



Open (Miligan Morgan) Haemorrhoidectomy versus Stapled Haemorrhoidopexy: A Comparative Study

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Authors' contributions

This work was carried out in collaboration between all authors. Author AK designed the study, wrote the protocol and did the critical revision of the study. Author MA analyzed and interpreted the data, wrote the draft of the manuscript and did critical revision of the manuscript. Authors RLS and SG contributed towards aquisition of the data. Author TK helped in analysis and interpretation of data and managed the draft of the manuscript.

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ABSTRACT

Background: Haemorrhoidal disease, one of the most common anorectal disorders, when complicated, is a painful concern to the patient. Miligan Morgan haemorrhoidectomy is a commonly performed gold standard procedure for haemorrhoids with good results but is a very painful procedure. Stapled haemorrhoidopexy has emerged as a possible alternative promising lesser immediate post operative complications.

Methods: Sixty patients between age group of 20-70 years with symptomatic haemorrhoidal disease planned for surgical technique were randomized into two groups: A stapled haemorrhoidopexy(SH) group operated on using PPH 03 kit and a Miligan Morgan (MM) group operated on using a standard open haemorrhoidectomy technique.

Results: The mean operative time, average pain scores and consequent parenteral and oral

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analgesics requirement was significantly lower in stapled group. There was no significant difference in immediate complications between the two groups. Duration of hospital stay was significantly lower in SH group and they returned to work significantly earlier and were more satisfied than the open group.

Conclusion: Stapled haemorrhoidopexy is an effective procedure for haemorrhoids with minimal immediate complications but the cost is exorbitant.

Keywords: Haemorrhoids; miligan morgan haemorrhoidectomy; stapled haemorrhoidopexy.

1. INTRODUCTION

Haemorrhoidal disease, the hypertrophy of normal vascular cushions located inside the anus, that normally seal the opening and prevent leakage of gas or stools become worrisome, when, these cushions become engorged or the tissue prolapses into the anal canal due to engorgement of blood vessels and laxity of the supporting connective tissue [1].

The treatment of haemorrhoids dates back to antiquity suggesting that not a single method has stood the test of time. At present, surgery is indicated in treatment of Grade 3 and 4 haemorrhoids [2].

Miligan Morgan haemorrhoidectomy, by virtue of its cost effectiveness, is a commonly performed procedure for haemorrhoids, it has good results but is a very painful procedure resulting in prolonged hospital stay. The patient may also face complications like haemorrhage, urinary retention and late complications like stenosis or incontinence [3].

Stapled haemorrhoidopexy, a relatively novel technique, popularised by Dr Antonia Longo, with use of a circular stapler has revolutionized operative procedures over the last two decades but this procedure is not without complications. A stapling gun is an expensive instrument and though, the procedure has many short term benefits, but, has been reported in some studies to have higher recurrence rate in the long run. Serious complications like rectal perforation and recto vaginal fistula have also be seen in this procedure [4,5].

Several controlled trials like those conducted by Mehigan et al. [6], Zakaria [7] concluded that stapled haemorrhoidopexy is superior to Miligan Morgan haemorrhoidectomy in terms of post operative pain, duration of hospital stay and time to return to work. These results were supported by Yousuf, Ellabban and Salman [8,9,10] in their respective randomized trials.

Major studies have been done in western countries but there is paucity of data in Indian literature, thus, the present study was done to compare Miligan Morgan haemorrhoidectomy and stapled haemorrhoidopexy on a set of predetermined parameters, in an Indian set up.

2. METHODS

A total of 60 patients were randomized to undergo either the stapled haemorrhoidopexy technique or the Miligan Morgan technique. Two groups were constituted: A stapled hemorrhoidopexy (SH) group (30), operated on using the PPH 03 kit (Ethicon Endo Surgery); and a Miligan Morgan(MM) group (30) operated on using a standard open haemorrhoidectomy technique. Patients with acute haemorrhoidal episodes with thrombosis, prior haemorrhoidectomy and intercurrent anal pathology (i.e fistula and/or fissure) were excluded from the study. Approval was taken from the ethical research committee based in Rajindra hospital, Patiala, India.

A detailed history was taken and general physical examination was done on each patient alongwith digital rectal examination, proctoscopic evaluation, preoperative investigations and pre anaesthetic check up. Informed consent was taken from all the patients.

3. OPERATIVE PROCEDURE [11]

Anaesthesia was of patients choice. Patients were given two phosphate enemas before the operation (one at night and other at the morning of surgery). All patients were given metronidazole (500 mg intravenously) at induction of anaesthesia. All operations were done in lithotomy procedure.

The operative procedure for Miligan Morgan group consist of holding the pile mass with an artery forceps and diathermy dissection and excision. The vascular pedicle was carefully ligated. A dressing sponge was placed in the anal canal on completion of the procedure.

The stapled procedure was done according to technique described here. The circular anal dilator with the transparent anal retractor was inserted upto the hilt and secured with 2 lateral stitches. After securing the circular anal retractor, the purse string anoscope was introduced through its center. A 2/0 monofilament suture on a tapered 5/8th needle was used. By rotating the anoscope, only mucosa purse string suture was placed 4 to 5 cm above the dentate line that draws a circumferential ring of mucosal tissue into the stapling device. The excision of a 2 cm tissue ring and the simultaneous reanastomosing of the mucosa with 2 staple rows result in a circumferential surgical wound about 2 cm above the dentate line. Inspection of the staple line was done by a bivalve retractor and any bleeding points were stopped by electrocautery. A dressing sponge was placed in the anal canal at the end of the procedure. Precautions were taken not to include the muscular wall in the purse string suture. Vaginal mucosa was checked in female patients before firing the stapler to ensure that it is not tenting into the housing of the stapler.

Post operatively, both the groups received similar nursing care. Patients were discharged when the pain was controlled and home conditions permitted and were called for regular follow up in OPD for 1 month or any time in case of emergency.

The primary endpoints of the study was measurement of pain during 1st 24 hours, 1st motion, till 7 days and 10 days. Postoperative pain scores was measured using a 100 millimeters VAS (visual analogue scale). The secondary outcome measures were operative time, use of analgesia, incidence of post operative complications, duration of hospital stay, time of first bowel, patient's satisfaction and time until return of normal activity.

Descriptive statistical analysis has been carried out in this study. Significance is assessed at 5% level of significance. Mann Whitney U test has been used to find significance of study parameters between two groups.



Fig. 1. Showing ligation of vascular pedicle in open haemorrhoidectomy



Fig. 2. Shows end result in open haemorrhoidectomy

STAPLED HEMORRHOIDOPEXY



Fig. 3. Anal dilator in place



Fig. 4. Stapler in its position ready to be fired

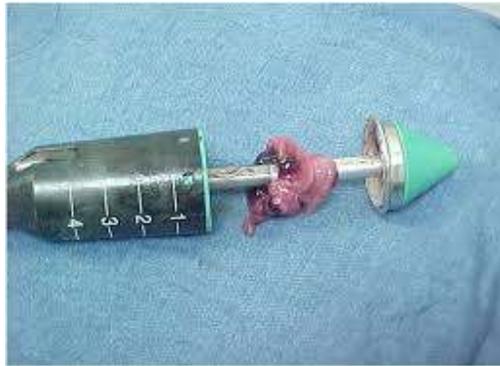


Fig. 5. Stapler after removal of donut shaped anal mucosa

Significant figures:

Suggestive significance (P value<0.05)
 Moderately significant (P value 0.01-0.05)
 Strongly significant (P value <0.01)

71.6%,13.33% presented with pain/discomfort during defecation and 21.66% patients had constipation and generalised weakness. 28.33% patients in the study were of grade II haemorrhoids and rest had grade III haemorrhoids (Table 1).

4. RESULTS

In this study maximum number of patients were in the age group of 31-50 years. The mean age with standard deviation was 43.75±13.05 years. The majority of patients included in the study were males (75%). Bleeding per rectum was the presenting complaint in the majority of the patients (91.6%), mass per anus in

The duration of surgery was calculated from the time of anaesthesia to the time of final dressing. The average time for stapled haemorrhoidopexy was significantly lower (50.33±9.55 vs 59.33±15.01; p=0.008). Maximum time consumption in stapled group was in anal dilatation and fixation of circular anal retractor with sutures.

Table 1. Patient characteristics in the two groups

Patient characteristic		Stapled		Open		Total	
		No	%	No	%	No	%
Age (in years)	21-40	21	70.00	13	43.33	34	56.67
	41-60	06	20.00	12	40.00	18	30.00
	>60	03	10.00	05	16.67	08	13.33
	Mean ±SD	40.76±11.96		46.73±13.61		43.75±13.05	
Gender	Male	22	73.6	23	76.9	45	75
	Female	08	26.4	07	23.1	15	25
Grade	Grade 2	10	33.3	07	23.33	17	28.33
	Grade 3	20	66.7	23	76.67	43	71.67
Total		30	100	30	100	60	100

Table 2. Comparison of pain score (VAS) in open and stapler group

Pain score (VAS)	Open Mean ± SD	Stapled Mean±SD	P value
6 hrs	6.53±0.73	3.93±1.25	0.00
12 hrs	5.56±0.72	2.96±1.24	0.00
24 hrs	5.33±0.66	2.83±1.31	0.00
1 st motion	3.13±1.07	1.50±1.07	0.00
1 week	2.13±1.19	0.50±0.90	0.00
10 days	1.56±0.85	0.16±0.74	0.00

Table 2 shows the pain scores of patients on post op day 1 at 6 hrs, 12 hrs, 24 hrs, 1st motion, 1st week and 10 day.

Patients in stapled group had significantly lesser pain as compared to open group. Consequently, requirement of analgesics (parenteral as well as oral) was also significantly lower in stapled group (p <0.01) (Table 3).The average time for passage of 1st stool in the stapled and open group was 16.43 hrs and 23.00 hrs respectively.

Table 3. Comparison of analgesic requirement among the two groups

Analgesic use	Group	Mean±sd	P value
Parenteral	Stapled	1.36±0.668	<0.01
	Open	2.36±0.614	
Oral	Stapled	5.93±1.43	<0.01
	Open	10.30±1.02	

Table 4 shows the complications in early post op period (1st week) in each of the groups (p=0.764 which is insignificant).

The hospital stay was significantly lower in stapled group (p=0.004) and return to work significantly earlier (in days) in stapled group (p=0.000) (Table 5).

Patients were asked to rate their satisfaction into three categories:

- Highly satisfactory: If given a choice will always choose same technique
- Satisfactory: If given choice may choose same technique again

- Un satisfactory: If given choice will never choose same technique

In this study total 96.7% patients were satisfied in stapled group and 90% in open group (Table 6).

5. DISCUSSION

Miligan Morgan technique has been under the radar due to pain in early post operative period, prolonged hospital stay and delayed return to work. The Longo technique promises to circumvent these issues by resecting circumferential part of rectal mucosa and submucosa, offering better venous drainage, but this is a relatively newer technique, with most surgeons still in the learning curve.

In our study, maximum patients were middle aged and majority (75%) of them were males. Some studies show equal sex ratio. This may be due to the fact that majority of woman suffering from haemorrhoids fail to seek medical assistance due to social and cultural factors.

Duration of surgery is significantly lower in stapled group which is similar to observation of other studies. In our study, post operative pain was assessed using a visual analogue scale (VAS).The aim was to keep the VAS below 3 with adequate analgesia. The pain scores were significantly higher in the open group because raw area was present in somatic region below the dentate line.VAS score was less in stapled group resulting in less requirement of analgesic drug. However, Cheetham et al. [12] reported significantly more pain in stapled group .The pain was probably due to low staple line in their study.

Table 4. Early post operative complications in the two groups

Complications	Stapled		Open		P value
	No	%	No	%	
Secondary bleeding	01	3.33	01	3.33	0.764
Urinary retention	-	-	01	3.33	
Pain not relieved with simple analgesics	03	10.0	10	33.33	
Constipation	01	3.33	02	6.67	
Mild incontinence	00	00.00	02	6.67	
Wound infection	-	-	-	-	

Table 5. Comparison of hospital stay and return to work among the two groups

	Stapled Mean±SD	Open Mean±SD	P value
Duration of hospital stay (in days)	2.20±1.12	3.16±1.34	0.004
Return to work (in days)	6.56±2.72	14.90±4.28	0.000

Table 6. Comparison of patient satisfaction in stapled and open group

Patient satisfaction	Stapled		Open	
	No	%	No	%
Not satisfied	1	3.33	03	10.00
Satisfied	05	16.67	22	73.33
Highly satisfied	24	80	05	16.67
Total	30	100	30	100

The average time for passage of 1st stool in the stapled and open group was 16.43 hrs and 23.00 hrs respectively. Delay in passage of stools in open group can be due to pain experienced by the patient. The passage of stool was associated with significant pain in open group. This also has been well documented in previous studies [13].

Postoperative complication rate was insignificant when compared in both groups. One patient had urinary retention in the open group for which indwelling catheterization was done. Post operative incidence of haemorrhage was similar in both groups which subsided after administration of an injection of tranexamic acid. This is well supported by literature [14]. Faecal incontinence in open group was present in two patients, it may be due to damage of some fibres of sphincter by cautery. No major complication was found in stapled group. Rare complications have been mentioned in literature. Molloy and Kingsmore [15] reported a case of severe retroperitoneal sepsis following stapler procedure. In our study, all patients received prophylactic antibiotics and no patient developed sepsis. There are 2 case reports of rectal perforation and one case of rectovaginal fistula after stapler haemorrhoidopexy [16,17]. Also acute intestinal obstruction due to closure of the rectum by purse string sutures has been reported [18]. These complications are suggested to have happened due to lack of experience and can be overcome.

As a late complication, in stapler group, one patient had faecal urgency. One patient complained of intermittent bleeding but was asymptomatic at the end of the month. One patient had pain on defecation which reduced with time. One had skin tag but otherwise didn't have any recurrence. In open group, persisting pain post surgery was seen in three patients, one of them had anal stenosis which was managed with anal dilatation followed by lateral internal sphincterotomy after 15 days. In comparative studies of both groups, no significant differences were seen. Most of the previous studies clearly

show long term haemorrhoid recurrence after stapled procedure but the overall need of surgical and nonsurgical reintervention after two procedures was similar.

We observed that, the duration of hospital stay and time to return to work was significantly lesser for stapled group. This is in accordance to the earlier studies [19]. This can be attributed to the fact that open group is related to more pain and discomfort and passage of stool is also delayed. There is also a higher patient satisfaction in stapled group which is in agreement with earlier literature.

In our study, we noted that the cost of stapled haemorrhoidectomy was very high (400\$ vs 110\$). There are few studies that suggest stapled hemorrhoidopexy is more cost effective on basis of early discharge but, as hospital stay is not costly in our setup, so for our patients stapled hemorrhoidopexy is not cost effective.

6. CONCLUSION

Stapled haemorrhoidopexy is an effective procedure for haemorrhoids and has minimal immediate complications, with shorter duration of surgery, lesser post operative pain and need for analgesia, shorter duration of hospital stay and earlier return to work when compared with Miligan Morgan haemorrhoidectomy but the cost of stapled haemorrhoidopexy is exorbitant and cannot be offered to all patients. The long term complications of stapled haemorrhoidopexy are still unknown and it is a relatively novel concept with most surgeons still in learning curve.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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