

## COMPARATIVE STUDY OF VARIOUS METHODS OF TREATMENT IN RELATION TO POST PROCEDURAL COMPLICATIONS OF HAEMORRHOIDAL DISEASE

N. Krishna Mohan<sup>1</sup>, D. Ramesh<sup>2</sup>, M. K. Raufuddin<sup>3</sup>

<sup>1</sup>Associate Professor, Department of General Surgery, Gandhi Medical College and Hospital, Secunderabad.

<sup>2</sup>Assistant Professor, Department of General Surgery, Gandhi Medical College and Hospital, Secunderabad.

<sup>3</sup>Final Year Postgraduate, Department of General Surgery, Gandhi Medical College and Hospital, Secunderabad.

### ABSTRACT

#### BACKGROUND

Haemorrhoidal disease is probably one of the oldest ills known to man, perhaps since the time he assumed the upright position. It leads to significant pain, discomfort, and decreased quality of life.

#### AIMS & OBJECTIVES

To compare the various methods of management in relation to the post procedural complications of haemorrhoidal disease.

#### MATERIALS AND METHODS

The study group comprises of 120 patients with complaints of bleeding per rectum attending the outpatient department of General Surgery of Gandhi Hospital, Secunderabad.

After detailed history and proctoscopic examination, they are diagnosed of having Grade II and Grade III haemorrhoids. They are randomly subjected to banding, sclerotherapy and open hemorrhoidectomy of 40 patients each respectively. Follow up of these patients are done to know the complications like pain, bleeding and discharge per rectum, stenosis and recurrence. This was two years prospective study from June 2013 to Sept 2015.

#### RESULTS

Occurrence of haemorrhoids were maximum in fourth decade with male preponderance and with bleeding as major symptoms. Statistical analysis using chi square was done. When comparison was done between above treatment modalities, it was found that pain, bleeding per rectum and anal stenosis were more in patients who underwent haemorrhoidectomy. Discharge per rectum was more in patients who had sclerotherapy and recurrence rate is more in banding.

#### CONCLUSION

In our study sclerotherapy has relatively less severe complications of discharge per rectum when compared to the more severe complications of pain, bleeding per rectum rarely anal stenosis seen in other two methods.

#### KEYWORDS

Banding, Sclerotherapy, Haemorrhoidectomy, Bleeding per rectum.

**HOW TO CITE THIS ARTICLE:** Mohan NK, Ramesh D, Raufuddin MK. Comparative study of various methods of treatment in relation to post procedural complications of haemorrhoidal disease. J. Evid. Based Med. Healthc. 2016; 3(11), 314-320.

DOI: 10.18410/jebmh/2016/76

**INTRODUCTION:** Haemorrhoidal disease is probably one of the oldest ills known to man, perhaps since the time he assumed the upright position.<sup>1</sup> It leads to significant pain, discomfort, and decreased quality of life.

The term haemorrhoids is derived from the Greek word haemorrhoids meaning flow of blood while the word pile comes from Latin pila meaning a pill or ball thus indicating the two cardinal symptoms namely bleeding and relapsing mass per rectum.

The incidence of piles increases with age and it seems likely that at least 50% of people over the age of 50 years

have some degree of haemorrhoid formation. Men seem be affected roughly twice as frequently as women.<sup>2</sup>

Many theories abound as to the causation of this disease and probably even more methods to treat them. Every therapeutic modality has advantage and disadvantage. Among such methods are open haemorrhoidectomy, banding injection sclerotherapy, bipolar diathermy, laser haemorrhoidectomy, infrared photocoagulation, stapler and cryosurgery. Use of open haemorrhoidectomy, bandings and sclerotherapy has been evaluated in my study.

**AIMS AND OBJECTIVES OF THE STUDY:** To compare the various methods of management in relation to the post procedural complications of haemorrhoidal disease.

Submission 14-01-2016, Peer Review 28-01-2016,

Acceptance 05-02-2016, Published 08-02-2016.

Corresponding Author:

Dr. N. Krishna Mohan,

H. No. 3-5-867, Hyderguda,

Hyderabad-500029.

E-mail: krishnamohannaribole@yahoo.co.in

DOI: 10.18410/jebmh/2016/76

**CLINICAL FEATURES: SYMPTOMS:**

**1. Bleeding:** Most common and earliest symptom. Bright red in colour especially after passing a non-blood stained hard stool, usually in absence of pain or pruritis.

Later profuse bleeding dripping into the pan like a tap or spattering the sides like a jet to mark the end of defecation, which is pathognomonic of haemorrhoidal disease. Still later- continuous bright red bloody mucus discharge especially in elderly whose vascular cushions lie permanently outside the anus.<sup>3</sup> The cause of bleeding<sup>4</sup> in the initial phases is due to trauma to the capillaries of the lamina propria which are protected only by a single layer of epithelial cells. Following prolapsed trauma due to wiping or contact with clothing often occurs. Due to repeated trauma, subsequently granulation tissue which is more friable and likely to bleed.

**2. Prolapse:** Protrusion with spontaneous or self-digital reduction of the mass is highly characteristic and is the other cardinal manifestation. Patients may be quite unaware of these or on the other hand some may be plagued by a pile which prolapses and exudes mucus.

**3. Pain and Discomfort:** Presence of severe pain suggests another diagnosis or a complication. However, some studies have found a significant incidence of pain in haemorrhoidal disease.<sup>3</sup>

**SIGNS:** The clinical assessment apart from detailed physical examination includes a digital per rectal examination and proctoscopy.<sup>5</sup> If facilities are available sigmoidoscopy should be done in all patients.

**Categorization of Degrees:** It has been traditional to grade haemorrhoidal disease into four degrees (three according to same) based on the extent of prolapse. Though far from satisfactory due to the fact that it assesses only aspect of haemorrhoidal disease that is prolapsed and that it is variable from time to time it still remains one of the few clinical parameters for comparison of results.

First degree-non prolapsing.

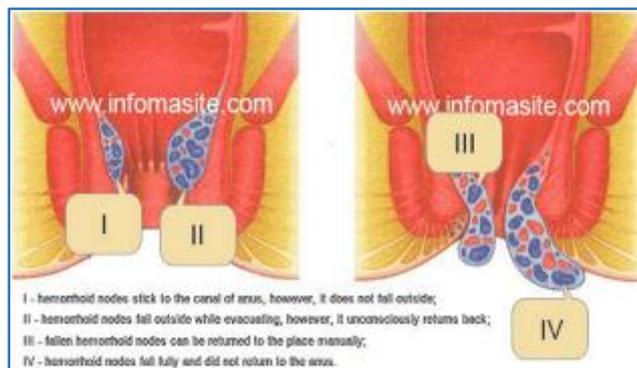
Second degree-cushions that protrude below dentate line on straining but disappear once the straining stops.

Third degree-cushions that descend to the exterior on straining or defecation and remain outside until they are digitally replaced into the anal canal where they remain until the next bowel movement.

Fourth degree-used by some to describe mucosa covered internal cushions that are permanently outside the anal verge and return at once on attempted replacement.

Fifth degree-used by some to describe strangulated or thrombosed piles.

Haemorrhoids are also classified as internal, external or interoexternal based on the lining epithelium.<sup>6</sup>



**Fig. 1: Grades of Haemorrhoids**

**Natural History and Complications:** The natural history is not well known. Some patients with symptoms at some point of time have no further trouble, some have intermittent minor symptoms and some have severe complications.<sup>7</sup> It is not known why or what proportion of patients becomes progressively worse while others don't.

**Complications include:**

1. Severe haemorrhage.
2. Thrombosis- may lead on spontaneous resolution with or without extrusion of clot or may progress to strangulation, infection, abscess formation, septicaemia and the fortunately very rare portal pyemia and pyelephlebitis.
3. Thrombosis of external vascular channels often misnamed as perianal hematoma.
4. Peri anal dermatitis.
5. Prolapse.
6. Anaemia.

**MANAGEMENT OPTIONS:** A wide variety of treatment options are available and the choice of method depends on

- Severity & type of symptoms.
- Degree of prolapsed.
- Expertise of the operator.
- The equipment available.

**1. Conservative/Medical:** for patients with minor symptoms and obviously incorrect diet or hygiene habits and for those who are amenable to suggestion and have the intelligence ability to take it.<sup>8</sup> It is especially suited for patients in early weeks of pregnancy or with complication medical illness like blood dyscrasias.

- a) In patients with principal complications of loose stools, itching and smearing of blood on the toilet paper it is best to begin with a high fibre diet avoiding diarrhoeagenic foods or drink and through gentle lavage after defecation.
- b) Changing defecation habits<sup>7</sup> three errors of bowel habit most prevalent in patients with haemorrhoidal disease are.
  - i. Insisting on having at least one bowel movement daily come what may.
  - ii. Neglect of the first urge to defecate in the morning because it is not convenient to do so.

- iii. Insisting on trying to pass the last portion of stool from the rectum or anal canal in the belief that if it is not passed discomfort will persist all day.
- c) Diet manipulation change to a high fibre diet, which is difficult; addition of a simple bulk forming agent-Bran, sterculia, ispaghula husk, psyllium seed extract and methyl cellulose
- d) Topical applications anecdotal evidence suggests that they do produce some symptoms relief. Most preparations contain several ingredients including topical anaesthetics, steroids and antiseptics. Soft paraffin is frequently used by sufferers and probably works by lubricating the swollen cushions or skin tags. Astringents or hygroscopic agents are often used. Superiority of one over the other remains unproved.<sup>9</sup>

## 2. Surgical Treatment:

**Principles:** Three broad methods have developed in parallel with each one relating to a hypothesis; these are.

- I. Prevention of prolapse by mucosal fixation.
- II. Prevention of congestion or venous impedance by stretching or by sphincterotomy.
- III. Excision of the engorged vascular cushions.

### Surgical Methods: Conventional Haemorrhoidectomy<sup>10</sup>:

It is best suited for intero-external, Prolapsed, thrombosed or secondary haemorrhoids and those with associated conditions of the anus like fissure or fistula. Contraindications include bleeding diathesis, inflammatory bowel disease especially Crohn's disease and immuno compromised patients. In addition, contraindications to regional or general anaesthesia and contraindications to positioning (lithotomy position being the most preferred) are relative.

**Open Haemorrhoidectomy<sup>11</sup>:** Is practiced most frequently in UK as the Milligan-Morgan operation usually under spinal or general anaesthesia in lithotomy position.

**Technique<sup>12</sup>:** the skin covered component of each of the main piles is seized with artery forceps and retracted outwards; the purple anal mucosal component is grasped and drawn down and out. With a V-shaped incision in the anal and peri anal skin dissection is carried out to free the cushions off the internal sphincter for 1.5-2cms and the pedicle transfixed and ligated with either absorbable or non-absorbable suture. The isolated haemorrhoids are then excised a few mm below the apical ligature, the transfixation suture being left long

### Complications<sup>8</sup>:

- 1) **Pain:** The severity of pain experienced is patient dependent.
  - I. Spasm of the sphincter: addition of four finger stretch or sphincterotomy was recommended but no benefit has been demonstrated.

II. The most plausible cause is the exposed raw areas in the anal canal; thus the closed techniques by Parks and Fergusson-Heaton were introduced. With the former there is apparently no pain relief due to the open wound below the dentate line while the latter remains to be tested.

- 2) Reactionary or secondary hemorrhage-7.6% those requiring reoperation-1%.
- 3) Other was rare and requires specific treatment. These include-anal stenosis<sup>13</sup> 2.9% anal fissure-0.5%; abscess-0.6%, fistula in ano-1.2% long term incontinence was noted in 2 patients (n=1134). Other complications include anal skin tags. Pseudo polyps and epidermal cysts. Anal leakage and soiling is common (50%) during early postoperative period but settles in 6-8wks. Causes include anal dilation, loss of sensation and transient reduction in anal canal pressures. Return of anal canal pressure to normal has been described.



**Fig. 2: Open haemorrhoidectomy**

**CLOSED HAEMORRHOIDECTOMY<sup>8</sup>:** Technique-after excision of haemorrhoids, the wound is closed using 3-0 chronic catgut or PGA sutures fixation mucosa to underlying muscle.<sup>14</sup>

Variations in technique include use of left lateral position by Ferguson, prone jack knife position by Khubchandani, adjuvant sphincterotomy and marsupialization by Ruiz-Moreno.

**ELASTIC BAND LIGATION<sup>15</sup>:** Produces fixations of mucosa by causing ulceration rather than a simple sub mucosal inflammation.

Equipment used-a number of instrument have been devised. The original Barron ligator gives the smoothest operation and is sufficiently robust for frequent use. It is the most commonly used. The rubber O rings are 2-3mm and are loaded onto the 11-mm inner drum.

The Mc Giveny ligator is simpler and cheaper but less study. Van Hoorn's banding equipment makes it a one handed procedure using a 1.8 cm proctoscope with a larger rubber band stretched over its tip. Thomson's device is a modified McGiveny applicator used with a proctoscope. Other makes include the Preston gun and a complex multi-action machine popular in France.

Recently ligation device attached to the end of a video endoscope has been described Technique-it is better suited

for 2 or 3 degree haemorrhoids. The base of the cushions lies between 1.5 and 2cms from the pectin and here the mucosal tissue can be grasped with forceps and drawn into a preloaded inner drum. A rubber band is discharged by pressing the trigger.

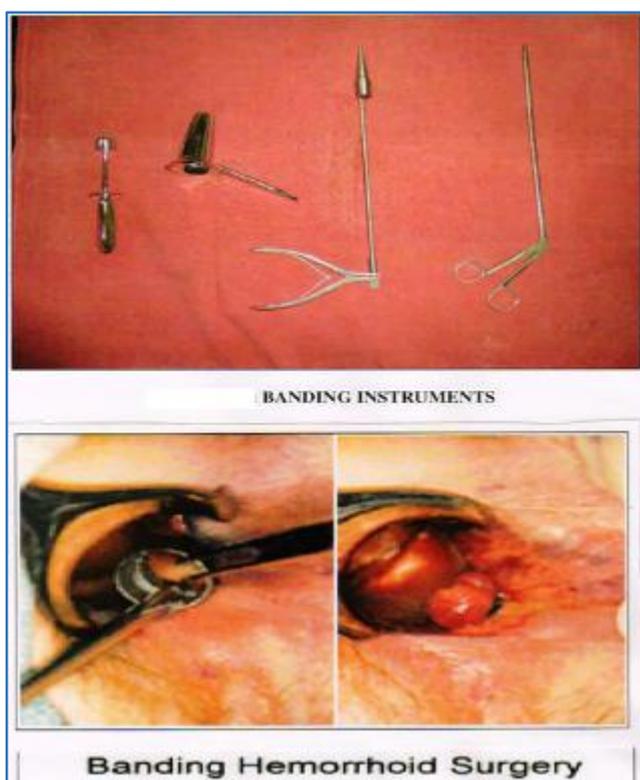
Barron recommended that only one ligation should be performed at each session spaced at 3 weeks' interval. Subsequent authors recommend two or even all three ligations at the same sitting. Some recommend the use of two bands at each site. Additional procedures include phenol injection into the strangulated tissue or freezing it.

**Complications:** Pain-most common at the time of ligation or a few moments later.

Usually mild but occasionally may warrant removal of the band which is not very easy and use of an alternative method. It is felt as discomfort in 20% and severe in 3%.

Bleeding-up to 1% when the necrosed tissue separates, the plane of cleavage between dead and live tissue is vascular granulation tissue that frequently bleeds.

Pelvic cellulites-in 1980 O'Hara reported the first case of fatal Clostridia infection resulting from bandings haemorrhoids Perforation and deep ulceration.



**Fig. 3**

#### Fixation with Tissue Destruction:

**Injection Sclerotherapy<sup>15</sup>:** Sub mucosal injection of 5% phenol in almond or arachis oil leads to necrosis and fibrosis leading to fixation of the mucosa to the muscularis.

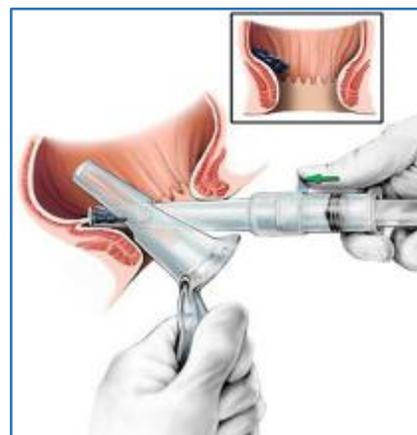
Equipment used is the time honoured Gabriel syringe and needle; newer disposable syringes made of phenol resistant material with three finger control and a Luer Lok device have been devised. Advantages of Gabriel syringe and needle continues are that the needle does not shoot off when the

viscous phenol is injected and the shaft of the needle has a bevelled buffer which ensures that the tip can be inserted for only 1-2 cms, thus reducing the risk of too deep an injection into muscle or adjacent organs like the prostate. In USA a quinuride injection containing 2.4% of anhydrous quinine- urea pH2.6 is used. Up to 5ml is injected into the sub mucosa at the base of each vascular cushion at the junction of pink and plum coloured mucosa.

#### Complications Include:

- 1) Pain-due to badly sited injection or due to sub mucosal extravasation;
- 2) Haemorrhage.
- 3) Lower urinary tract sepsis in male from a grossly misplaced injection.
- 4) Tight encircling sub mucosal band formation.
- 5) Oleogranuloma.

It is best suited for grade 1&2 haemorrhoids with bleeding as the principal complaint with more than 70% of patients satisfied. Recurrence rate is 15% and repeated injections are difficult due to the fibrosis.



**Fig. 4: Sclerotherapy procedure**

#### MATERIALS AND METHODS:

**Source of Data:** The study group comprises of patients with complains of bleeding per rectum and on examination diagnosed to be having haemorrhoids attending the outpatient department of General Surgery in our hospital & ethical committee clearance obtained.

**Method of Data Collection:** Patients who are coming to Out Patient Department with complaints of bleeding per rectum or mass per rectum are subjected for detailed history taking which includes symptoms and duration of disease. Then they are subjected for per rectal digital examination. proctoscopy is done to find out the internal haemorrhoids and its degree and position. Systemic examination and basic investigation done, according to severity and type of symptoms and degree of haemorrhoids, Patients are subjected for open haemorrhoidectomy, banding and sclerotherapy. Follow up of patients after treatment is done by history, per rectal examination and anoscopy to assess patient's response and rate of complications like pain, bleeding, recurrence, stenosis and discharge per anum.

**Sample Size:** Among the 120 patients who are diagnosed to be having grade II and III internal haemorrhoids between the period September 2013 to November 2015 are randomly grouped into three categories.

Group 1: 40 patients are subjects to open haemorrhoidectomy.

Group 2: 40 patients are subjected to banding.

Group 3: 40 patients are subjected to sclerotherapy.

**Inclusion Criteria:** All patients who are diagnosed to be having Grade II and III internal haemorrhoids.

**Exclusion Criteria:** Patients who are diagnosed to be having Grade I and IV internal haemorrhoids and external haemorrhoids.

**Follow-up:** Required.

**Follow-up Period:** On third postoperative day and seventh postoperative day.

Then weekly for first four weeks after surgery.

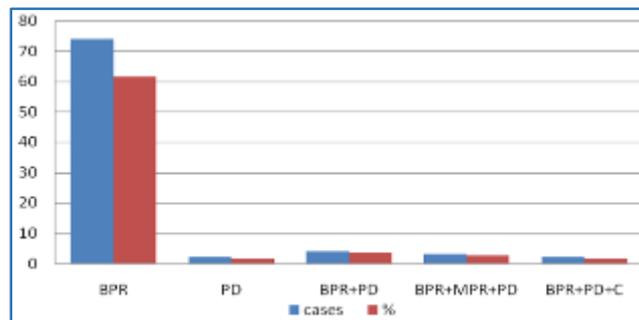
There after once a month for next five months.

**OBSERVATIONS:** A total of 120 cases were enrolled in the Department of General Surgery, in our hospital during the study period. Age of the patient varied from 20 years to 76 years. Maximum numbers of patients were seen between the age group of 41 to 50 years. The following table gives age distribution in the study group. Out of 12 patients 69 were males and 51 were females. There was male preponderance of cases.

**Presenting Complaints:** The presenting complaints in all 120 patients are tabulated in table 01. The presenting complaint in 61.66% of patients was bleeding per rectum. Mass per rectum was the presenting complaint in 2.5% of the patients, 1.6% of patients presented with painful defecation, 17.5% of patients presented with bleeding per rectum and mass per rectum. Bleeding per rectum and painful defecation were the presenting complaints in 3.33% of patients. Bleeding per rectum and constipation were the presenting complaints in 7.5%, 1.66% of patients presented with bleeding per rectum, mass per rectum and constipation. 2.5% of patients presented with bleeding per rectum, mass per rectum and painful defecation and 1.6% of patients presented with bleeding per rectum, painful and constipation.

Symptom	Cases	%
Bleeding per rectum	74	61.6
Mass per rectum	3	2.5
Painful defecation	2	1.6
Bleeding per rectum+ mass per rectum	21	17.5
Bleeding per rectum+ Painful defecation	4	3.3
Bleeding per rectum+ Constipation	9	7.5
Bleeding per rectum+ mass per Rectum+ Painful defecation	3	2.5
Bleeding per rectum+ mass per rectum+ Constipation	2	1.6
Bleeding per rectum+ Painful defecation+ Constipation	2	1.6
<b>Total</b>	<b>120</b>	<b>100</b>

**Table 1: Distribution of symptoms in all cases**



**Fig. 5: Presenting complaints**

**Grading of Disease:** In a total number of 120 patients, 60 were diagnosed to have grade 2 haemorrhoids and remaining 60 were of grade 3 haemorrhoids.

**Type of Treatment:** Patients were randomly selected for treatment. All the 40 cases selected for Banding had grade II haemorrhoids. Among the cases selected for sclerotherapy 20 cases had grade II and 20 cases had grade III haemorrhoids. All the cases selected for haemorrhoidectomy had grade III haemorrhoids.

**Type of Surgery:**

		Grade		Total
		Grade II	Grade III	
Banding	Count	40	0	40
	%	66.7%	0%	33.3%
Sclerotherapy	Count	20	20	40
	%	33.3%	33.3%	33.3%
Haemorrhoidectomy	Count	0	40	40
	%	0%	66.7%	33.3%
Total	Count	60	60	120
	%	100.0%	100.0%	100.0%

**Table 02: Type of treatment with Grade**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	80.000	.000

**Table 3: Chi-Square Tests for Type of Surgery with Grade**

**Post-Operative Stay:** Out of 40 patients who underwent banding, 34 patients stayed in hospital for 1 day and 6 patients stayed for 2 days. Out of 40 patients who were treated by sclerotherapy 30 had to stay for 1 day and 10 had to stay for 2 days.

40 patients underwent haemorrhoidectomy, of which 18 patients stayed for 4 days, 16 for 5 days and 6 patients for 6 days.

**Post-Operative Complications:** Patients were followed on third post-operative day and seventh post-operative day. Then weekly for first four weeks after surgery. There after once a month for next five months.

**1. PAIN:** Out of 40 patients who underwent banding, 30 patients had local pain;

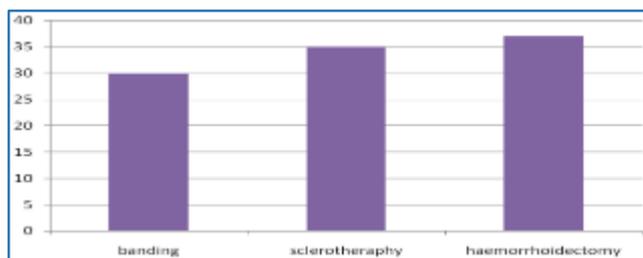
Out of 40 patients who underwent sclerotherapy, 35 patients had burning type of pain; Out of 40 patients who underwent haemorrhoidectomy, 3 7 patients had local pain.

		P		Total
		Yes	No	
Banding	Count %	30 29.4%	10 55.6%	40 33.3%
Sclerotherapy	Count %	35 34.3%	5 27.8%	40 33.3%
Haemorrhoidectomy	Count %	37 36.3%	3 16.7%	40 33.3%
Total	Count %	102 100.0%	18 100.0%	120 100.0%

**Table 4: Type of surgery with complication pain**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.098a	2	.078

**Table 5: Chi-Square Tests for type of Surgery with Pain**



**Fig. 6: Post-operative complication as pain**

**2. BLEEDING PER RECTUM:** Out of 40 patients who underwent banding, 10 patients had bleeding per rectum;

Out of 40 patients who underwent sclerotherapy, 1 patient had bleeding per rectum;

Out of 40 patients who underwent haemorrhoidectomy, 19 patients had bleeding per rectum.

		Bpr		Total
		Yes	No	
Banding	Count %	10 33.3%	30 33.3%	40 33.3%
Sclerotherapy	Count %	1 3.3%	39 43.3%	40 33.3%
Haemorrhoidectomy	Count %	19 63.3%	21 23.3%	40 33.3%
Total	Count %	30 100.0%	90 100.0%	120 100.0%

**Table 6: Type of surgery with complication bleeding per Rectum**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.6	.000

**Table 7: Chi-Square Tests for Bleeding Per Rectum**

**3. DISCHARGE PER RECTUM:** Out of 40 patients who underwent banding, none of the patients had discharge per rectum;

Out of 40 patients who underwent sclerotherapy, 24 patients had discharge per rectum;

Out of 40 patients who underwent haemorrhoidectomy, none of the patients had discharge per rectum

		DPR		Total
		Yes	No	
Banding	Count %	0 .0%	40 41.7%	40 33.3%
Sclerotherapy	Count %	24 100.0%	16 16.7%	40 33.3%
Haemorrhoidectomy	Count %	0 .0%	40 41.7%	40 33.3%
Total	Count %	24 100.0%	96 100.0%	120 100.0%

**Table 8: Type of surgery with complication discharge per Rectum**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.000	.000

**Table 9: Chi-Square Tests for Discharge per Rectum**

**4. STENOSIS:** Out of 40 patients who underwent banding, none of the patients had stenosis;

Out of 40 patients who underwent sclerotherapy, none of the patients had stenosis;

Out of 40 patients who underwent haemorrhoidectomy, 4 patients had stenosis;

		s		Total
		Yes	No	
Banding	Count %	0 0%	40 34.48%	40 33.3%
Sclerotherapy	Count %	0 0%	40 34.48%	40 33.3%
Haemorrhoidectomy	Count %	4 100.0%	36 31.03%	40 33.3%
Total	Count %	4 100.0%	116 100.0%	120 100.0%

**Table 10: Type of surgery with complication Stenosis**

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.58	.000

**Table 11: Chi-Square Tests for Stenosis**

**5. RECURRENCE:** Out of 40 patients who underwent banding, 8 patients had recurrence;

Out of 40 patients who underwent sclerotherapy, 4 patients had recurrence;

Out of 40 patients who underwent haemorrhoidectomy, 2 patients had recurrence;

		s		Total
		Yes	No	
Banding	Count %	8 57.14%	32 30.18%	40 33.3%
Sclerotherapy	Count %	4 28.57%	36 33.96%	40 33.3%
Haemorrhoidectomy	Count %	2 14.28%	38 35.84%	40 33.3%
Total	Count %	14 100.0%	106 100.0%	120 100.0%

**Table 12: Type of surgery with complication recurrences**

**DISCUSSION AND SUMMARY:** Haemorrhoids have been affliction of mankind from time immemorial. Although haemorrhoids are never life threatening, but can cause unhappiness and deserve serious examination and treatment.

The incidence of haemorrhoids increases with age. In present study, the occurrence of haemorrhoids is maximum in the 4<sup>th</sup> decade of life (36.6%). Predominantly seen in males (57.5%). This study revealed that bleeding continued to be commonest and major symptom (61.6%).

In our study out of 120 patients 74(61.6%) presented with bleeding per rectum as the chief complaint, 3(2.5%) presented with mass per rectum, 2(1.6%) presented with painful defecation

In our study only grade II and grade III haemorrhoids are included. Banding and sclerotherapy were done on OPD basis, were as haemorrhoidectomy needs hospitalization and was done under spinal anaesthesia. Serial follow up were done to assess postoperative complications and to compare between banding, sclerotherapy and haemorrhoidectomy.

In our study when comparison was done between banding, sclerotherapy and haemorrhoidectomy, we found out that, postoperative pain, bleeding per rectum and anal canal stenosis were more in patients who underwent open haemorrhoidectomy. Discharge per rectum was more in patients who are treated by sclerotherapy and recurrence rate was seen more in patients who underwent banding.

In the previous study done by Mac Rae HM et al in year 1997, haemorrhoidectomy was associated with more postoperative complications than rubber band ligation.

**CONCLUSION:** Rubber band ligation is simple outpatient procedure and most effective in grade II haemorrhoids. Simple robust equipment and cost effective. Minima blood loss and pain. Complication include recurrence and not suitable for grade III and IV haemorrhoids. Long term results poorer than haemorrhoidectomy.

Sclerotherapy can be used for both grade II and grade III haemorrhoids, simple OPD procedure with minimal postoperative pain and bleeding per rectum. But has high incidence of mucous discharge per rectum.

Haemorrhoidectomy gives best long term results and suited for both grade II and III but disadvantage is it requires hospitalization, spinal anaesthesia, long recovery time, high incidence of pain, bleeding per rectum and late anal canal stenosis.

- Considering above factors, sclerotherapy is a safe and effective procedure for grade II and III haemorrhoids. It is a simple outpatient procedure and postoperative complications are minimal and patient acceptance is good.
- Given all these advantage and minimal drawbacks, it can be concluded that sclerotherapy has a definitive edge in the management of grade II and grade III haemorrhoids when compared to banding and haemorrhoidectomy.

## REFERENCES:

1. Dozois RR. "Disorders of the anal canal" Section, Chapter 32 in Sabiston Textbook of Surgery, Sabiston DC JR., Lyerly KH, Pennsylvania, WB Saunders company, 15<sup>th</sup> edition:pp 1036-1s.
2. Russell RG, Williams N, Bullstrode CJK. Ed, Bailey and Love's short practice of surgery, London, Arnold publishers, 2000;1115-34.
3. Keighley MRB, Williams NS. Ed. Surgery of the anus, rectum and colon, London, WB Saunders Co.Ltd. 1993;295-363.
4. Constantin JM, Etienne G, Hevia M. Techniques and results of cryostripping in the treatment of varicose veins of th lower limb. (French), Annales de Chirurgie. 1997;51(7):7.
5. Thomas WH. "Haemorrhoid" Chapter 20.1 in Oxford Textbook of Surgery, Morris PJ & Malt RA, New York, Oxford University Press, 1994;pp-1125.
6. MacRae HM, McLeod RS. Comparison of haemorrhoid treatment. Can J Surg 1997;40(1):14-7.
7. Gibbons CP, Bannister JJ, Read NW. Role of constipation and anal hypertonia in the pathogenesis of haemorrhoids. British Journal of Surgery 1988;75:656-660.
8. Milligan ETC. "Haemorrhoids" BMJ 2412. 1939
9. Whitehead W. Surgical treatment of haemorrhoids. BMJ 1. 1882;1(1101):148-150.
10. Ho YH, Seow-Choen F, Goh HS. Haemorrhoidectomy and disordered rectal and anal physiology in patients with prolapsed haemorrhoids. British Journal of Surgery 1995;82(5):596-598.
11. Park AG. The surgical treatment of haemorrhoids. British Journal of Surgery 1956;43:180:337-51.
12. Miles WE. Observation upon internal piles. Surgery Gyneol Obstet 1919;29:496.
13. Hancock BD, Smith k. The internal sphincter & Lord's procedure for haemorrhoids. British Journal of Surgery 1975;62:833-6.
14. Boccasantha P, Venturi M, Orio A, et al., Circular haemorrhoidectomy in advanced haemorrhoidal disease. Hepatogastroentology 1998;45(22):969-72.
15. Dodi G, Pirrone E, Cavallari F. Sclerotherapy & elastic band ligation of haemorrhoids. Annali italiani di chirurgia 1995;66(6):769-73.