

Original Research Article

A Prospective Comparative Study of Stapler Hemorrhoidectomy vs Open Haemorrhoidectomy (Milligan Morgan) In its Outcome and Postoperative Complications

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Abstract

Background: Stapled hemorrhoidectomy has been hailed as a groundbreaking procedure for treating prolapsed haemorrhoids. In comparison to open hemorrhoidectomy, it resulted in a shorter period of convalescence despite the significant additional cost. **Aim:** The goal of this study was to look into and evaluate the outcomes and post-operative problems in patients with grade III and IV haemorrhoids who underwent Stapler or Milligan Morgan hemorrhoidectomy. **Methods:** A total of 102 individuals with grade III and IV haemorrhoids, ranging in age from 38 to 50 years, were randomly assigned to one of two groups. There are 51 patients in Group 1 who are getting Stapler hemorrhoidectomy and 51 patients in Group 2 who are undergoing Open hemorrhoidectomy/Milligan Morgan. Patients in both groups were evaluated post-operatively for bleeding, discomfort, recurrence, and long-term consequences in comparison to their pre-operative symptom profiles. Student's T tests were used to conduct a comparative analysis between the two groups using SPSS software version. The threshold for significance was set at 5% ($p < 0.05$). **Results:** Stapler hemorrhoidectomy technique was quicker to perform in comparison with Open hemorrhoidectomy (p value < 0.001). Hospitalization and duration of resumption to daily activity was less in Stapler hemorrhoidectomy group as compared to Open hemorrhoidectomy/Milligan Morgan group (p value < 0.001). **Conclusion:** Both procedures were efficient for hemorrhoidectomy therapy, however Stapler hemorrhoidectomy had advantages in terms of shorter operative times, less intra- and post-surgical bleeding, and a decreased incidence of various post-operative sequelae.

Keywords: Stapler hemorrhoidectomy; Milligan Morgan hemorrhoidectomy; Surgical procedures; Hemorrhoids; Piles

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Introduction

Anal cushions that expand, bleed, thrombose, and prolapse and generate clinical symptoms are referred to as haemorrhoids[1]. Internal haemorrhoids originate from the sub-epithelial plexus of the anal canal above the dentate line, whereas external haemorrhoids are aggregations of congested exterior perianal vascular plexus covered by perianal skin. Internal haemorrhoids are divided into four degrees based on the degree of prolapse, albeit this may not always reflect the intensity of a patient's symptoms. Discomfort, itching, mucous discharge, bleeding, pain, and prolapse are among the symptoms, which are linked to a sense of fullness and inadequate evacuation[2].

Conservative therapy incorporating dietary and lifestyle changes, as well as the use of various pharmacological agents such as creams, office-based non-operative procedures, and so on, can be used to treat symptomatic haemorrhoids[3,4]. Surgery is the preferred treatment for grade III and IV haemorrhoids, especially in individuals who have failed to react to previous treatments[5-7]. However, the condition is not limited to elderly people, despite the male predominance[8]. Surgery is not a realistic option for 1st and 2nd degree haemorrhoids and should be avoided. The Milligan Morgan hemorrhoidectomy is the most widely used surgical technique for the treatment of 3rd and 4th degree haemorrhoids, and it is considered the current Gold standard and has stood the test of time due to its low postoperative complications, cost effectiveness, and better long-term effects[9,10].

Although the Stapled hemorrhoidectomy treatment is recognised as a well-established procedure with relatively low complication rates and shorter hospital stays, it is an expensive procedure. The traditional care of haemorrhoids by open hemorrhoidectomy, while cost-effective, causes patients post-operative discomfort and other problems. As a result, the goal of this study was to compare stapler hemorrhoidectomy to Milligan Morgan open hemorrhoidectomy in terms of outcome and post-operative complications in the treatment of 3rd/4th degree haemorrhoids[11].

Materials and Methods

A prospective comparative hospital-based study was done in the Department of General Surgery at a Tertiary care centre. According to a study by Frank H et al[12], a sample size of 102 individuals was calculated by assuming a mean operation time of around 30 minutes in the staple group and 43.25 minutes in the open group. For the sample size calculation, a statistical power of 90% and a 2-sided alpha error of 5% were used. In each group, a sample size of 47 participants would be necessary. An additional three patients were recruited to each group to account for a 5% loss in follow-up. After then, the sample size was rounded up to 51 people in each category.

A total of 102 patients diagnosed with grade III and grade IV haemorrhoids, aged 38 to 50 years (median age – 44.5 (Group-1), 45.5 (Group-2) were recruited in the study sequentially by convenient sampling until the sample size was met. All individuals signed an informed permission form, and the study participants' identities were kept private. The research protocol was approved by the hospital's ethics committee. The study's data was collected during a 1.8-year period, including follow-up, from June 2016 to February 2018. Patients in Group 1 had Stapler hemorrhoidectomy (51 patients), while patients in Group 2 had Open hemorrhoidectomy/ Milligan Morgan (51 patients). A comprehensive clinical history, clinical examination, and proctoscopy were used to assess the patients. The surgical procedure was chosen based on the hospital protocol and the preferences of the participants.

Technique

The surgery was performed while the patient was in the lithotomy position, under spinal anaesthetic. After prepping the anal canal (operating surface) and a Proctoscopy inspection, SH was performed. A transparent anal dilator was gently introduced and sutured to the perianal skin, followed by the suture anoscope, which was placed through a mucosal purse-string suture about 3-4 cm above the dentate line. The purse-string suture was then secured to the fully opened stapling device by threading its two ends through the stapler's lateral apertures. With sustained traction to the sutures, the stapler was closed until the maximum was attained.

The stapler was placed and held in position for 2 minutes before being opened and gently removed with one and a half turns. The authenticity of the donut was confirmed. The staple line was checked for its position above the dentate line, and bleeding areas were cauterised or suture ligatured to stop the bleeding.

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A Kelly clamp was placed over one haemorrhoidal pedicle during the open hemorrhoidectomy, and an absorbable suture ligature was formed at the apex of the haemorrhoidal pedicle. A V-shaped incision was made on the external skin, which was then expanded to a thin eye-shaped incision towards the ligated vascular pedicle, which was dissected with sharp scissors and electrocautery. The wound was left open to heal after the hemorrhoid was removed. For the other hemorrhoid pedicles, the process was repeated. Intraoperative time and intraoperative bleeding were measured and recorded during the procedure. During this time, all problems were documented, as well as their response to therapy. In both groups, the cost was calculated based on the length of hospital stay and time to resume normal activities, and all patients were followed for 6 months following surgery to assess the development of recurrence and long-term problems such as anal stenosis and incontinence.

Statistical analysis

SPSS software version 22.0 was used to collect and analyse data. For each variable, descriptive statistics were reported. Student's t test was used to compare the two groups, with a p-value of less than 0.05 considered significant.

Results

There were a total of 102 patients in the study. There were two groups of patients: group-1 and group-2. Stapler haemorrhoidectomy was performed on group 1 patients, while open hemorrhoidectomy was performed on group 2. Patients with stapler haemorrhoidectomy had a median age of 44.5 years, while those with open hemorrhoidectomy had a median age of 45.5 years. In both groups, males outnumbered females. (See Table 1)

Table 1: Demographic Profile

Gender	Group		P-value
	Stapler haemorrhoidoxy (N=51)	Open hemorrhoidectomy (N=51)	
Male	72.5%	70%	0.716
Female	27.5%	30%	
Age in years Median (IQR)	44.5	45.5	0.979
Height Cm, Median (IQR)	174	175	0.197
Weight kg Median (IQR)	67	69	0.701
BMI Mean ± Std	24.81 ± 2.15	25.17 ± 1.02	0.421

The bulk of the patients were suffering from third-degree haemorrhoids (60 percent). 61.5 percent of participants in the stapler haemorrhoidectomy group were in the third degree, while the remaining 38.5 percent were in the fourth degree. 70% of the individuals in the open hemorrhoidectomy group had 3rd degree haemorrhoids, while 30% had 4th degree haemorrhoids. The proportion of degrees of haemorrhoids between the groups was not statistically significant.

(Table 2). The patients' main complaint was anal haemorrhage. Both groups of participants complained of rectum bulk, pain during defecation, and constipation.

Table 2: Comparing the signs and symptoms in both the groups

	Group		P value
	Stapler haemorrhoidoxy	Open hemorrhoidectomy	
Bleeding per rectum	93%	99%	**
Duration of BPR (in days) Median (IQR)	9	9	0.879
Pain during defecation	93%	99%	**
Mass per anum	91.5%	99%	**
3rd degree	61.5%	70%	**
4th degree	38.5%	30%	

**No statistical test was applied- due to 0 subjects in the cells

In the stapler hemorrhoidectomy group, 93 percent of participants had rectum bleeding, while in the open hemorrhoidectomy group, 99 percent of patients had rectum bleeding. The median duration of BPR was nine days in both groups. There was no significant difference in the number of days spent on BPR across the groups. (Table 2). 93 percent of the stapler haemorrhoidectomy

group reported pain during faeces, with 91.5 percent reporting a mass per annum. However, 99 percent of participants experienced pain during defecation, with 99 percent of open hemorrhoidectomy patients presenting with a mass per annum (Table 2).

Table 3: Comparing the intra-operative parameters in both the groups

	Group		P value
	Stapler haemorrhoidoxy	Open hemorrhoidectomy	
Median time of procedure (min)	49 (48 to 50)	59 (58 to 60)	<0.001*
Intraoperative bleeding (ml) Median (IQR)	8 (9 to 7)	40 (37 to 43)	<0.001*

The mean operating time for stapler hemorrhoidectomy was 49 minutes (IQR 48 to 50), while it was 59 minutes for open hemorrhoidectomy (IQR 58 to 60). There was a significant difference in the time procedure between groups (P value 0.001). (Table 3). The median intra-operative bleeding was 8 ml (IQR 9

to 7) in stapler hemorrhoidectomy patients, compared to 40 ml (37 to 43) in open hemorrhoidectomy patients, with a statistically significant difference in intra-operative bleeding between groups (P value 0.001). (Table 3).

Table 4: Comparing the post operative parameters in both the groups

	Group		P value
	Stapler haemorrhoidoxy	Open hemorrhoidectomy	
Post-operative bleeding(ml) Median (IQR)	3	14	<001*
Post-operative pain-VAS score Median (IQR)	4	7	<0001*
Post-operative Hospital stay in days Median (IQR)	2	5	<0001*
Resumption of daily activity (in days) Median (IQR)	5	7	<0001*
Recurrence	7%	3.5%	0.556
Incontinence	1%	8.6%	**
Anal stenosis	1%	7%	**

The median post-operative bleeding in the SH group was 3ml, while it was 14ml in the CH group. There was a statistically significant difference between the groups (P value 0.001). (Table 4). Patients who had stapled haemorrhoidectomy had a median VAS score of 4, while those who had open hemorrhoidectomy had a median VAS score of 7. There was a statistically significant difference in VAS scores between the groups (P value 0.001). (Table 4). The median hospital stay in days for persons who had a stapler haemorrhoidectomy was 2, whereas the median hospital stay in days for people who had an open hemorrhoidectomy was 5. There was a statistically significant difference between the groups (P value 0.001). (Table 4). The median return to normal activity (in days) for persons who had stapler haemorrhoidoxy was 5,

while it was 7 for people who had open hemorrhoidectomy. The difference between groups in the time it took to return to regular activity (in days) was statistically significant (P value 0.001). (Table 4). The stapler haemorrhoidoxy group had a recurrence rate of 7%, while the open hemorrhoidectomy group had a recurrence rate of 3.5 percent. There was no statistically significant change. (Table 4).

Discussion

In comparison to the Open hemorrhoidectomy (MM) surgery, which is somewhat more intrusive and uncomfortable in the immediate postoperative period, the Stapled hemorrhoidoxy (SH) procedure established by Dr Antonio Longo is a revolutionary approach and a significant alteration in the

treatment of haemorrhoids. In this study, we discovered that surgery took significantly less time in SH than in MM (P value 0.001). Similar observations were observed by Daniel R et al. and could be related to the surgeon's experience and proficiency with the method[13]. However, Simone Manfredelli et al[14] found no statistically significant difference between the two methods in terms of operating time and recovery time. When the median intraoperative bleeding was examined across the groups in SH and MM, a statistically significant difference (P value 0.001) was found. Low median post-operative bleeding was found with superior intra-operative hemostasis in the stapler haemorrhoidectomy procedure, with a statistically significant difference between groups (P value 0.001). Dr. Mohan S V et al[15] made similar observations. However, Kim JS et al[16] (2013) has reported that the postoperative bleeding rate was 4.9% in both groups. According to Gravies J F et al[17], stapled hemorrhoidectomy results in significantly less postoperative pain. In comparison to open haemorrhoidectomy, Bhandari RS et al[18] hypothesized that SH had a better short-term outcome in terms of postoperative pain and analgesic demand. Kim JS et al[16] (2013) and Daniel R et al[13] similarly found comparable results. The results of the current study, not unexpectedly, confirmed this, with a statistically significant difference between the groups (P value 0.001). The lack of nerve endings above the dentate line, as the surgery was performed above the dentate line, may account for the pain reduction. The stapler haemorrhoidectomy group spends less time in the hospital after surgery than the open hemorrhoidectomy group, with a statistically significant difference (P value 0.001). A study by Daniel R et al[13] indicated that the stapler haemorrhoidectomy group had a significantly shorter hospital stay. Mehigan BJ et al[19], on the other hand, discovered no statistically significant difference in the stapled group. However, a systematic review by Tjandra JJ et al[20], a meta-analysis by Nisar PJ et al[21], and a research by RS Bhandari et al[18] all found that stapler haemorrhoidectomy had a much shorter post-operative stay than open hemorrhoidectomy. The reason for early discharge could be lesser post-operative pain, which is also an important reason for patient's resumption of daily routine activity following the surgery. A study by Mehigan BJ et al., a systemic review by Tjandra JJ et al., and a meta-analysis by Nisar PJ et al., all demonstrate a statistically significant difference (P value 0.001) between the groups when compared in terms of early resumption to normal activities, and a literature review substantiates this. Previous studies have shown that stapler haemorrhoidectomy has a greater recurrence rate than open hemorrhoidectomy. In the current study, 2 (5%) individuals in the stapler haemorrhoidectomy group had a recurrence, while 1 (2.5%) participant in the open hemorrhoidectomy group had a recurrence. The difference in the proportion of recurrence between groups was statistically not significant (P value 0.556). The disadvantage of stapled hemorrhoidectomy, according to Giordano P et al[22], is that it has a considerably higher rate of recurrence and further operations than open hemorrhoidectomy. Stapled hemorrhoidectomy is as effective as the Milligan-Morgan surgery, according to Kim JS et al. (2013). However, Simone Manfredelli et al[14] reported no differences in pre- and post-surgery hospitalisation or intraoperative duration between open and Stapler hemorrhoidectomy. In contrast to Shalaby and Desky, who documented problems after stapled hemorrhoidectomy, including anal stenosis in 2% of patients, the current study found that 2(5%) of open hemorrhoidectomy patients had anal stenosis. In contrast to the findings of Dr. HO Yh et al., our investigation discovered anal inconsistency in 3 (7.5%) of the open hemorrhoidectomy group. The lack of randomization and blinding was one of the study's weaknesses, despite the fact that it was prospective. As a result, there is an appraisal bias when reporting diverse results. However, every attempt was taken to reduce subjectivity in the estimation of critical outcome indicators. Another significant disadvantage is that due to the small sample size, the role of residual confounding could not be examined using adequate regression methods. Because of possible differences in the demographic structure, skill level, and experience of the surgeon, the generalizability of the study findings is restricted. Despite the limitations, the current hospital-based prospective study compares the results and post-operative complications of stapled hemorrhoidectomy and open hemorrhoidectomy procedures.

Conclusion

Despite this, a survey of the literature suggests that many surgeons favour open hemorrhoidectomy. The benefits of stapling haemorrhoidectomy procedure were found to be related with shorter operating times, less intra- and post-operative bleeding, and reduced post-operative discomfort, potentially leading to early recovery and discharge with patient satisfaction, regardless of any risks.

Conflict of Interest: Nil

Source of support: Nil

Specialists could modify this procedure in a safe and simple manner and give it to patients.

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