and no other major complication. It seems that rubber band ligation best suits second degree haemorrhoids and acceptable results with third degree haemorrhoids. First degree haemorrhoids has insufficient tissue for ligator drum , and hence best treated with sclerotherapy. Recurrent cases are always treated with surgical techniques.

### **SURGICAL MANAGEMENT- HEMORRHOIDECTOMY:**

According to authors, hemorrhoidectomy gives good result in all degree of piles , this study also concluded the same result. But it is usually considered for cases of 3rd & 4<sup>th</sup> degree haemorrhoids and early cases when the conservative treatment fails, because of the high incidence of postoperative pain and associated morbidity.

AUTHOURS	NO.OF. CASES	PERIOD OF FOLLOW UP	CURE RATE
Soderland (1962)	100	6-7 yrs	99%
Chang et al (1981)	24	-	97%
Murie et al (1981)	45	1 yr	93%
Shanmugam et al(2005)	-	1 yr	95%
This study(2012)	40	6-18 months	90%

### **Complications:**

- 1) Pain: usually, mild to moderate during the first 12-24 hrs. Often, the patient experiences severe pain that needs sedation.
- 2) Hemorrhage: This occurs when the knot over the pedicle of the pile mass is not done properly or it get loosened after sometime . It should be suspected when patient develops severe pain, urinary retention and pallor. When it occurs, the wound is immediately explored under anaesthesia and hemostasis secured.
- 3) Retention of urine: is more frequent when low spinal anaesthesia is used. But with GA and caudal block, retention occurs in only 3% of cases.

4) Formation of skin tags: To avoid this , the lax wound edges should be trimmed to leave flat open wounds. Sometimes, the whole skin-mucosa bridges between two excised wounds is slack and redundant and became edematous. This edema eventually subsides and the prominent skin tags settles down to normal or fibrosed to become a permanent skin tag.

complication	Varut et al	This study(2012)
pain	1.6-30%	52%
bleeding	0.03 -6%	20%
sepsis	0.5-5.5%	Nil
stenosis	0-6%	0.5%
retention	2-36%	0.5%
Fecal incontinence	2-12%	Nil
recurrence	2-5%	5%

In this study, 40 cases were treated with hemorrhoidectomy, one case developed reactionary hemorrhage and 4 patients developed severe pain requiring opioids.

## **SUMMARY & CONCLUSION:**

The experience in the series of 120 patients with various degrees of haemorrhoids treated at Government Rajaji Hospital, Madurai during the period of October 2010 to October 2012 have been reviewed.

By analysis of the data obtained, the results are studied and the following findings are noted.

- ❖ Common age group 30-50 yrs. Mean- 40 yrs.
- ❖ Male preponderance.
- ❖ Common clinical feature being bleeding, constipation & prolapse of pile mass.
- ❖ Results regarding management as follows:

Sclerotherapy is the better initial treatment option for first degree haemorrhoids which has good acceptable success rate compared to other more invasive and painful procedures.

It has following advantages.

- ❖ OP procedure
- ❖ Less painful.
- ❖ No anaesthesia required.
- ❖ Less complications.

- ❖ Cheaper & faster.
- ❖ Overall Cure rate - 57%

Disadvantages:

- ❖ Multiple injections may be required to achieve good results.
- ❖ Not suitable for higher degree pile masses.

Band ligation is the best initial treatment option for second degree haemorrhoids compared to other methods. It can also be used as the initial treatment for early third degree haemorrhoids with acceptable cure rate.

Advantages:

- ❖ Less painful.
- ❖ No bowel preparation required.
- ❖ No anaesthesia.
- ❖ Less complications.
- ❖ Cheaper.
- ❖ Overall Cure rate – 75%

Disadvantages:

- ❖ External pile mass & skin tags cannot be treated .
- ❖ Secondary hemorrhage may occur.

Surgery (hemorrhoidectomy ) remains the gold standard treatment for third and fourth degree haemorrhoids and the patients for whom other less invasive options failed to cure the disease.

**Advantages:**

- ❖ For III & IV degree & recurrent haemorrhoids.
- ❖ External pile mass & skin tags can be removed.
- ❖ Overall Cure rate – 90%

**Disadvantages:**

- ❖ Painful procedure.
- ❖ Anaesthesia required.
- ❖ More bleeding.
- ❖ Longer duration of stay.

On concluding all these results analysis, non operative techniques like sclerotherapy for first degree haemorrhoids and banding for second degree haemorrhoids gives excellent results.

Surgical treatment like open & closed hemorrhoidectomy remains the ideal treatment option for third & fourth degree haemorrhoids and recurrent cases.

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## PROFORMA FOR DATA COLLECTION

**Name** :

**Age** :

**Sex** :

**Occupation** :

**IP no** :

**DOA** :

**DOD** :

**Presenting c/o** :

Bleedings PR

Mass PR (prolapse)

Constipation

Mucous discharge

Pain during defecation

Anal irritation

**Co – morbid factors** :

old age

COPD / TB

BPH

DM

**Proctoscopy findings:** Gr I GrII GrIII GrIV

**Colonoscopy :** Normal Abnormal

**Treatment:**

1. Sclerotherapy
2. Banding
3. Hemorrhoidectomy

**Outcome:**

cured

recurrence

**Complications** Early Late

Postop Pain Stenosis

Urinary Retention Recurrence

Hemorrhage

Infection

1	barathkumar	47	M	82891	YES	NO	NO	YES	NO	1	R
2	muthumari	50	F	82208	YES	NO	YES	NO	NO	3	S
3	elizabeth	32	F	87584	YES	YES	YES	NO	YES	3	SUR
4	pappuraj	41	M	123232	YES	YES	YES	NO	YES	4	SUR
5	karthick	40	M	1627	NO	NO	NO	YES	NO	2	S
6	mumtaj	51	F	47	YES	NO	NO	YES	NO	1	R
7	jothy	19	F	197654	NO	NO	YES	NO	NO	1	R
8	aandi	17	M	4737	YES	NO	NO	NO	NO	2	R
9	saraswathy	32	F	7775	NO	YES	YES	NO	YES	4	SUR
10	ganesh	32	M	9383	NO	NO	NO	YES	NO	2	SUR
11	karpagam	27	F	10996	YES	NO	NO	NO	NO	1	S
12	soundarapandian	34	M	67225	NO	NO	NO	NO	NO	1	R
13	muniyandi	68	M	9370	YES	YES	YES	NO	YES	4	SUR
14	vijaya	48	F	15733	NO	YES	YES	NO	NO	3	S
15	sivalingam	56	M	25878	YES	NO	YES	NO	NO	2	R
16	gurusamy	32	M	22059	YES	YES	NO	NO	NO	3	SUR
17	kamarnisha	26	F	31608	NO	NO	YES	NO	NO	2	S
18	dharmaraj	47	M	34926	YES	NO	NO	YES	NO	2	S
19	meenakshi	19	F	41528	NO	NO	NO	NO	NO	1	R
20	poornima	30	F	213210	YES	YES	YES	NO	NO	3	R
21	kannan	36	M	46634	YES	YES	NO	NO	YES	4	SUR
22	ganesan	40	M	46654	YES	NO	YES	YES	NO	1	S
23	pillaithevar	63	M	48162	YES	NO	NO	NO	NO	1	S
24	poornima	35	F	53060	NO	NO	NO	NO	NO	2	R
25	natarajan	60	M	54921	YES	NO	YES	NO	NO	3	S
26	jothi	21	F	55937	YES	NO	NO	YES	NO	1	R
27	sampath	65	M	55833	NO	NO	YES	NO	NO	2	SUR
28	revathy	22	F	54345	YES	YES	YES	NO	YES	3	S
29	ganesan	32	M	62457	NO	NO	NO	YES	NO	2	SUR
30	dhanam	32	F	64055	YES	NO	YES	NO	NO	2	R
31	somu	40	M	77262	YES	NO	YES	NO	NO	3	R
32	muthupandi	26	M	74344	NO	NO	NO	YES	NO	2	S
33	paramasivam	27	M	80662	YES	YES	YES	NO	YES	4	R
34	ganesan	32	M	81664	NO	NO	NO	YES	NO	2	S
35	selvam	36	M	80645	YES	NO	YES	NO	NO	3	R
36	sethuraman	52	M	80603	YES	YES	YES	NO	NO	4	SUR
37	sarabegam	25	F	213422	YES	NO	NO	NO	NO	2	S
38	selvam	47	M	4752	YES	YES	YES	NO	NO	3	S
39	kamatchi	63	F	83958	YES	YES	YES	NO	YES	4	SUR
40	nagaraj	34	M	4737	YES	NO	NO	NO	NO	3	S
41	dharmalingam	39	M	4713	NO	NO	NO	YES	NO	2	SUR
42	sarabegam	29	F	123421	YES	YES	YES	NO	YES	3	R
43	balasubramani	43	M	9934	YES	NO	NO	NO	NO	2	S
44	ajith	23	M	476233	NO	NO	NO	YES	NO	1	S
45	eswari	27	F	378127	YES	YES	YES	NO	NO	4	SUR
46	subramani	45	M	13426	YES	NO	NO	NO	NO	1	R

47	valarmathi	48	M	11765	NO	NO	YES	NO	NO	2	SUR
48	ahamed basha	42	M	12876	YES	YES	YES	NO	YES	3	S
49	kaleeswari	31	F	567212	NO	NO	NO	YES	NO	2	S
50	ayyankalai	52	M	20275	YES	NO	NO	NO	NO	1	S
51	nadimuthugopal	61	M	23454	YES	YES	YES	NO	NO	3	R
52	marimuthu	55	M	543256	YES	NO	YES	NO	NO	3	S
53	aravalli	18	F	453544	NO	NO	YES	NO	NO	2	SUR
54	jeyalakshmi	40	F	27666	YES	NO	NO	YES	NO	2	R
55	ponnaiya	34	M	20303	YES	YES	YES	NO	NO	3	SUR
56	baskaran	38	M	31108	NO	NO	NO	NO	NO	2	S
57	bose	26	M	342535	YES	YES	YES	NO	NO	3	R
58	viji	27	F	36963	NO	NO	NO	YES	NO	1	S
59	malaisamy	50	M	36408	YES	YES	YES	NO	NO	3	SUR
60	balraj	50	M	89144	YES	NO	YES	NO	NO	2	SUR
61	ramamoorthy	57	M	39884	YES	NO	NO	NO	YES	3	S
62	haridas	30	M	42148	NO	NO	YES	YES	NO	2	R
63	ramanathan	48	F	35	YES	YES	YES	NO	NO	3	S
64	rajkumar	31	M	43857	YES	NO	NO	YES	NO	2	S
65	maheswari	30	F	153421	YES	NO	YES	NO	NO	3	R
66	arumugam	42	M	43167	YES	NO	NO	NO	NO	2	S
67	hassenfarooq	28	M	45741	NO	YES	YES	NO	YES	4	SUR
68	shanmugam	47	M	47128	YES	NO	YES	NO	NO	3	R
69	lakshmi	35	F	60911	NO	NO	NO	YES	NO	3	SUR
70	perumal	42	M	154324	YES	NO	NO	NO	NO	1	S
71	kalavathy	54	F	45701	NO	YES	YES	NO	NO	4	R
72	murugan	50	M	83949	YES	NO	NO	NO	NO	2	R
73	petchiammal	50	F	40124	NO	YES	YES	NO	YES	3	SUR
74	palkannan	28	M	324321	YES	NO	NO	YES	NO	1	R
75	sundaram	53	M	7390	NO	YES	YES	NO	NO	4	SUR
76	karupayeeammal	40	F	43915	YES	NO	YES	NO	NO	2	S
77	pushparaj	54	M	45701	NO	NO	NO	NO	NO	2	R
78	velmurugan	26	M	125437	NO	YES	YES	NO	NO	4	S
79	kani	18	F	65234	YES	NO	NO	YES	NO	1	R
80	anandavalli	40	F	47920	NO	YES	YES	NO	YES	4	SUR
81	gopal	60	M	505501	YES	YES	YES	NO	NO	4	R
82	muthukumar	70	M	53041	NO	YES	NO	NO	NO	4	SUR
83	ramesh	36	M	54003	YES	NO	YES	NO	NO	3	R
84	velsamy	52	M	53938	NO	YES	YES	NO	YES	3	S
85	mariyammal	38	F	231324	YES	NO	NO	YES	NO	2	R
86	velu	45	M	50570	NO	NO	YES	NO	NO	3	S
87	padmini	33	F	45736	NO	YES	NO	NO	NO	4	SUR
88	kannan	52	M	56486	NO	NO	YES	NO	NO	3	SUR
89	vellaisamy	45	M	50637	NO	YES	YES	NO	NO	4	S
90	rajendran	31	M	80665	YES	NO	YES	NO	YES	3	SUR
91	gurusamy	43	M	62543	NO	NO	NO	YES	NO	2	R
92	ayyanar	42	M	62144	YES	NO	YES	NO	NO	3	SUR

93	subburaj	43	M	62145	YES	NO	NO	NO	NO	1	R
94	periyasamy	65	M	66334	NO	YES	YES	NO	YES	4	S
95	sethukani	47	M	69661	YES	NO	YES	NO	NO	3	SUR
96	sathakkal	65	F	69654	NO	YES	YES	NO	NO	3	R
97	selvam	51	M	69769	YES	NO	NO	NO	NO	2	R
98	eswari	32	F	71583	NO	NO	YES	NO	NO	3	R
99	nagamalai	30	M	71510	NO	YES	YES	NO	YES	3	SUR
100	shahul hameed	26	M	75538	YES	NO	NO	NO	NO	1	S
101	muniyammal	60	F	73468	NO	NO	YES	NO	NO	3	SUR
102	pandiyammal	38	F	80481	YES	NO	YES	NO	NO	2	R
103	sivalingam	48	M	80124	YES	NO	NO	YES	NO	1	S
104	balamurugan	35	M	85893	NO	YES	YES	NO	NO	4	SUR
105	thulasi ram	48	M	85721	YES	NO	NO	NO	NO	2	SUR
106	selvi	32	F	87090	NO	YES	YES	NO	NO	3	S
107	lakshmi priya	19	F	90932	NO	NO	YES	NO	NO	2	R
108	thangammal	46	F	86104	YES	YES	NO	NO	NO	3	SUR
109	maruthurajan	55	M	88497	NO	NO	YES	NO	NO	3	SUR
110	ravi	42	M	88193	YES	YES	YES	NO	NO	4	SUR
111	lingusamy	60	M	85719	YES	NO	NO	YES	NO	2	S
112	periyakaruppu	36	M	86270	NO	YES	YES	NO	YES	4	SUR
113	subbulakshmi	52	F	80541	NO	NO	YES	NO	NO	3	R
114	arumugam	52	M	72541	YES	NO	NO	NO	NO	2	S
115	malairajan	38	M	86060	YES	NO	YES	NO	NO	3	SUR
116	vijayamani	18	M	85220	NO	NO	YES	NO	NO	2	R
117	prema	38	F	80808	YES	NO	NO	YES	NO	2	S
118	mokairaj	58	M	82787	NO	YES	YES	NO	YES	3	SUR
119	syed mohammed	50	M	80588	NO	YES	YES	NO	NO	3	SUR
120	saravanakumar	47	M	73645	YES	NO	NO	YES	NO	2	R