



ORIGINAL RESEARCH PAPER

General Surgery

A PROSPECTIVE STUDY OF OPEN VERSUS CLOSED HAEMORRHOIDECTOMY

KEY WORDS: Milligan-Morgan open haemorrhoidectomy, Ferguson closed haemorrhoidectomy, General Surgery

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ABSTRACT

The Milligan-Morgan open haemorrhoidectomy (MMOH) and the Ferguson closed haemorrhoidectomy (FCH) are the conventional methods of haemorrhoidectomy. MMOH remains the procedure of choice due to its low cost and technical ease. On the other hand, FCH has developed a lot of interest because of the minimal postoperative pain. This research compares the outcomes of open versus closed haemorrhoidectomy. In this study, a total of 46 patients were operated by MMOH and FCH methods and evaluated for complications. The study was carried out in a tertiary care centre in the Department of General Surgery during 2019-2021. It is observed that an early postoperative bleeding, early postoperative pain and post-defaecation pain were significantly lower in closed group as compared with the open group. Postoperative wound healing was faster in closed group than the open group. However, other postoperative complications such as postoperative urinary retention, postoperative anal stenosis and anal incontinence did not show any statistically significant difference in both the groups

INTRODUCTION

Proctologic disorders have existed since the dawn of time. It encompass a variety of disorders that cause severe patient discomfort.^[1] Haemorrhoid disease is defined as the symptomatic enlargement and protrusion of normal anal cushions.^[1] According to an epidemiological study conducted in the United States, it is a common surgical condition affecting 4.4 percent of adults, with a peak prevalence between the ages of 45 and 65.^[2]

A haemorrhoidectomy is the standard treatment for patients with grade III or IV haemorrhoids. The Milligan-Morgan open haemorrhoidectomy and the Ferguson closed haemorrhoidectomy are the conventional methods of haemorrhoidectomy described. These methods are similar and are considered traditional. Using a scalpel and electrocautery, haemorrhoid tissue is removed, the pedicle is ligated, and the defect is either left open (Milligan-Morgan) or closed (Ferguson). Postoperative pain is the most serious complication.^[3] Postoperative bleeding, anal stenosis, and anal incontinence are all possible complications.

Even though newer modalities have entered the picture, open haemorrhoidectomy remains the procedure of choice due to its low cost and technical ease. Ferguson's closed haemorrhoidectomy has developed a lot of interest in some areas of the world because of the minimal postoperative pain, which is thought to be attributable to the closing of the cut edges of the mucosa, as well as faster wound healing and excellent patient compliance. Randomized control trials, on the other hand, comparing the two procedures listed above have been found to be contradictory with assumptions. This research compares the outcomes of open versus closed haemorrhoidectomy using a set of criteria.

Review Of Literature

The term haemorrhoid is derived from the ancient Greek words haema, which means blood, and rhoos, which means flow, and thus refers to the flow of blood. Hippocrates (460 BC) is thought to be the first person to use the term haemorrhoid. Piles is another term for haemorrhoids, which is derived from the Latin word pila (ball), which means anal swelling (round mass). Since the birth of English doctor John of Arderne (1307 AD), haemorrhoids were commonly referred to as piles.^[4]

In the history of conservative treatment for haemorrhoids, Dittel (1923) was the first to describe the rubber band ligation procedure. Blaisdell (1958) used an umbilical cord ligator to bind haemorrhoids with a rubber band. Barron (1963) produced a haemorrhoidal ligator, which was a step forward. This ligator is still in use today and has proven to be quite effective.^[4]

The age distribution of haemorrhoids showed a peak between 45 and 65 years of age, followed by a fall after 65 years of age. It was unusual to see haemorrhoids in patients under the age of 20. Khanna et al (2009) found similar results, despite the fact that the average age of the patients participated in this trial was 45 years.^[6] N. Pokharel et al (2009)^[5] (n=56, M:F::1.43:1), Khanna et al (2009)^[10], A. A. Abo-Hashem et al (2010)^[10] (n=48, M:F::5:3), Peker K et al (2013)^[8], and P. Krishna Kishore et al (2016) (M:F::4.9:1).^[11]

Open haemorrhoidectomy was first performed by Milligan and Morgan in the United Kingdom in 1917. This technique includes resection of the entire enlarged internal haemorrhoid complex, ligation of the arterial pedicle, and preservation of the intervening anoderm. Ferguson invented this approach in 1959 with primary motivation to eliminate the drawbacks of open haemorrhoidectomy. The procedure has been widely adopted in USA.^[8] This technique involves complete haemorrhoidectomy with high ligation and the resulting longitudinal wound in the lining of the anal canal and in the perianal skin is closed with a continuous suture of fine catgut or Dexon (Fig.5).

MATERIALS & METHODS

The present study was conducted in a tertiary care centre during a two-year period, from October 2019 to October 2021. All patients with a history of haemorrhoids who visited the out-patient department of General Surgery at this tertiary care facility were screened. Per rectal bleeding, perianal pain, and prolapse were the common symptoms. The patients who were diagnosed with grade III or IV haemorrhoids and were willing to undergo surgery were enrolled in the study. A thorough history was taken, including the onset, duration, and progression of symptoms. They were also asked about their food, bowel habits, prolonged sitting, lifting heavy weights in the past, weight loss, stomach pain, medical issues,

coagulation history, and family history. Patients were examined thoroughly including external examination, digital rectal examination and examination using a proctoscope.

Inclusion criteria:

Symptomatic grade III or grade IV haemorrhoids.

Exclusion criteria:

Grade-I and grade-II haemorrhoids, Per rectal bleeding associated with growth. All patients with per rectal bleeding with bleeding diathesis. Patient not willing for surgical treatment.

The design of our study is a Prospective Non-randomized controlled trial.

Screening process:

Eligible individuals were informed about the processes as well as the study concept. After obtaining proper consent, participants were enrolled in the study. Simple non-random sample procedure was used to allocate patients to one of the two groups: Group A (open haemorrhoidectomy) or Group B (closed haemorrhoidectomy). Day before surgery, all patients got a sodium bisphosphate enema at night. Preoperative antibiotics were given to all patients (injection ciprofloxacin {200mg}, ceftriaxone 1gm and metronidazole 500mg). Both the procedures were carried out under spinal anaesthesia.

Follow up schedule:

Patients were followed up on postoperative day 1, day 3, day 7, day 14, 6 weeks and 6 months after surgery. Advice regarding warning signs and unscheduled visits, if required was also given. An unscheduled follow up visit as the name suggests a visit to the out- patient department for any expected or unexpected bowel symptoms, which might suggest a postoperative complication.

Statistical analysis:

Data was entered in Microsoft excel worksheet. Frequency tables and measures of central tendency (mean) and measures of dispersion (standard deviation) were obtained by using the statistical package SPSS version 23.0.

OBSERVATIONS

Patients operated by open haemorrhoidectomy were included in group A whereas closed haemorrhoidectomy patients were included in group B. These two groups were then compared on the basis of postoperative complications. Based on the data obtained through this comparison and other demographic data the following observations were made.

The most common age group was 31-40 (12 patients). The youngest patient was 16 years old while the oldest was 75 years with a mean age of 46.14 years. Males were affected more than females, with total number of males being 38 and 8 females with a male to female ratio of 4.7:1. The main presenting symptom was painless bleeding per rectum in 38 patients while painful defaecation was seen in 24 patients. In the present study out of the 46 patients 17 patients had two haemorrhoids (37%), 26 had three haemorrhoids (56.5%) whereas three patients (6.5%) had more than three haemorrhoids. In the present study out of total 46 patients, 28 were having Grade III and 18 were having Grade IV haemorrhoids. Among 28 patients with Grade III haemorrhoids 21 were operated by open method and seven by closed method. Among 18 patients with Grade IV haemorrhoids ten were operated by open method and eight by closed method.

Post-procedural minor bleeding was present in 16 patients in Group A and four patients in Group B at 24 hours. Bleeding was mild and was managed by stool softeners, sitz bath. No

intervention was required in both groups. Surgical site infection was present in two patients of Group A and five patients in Group B. All the patients were managed conservatively with antibiotics. Urinary retention was present in five patients in Group A and four patients in Group B, no significant difference was noted between two groups. Anal incontinence was there for liquid stools; was seen in four patients in Group A and two in Group B, this is noted in the early postoperative period and was advised high fibre diet and Kegel exercises. At 6 months follow-up; no patients had anal incontinence. Immediate postoperative pain was significantly lower in Group B when compared to Group A but mean pain score at 48 hours, 3 days, 7 days, 2 weeks, 6 weeks did not show any significant difference. Four patients in closed group and three in open group required anal dilation for mild stenosis at six months follow-up. Postoperative anal stenosis between the two procedures did not show any statistical difference. Post-defaecation pain score was low in closed group. Pain was managed by stool softeners, sitz bath and high fibre diet. Pain score between two groups was statistically significant. Closed group had faster wound healing rate as compared to Open group with p value less than 0.001 which is statistically significant. Closed group had faster wound healing rate as compared to Open group with p value less than 0.001 which is statistically significant.

Test used: Chi square test ANOVA with Bonferonni t test Students paired and unpaired t test SPSS version 23.0 was used, $P < 0.05$ considered to be significant $p < 0.001$ considered very highly significant

RESULTS

A total of forty-six patients were operated by Milligan-Morgan and Ferguson's methods of haemorrhoidectomy. The most common age of presentation was 31-40 years with a mean age of 46.14 years. Male preponderance was seen with male: female ratio of 4.7:1. As observed the primary presenting symptom was painless bleeding per rectum seen in 38 patients. Painful defaecation was seen in 24 patients which is around 52.2% of all patients. Postoperative pain significantly differs in both the groups. Pain experienced after surgery is due to ligation of sensitive epithelium below the dentate line and hence closed method should have less pain than the open haemorrhoidectomy.

Most common presenting complaint was per rectal bleeding (82.6%) followed by constipation (67.4%), pain while defaecation (52.2%) and prolapse (32.6%).

Table 1: Statistical Analysis

Procedure	Group A [%]	Group B [%]	Total No (%)
Postprocedural bleeding, $p=0.11$			
Yes	16[53.3]	4[20]	20[43.4%]
No	14[46.6]	12[80]	26[56.6%]
Total	30	16	46
Post operative infection $\chi^2=1.915$ $p=0.166$			
Yes	2[6.6%]	3[18.75%]	5[10.8%]
No	28[93.3%]	13[81.2%]	41[89.1%]
Total	30	16	46
Postoperative urinary retention $\chi^2=2.681$ $p=0.102$			
Yes	5[16.6%]	4[25%]	9[19.5%]
No	25[83.3%]	12[75]	37[80.4%]
Total	30	16	46
Postoperative anal incontinence, $\chi^2=0.002$ $p=0.968$			
Yes	4[13.3%]	2[12.5%]	6[13.04%]
No	26[86.6%]	14[87.5%]	40[86.9%]
Total	30	16	46
Postoperative Anal Stenosis, $\chi^2=2.261$ $p=0.132$			
Yes	3[10%]	4[25%]	7[15.21%]
No	27[90%]	12[75%]	39[84.78%]

Total	30	20	46
Postoperative Need of Analgesia			
Yes	23[76.66%]	10[62.5%]	33[71.7%]
No	7[23.33%]	6[37.5%]	13[28.2%]
Total	30	16	46
Post- defaecation Pain			
At 24 hours	7.10±1.076	7.00±0.655	<0.001
At 48 hours	5.03±0.983	4.87±0.834	<0.001
At 24 hours	7.10±1.076	7.00±0.655	<0.001
Duration of Wound healing, x ² =15.112, p<0.001			
2-4 weeks	10[33.3%]	14[87.5%]	24[52.17%]
>4 weeks	20[66.6%]	02[12.5%]	22[47.82%]
Total	30	16	46



Figure 2: Milligan-Morgan Haemorrhoidectomy



Figure 3: Ferguson's Haemorrhoidectomy



Fig 4: Grade III haemorrhoids [Clinical photo]



Figure 5: Grade IV haemorrhoids [Clinical photo]



Figure 6: Open Haemorrhoidectomy [Postoperative photo]

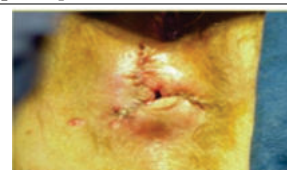


Figure 7: Closed haemorrhoidectomy [Postoperative photo]

Postoperative pain at 6 hours and 24 hours was significantly lesser in the closed group as compared to open group. Post-defaecation pain at 24 hours and 48 hours is significantly lesser in closed group as compared to open group. Early postoperative bleeding was compared and statistically analysed which showed lesser bleeding in closed group. Postoperative infection was compared and statistically analysed which showed no significant difference in the two study groups based on this criterion. Postoperative urinary retention was compared and statistically analysed which showed no significant difference in the two study groups based on this criterion. Postoperative anal stenosis was compared and statistically analysed which showed no equivocal difference between the two study groups. Postoperative anal incontinence was compared and statistically analysed which no showed equivocal difference between the two study groups. Wound healing is significantly faster and better in closed group as compared with the open group.

CONCLUSIONS

In this study, the Patients operated by open haemorrhoidectomy were included in group A (MMOH) whereas closed haemorrhoidectomy patients were included in group B (FCH). These two groups were then compared on the basis of postoperative complications and based on statistical analysis interferences were drawn.

and Males were affected more than females. Mostly, the main presenting symptom was painless bleeding per rectum. Also more number of the patients were having Grade III haemorrhoids. Post-procedural minor bleeding was less in MMOH than FCH. No significant difference for urinary retention was found in both the groups. Immediate postoperative pain was significantly lower in FCH when compared to MMOH. Post-defaecation pain score was low in closed group. Closed group had faster wound healing rate as compared to Open group. Most common presenting complaint was per rectal bleeding followed by constipation, pain while defaecation and prolapse.

Based on practical evidences, it is inferred that early postoperative bleeding, early postoperative pain and post-defaecation pain were significantly lower in closed group as compared with the open group. Postoperative wound healing was faster in closed group than the open group. However, other postoperative complications such as postoperative urinary retention, postoperative anal stenosis and anal incontinence did not show any statistically significant difference in both the groups.

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The average age of the patients in this disease are 46 years