

# Stapled Hemorrhoidopexy Versus Open Hemorrhoidectomy: A Comparative Study of Short Term Results

Ankur Jain

Senior Resident, Department of General Surgery, M.G.M. Medical College and M Y Hospital, Indore, M. P. India

**Abstract:** **Background:** Hemorrhoids are usually managed by surgical hemorrhoidectomy which is associated with postoperative pain, long hospital stay and a longer convalescence. Stapled hemorrhoidopexy is a newer alternative for the treatment of hemorrhoids. In this study, the two methods were compared for short term outcomes. **Methods:** Hundred patients having grade 3 or 4 hemorrhoids and who fulfilled the criteria were included in the study from June 2016 to May 2018. Fifty patients underwent stapled hemorrhoidopexy and other fifty underwent open hemorrhoidectomy. All patients were reviewed immediately after surgery and at 1, 3, 6 weeks and 6 months postoperatively. The two groups were compared for duration of surgery, hospital stay, return to work and post-operative complications. **Results:** The mean (S.D.) age was 40.06 (10.33) in our study. The majority of patients in the study were males and had grade 4 haemorrhoids. Stapled hemorrhoidopexy group had shorter duration of surgery, less postoperative pain and need for analgesia, shorter duration of hospital stay and earlier return to work and a high patient satisfaction as compared with open hemorrhoidectomy group. There were no major post-operative complications, recurrence, residual prolapse or incontinence in the follow up period of six months in the stapled group. **Conclusions:** Stapled hemorrhoidopexy is a safer alternative to open hemorrhoidectomy with many short-term benefits.

**Keywords:** Hemorrhoids, Milligan Morgan hemorrhoidectomy, Stapled hemorrhoidopexy

## 1. Introduction

Hemorrhoids are one of the commonest benign anorectal problems worldwide. The management of third and fourth degree hemorrhoids is usually surgical.<sup>1</sup> The most commonly performed operation is hemorrhoidectomy.<sup>2</sup> Milligan-Morgan hemorrhoidectomy has been the most popular among the various surgical techniques performed.<sup>3</sup> Surgical hemorrhoidectomy has been reputed as being a painful procedure for a benign disease, and causes postoperative pain which needs about 2- 3 days hospital stay and a convalescence of at least one month.<sup>4,5</sup> Stapled hemorrhoidopexy is a newer modality that represents a paradigm change in the treatment of hemorrhoids.<sup>6</sup> However it has been met with both skepticism and interest.<sup>7</sup> Stapled hemorrhoidectomy has better short-term outcomes, including shorter operating times, less postoperative pain, early return to work and greater patient satisfaction.<sup>4,5,8-10</sup>

The present study was designed to compare the short term outcomes of stapled hemorrhoidopexy with Milligan-Morgan open hemorrhoidectomy in terms of

- Duration of surgery
- Post-operative pain and analgesics requirement
- Duration of hospital stay
- Post-operative complications
- Days taken for Return to work
- Anorectal physiological functions and recurrence
- Patient satisfaction

## 2. Methods

The present study was conducted in the Department of General Surgery, M.G.M.MEDICAL COLLEGE & M Y HOSPITAL INDORE, M.P. India over duration of two years from 1st June 2016 to 31st May 2018. It was a prospective

study comparing Milligan Morgan open hemorrhoidectomy and Stapled hemorrhoidopexy for the management of grade 3 and 4 hemorrhoids. Hundred patients undergoing surgery for hemorrhoids at our institute who fulfilled the inclusion and exclusion criteria were included in the study. Data was collected by using a proforma.

### Inclusion Criteria

- Grade 3 and grade 4 hemorrhoids

### Exclusion Criteria

- Acute hemorrhoidal episodes with thrombosis
- Prior hemorrhoidectomy
- Intercurrent anal pathology (like fistula in ano and anal fissure)
- Prolapse of single anal cushion
- Anal stenosis

The patients included in the study were divided into two groups. Fifty patients underwent Milligan Morgan technique of open hemorrhoidectomy and fifty underwent longo technique of stapled hemorrhoidopexy.

Patients were clinically examined and routine laboratory investigations were done preoperatively. All patients were operated on an in-patient basis. Patient's hospital stay for analysis was calculated from the day of surgery. Preoperatively patients were kept nil per oral overnight and received phosphate enema in the morning of the day of surgery.

One dose of ciprofloxacin and metronidazole were given at the time of anaesthesia for surgery. All operations were performed in the lithotomy position under spinal anaesthesia. Patients were reexamined under anaesthesia to confirm the grade of hemorrhoids and to rule out associated

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anal pathologies like anal fissure and fistula in ano. Post-operative management consisted of standard nursing care and analgesia. Patients were started on a soft oral diet within 4 hours postoperatively. Dressing was removed on the morning after surgery and a local external visual examination was done.

Post-operative pain was managed according to the guidelines of French Anaesthesia Society. Pain was assessed using a visual analog scale (VAS) where a score of 0 represented no pain and a score of 10 represented the worst pain ever. The pain score was recorded every 6 hours during the first postoperative day, at the time of first motion and daily until the end of the first week. The aim was to keep the VAS score below 5 with adequate analgesia. Prescribed analgesics were classified using the world health organization (WHO) criteria. Analgesics were administered on the basis of the VAS score <3, class I analgesic (paracetamol); between 3 and 5, class II analgesic (codeine, dextropropoxyphene-paracetamol) or VAS >5, class III analgesic (with paracetamol). If a given analgesic was having a partial effect, an analgesic of the next class was prescribed.

In addition to analgesics, patients were advised Antibiotics (in tablet form) ciprofloxacin 500mg twice daily, metronidazole 400 mg thrice daily and syrup lactulose 20 ml at bedtime for two weeks. Patients undergoing open hemorrhoidectomy were also advised Sitz bath twice daily for two weeks. Patients were discharged when pain control and home circumstances permitted. The patients were reviewed on outpatient basis one week after surgery. Patients were advised to report immediately in case of emergency. Patients were reviewed at 1 week and 3 weeks and between 6-10 weeks postoperatively. On follow up, patients were asked to rate the control of their symptoms, degree of continence to flatus and faeces, duration to return to normal activities and any other problems they had. A physical examination was also carried out at each follow up. The outcome measures were postoperative pain, analgesia requirement, operative time, hospital stay, time to return to normal activity, continence, patient satisfaction and complications.

Data was analyzed by descriptive statistical analysis. Significance was assessed at 5% level of significance. Student t-test was used to find the significance of study parameters on continuous scale in parametric condition between two groups (inter group analysis) and Mann Whitney U test was used to find the significance of study parameters on continuous scale in non-parametric condition within each group. Chi-square/ Fisher Exact test were used to find the significance of study parameters on categorical scale between two groups.

### 3. Results

A prospective comparative study consisting of 100 patients divided into two groups, 50 in stapled hemorrhoidectomy and 50 in open hemorrhoidectomy was undertaken to study the short term results.

**Table 1:** Comparison of age distribution of patients studied.

Age in Years	Stapled		Open		Total	
	No.	%	No.	%	No.	%
21-30	13	26	14	28	27	27
31-40	15	30	13	26	28	28
41-50	16	32	14	28	30	30
51-60	5	10	7	14	12	12
>60	1	2	2	4	3	3
Total	50	100	50	100	100	100
Mean±s.d	39.50±9.82		40.05±10.88		40.06±10.33	

Samples are matched with P= 0.76

**Table 2:** Comparison of gender distribution of patients studied

Gender	Stapled		Open		Total	
	No.	%	No.	%	No.	%
male	27	54	33	66	60	60
female	23	46	17	34	40	40
Total	50	100	50	100	100	100

Samples are not gender matched with P = 0.04

**Table 3:** Comparison of grade of disease of patients studied

Grade	Stapled		Open		Total	
	No.	%	No.	%	No.	%
Grade3	24	48	23	46	47	47
Grade4	26	52	27	54	53	53
Total	50	100	50	100	100	100

Samples are matched based on grade with P = 0.832

**Table 4:** Complete or incomplete circumferential donut in stapled haemorrhoidectomy group of patients

	Number	%
Complete	46	92
Incomplete	4	8
Total	50	100

**Table 5:** Post-surgery findings

Post surgery findings	Stapled (n=50)		Open (n=50)		P-value
	No.	%	No.	%	
Bleeding	7	14	11	22	0.275
Supportive stitch	6	12	10	20	0.247
Residual prolapse	0	0	25	50	<0.001**

**Table 6:** Comparison of duration of hospital stay in days

Duration of hospital stay in days	Stapled		Open	
	No.	%	No.	%
Upto 2	40	80	1	2
2-4	10	20	37	74
>4	0	0	12	24
Total	50	100	50	100
Mean±S.D.	1.94±0.79		3.92±0.77	

Duration of hospital stay is significantly low in stapled group with t= 11.46; P<0.0001\*\*.

**Table 7:** Comparison of pain scores in two groups of patients

Pain score (VAS)	Stapled	open	P-value
6hours	1.78±0.77	2.89±0.86	<0.001**
12hours	1.82±0.61	2.13±0.82	0.047*
24hours	1.42±0.62	1.89±0.80	0.003**

P values are obtained based on Mann Whitney U test

**Table 8:** Complications

Complications	Stapled		Open		P-value
	No.	%	No.	%	
Retention	8	16	15	30	0.081
Bleeding	7	14	11	22	0.245
Pain	15	30	28	56	0.006
Incontinence	0	0	3	6	0.494

**Table 9:** Comparison of time taken to return to work in days in two groups of patients

Return to work in days	Stapled		Open	
	No.	%	No.	%
<7days	25	50	0	0
7-14days	24	48	19	38
>14days	1	2	31	62
total	50	100	50	100
Mean±S.D.	8.42±2.72		15.40±2.08	

Return to work is significantly early in days in stapled group with  $t = 10.573$ ;  $P < 0.001^{**}$

**Table 10:** Comparison of patient satisfaction score

Patient satisfaction score	Stapled		Open	
	No.	%	No.	%
1	0	0	0	0
2	3	6	6	12
3	5	10	20	40
4	35	70	18	36
5	7	14	6	12
Total	50	100	50	100
Mean±S.D.	3.92±0.69		3.48±0.86	

Significantly higher satisfaction score in patients with stapled hemorrhoidopexy with  $P = 0.003^{**}$  by Mann Whitney U test

**Table 11:** Follow up status

Follow up status	Stapled (n=50)		Open (n=50)		P-value
	No.	%	No.	%	
Incontinence at 1st month	0	0	3	6	0.241
Incontinence at 6th month	0	0	0	0	-
Recurrence after 6th month	1	2	5	10	0.362

**Table 12:** Comparison of oral medicine and I.V injections in two groups of patients

	Stapled	Open	P-value
Open medicine	5.89±2.86	11.04±2.27	<0.001**
I.V. injection	1.02±0.87	2.89±0.71	<0.001**

Oral medicine and IV injections use. Oral medication need was double in the open group as compared to stapled group and the need for I.V injections was nearly thrice.

#### 4. Discussion

This was a hospital based study conducted in the Department of General Surgery, M.G.M.MEDICAL COLLEGE & M Y HOSPITAL, INDORE, M.P. INDIA for duration of two years. It was a prospective study comparing Milligan Morgan haemorrhoidectomy and stapled haemorrhoidopexy for the management of grade 3 and 4 haemorrhoids.

Hundred patients undergoing surgery for hemorrhoids who fulfilled the criteria were included in our study. Fifty

patients underwent Longo technique of stapled hemorrhoidopexy and fifty underwent Milligan Morgan technique of open hemorrhoidectomy.

The mean (S.D.) age in our study was 40.06 (10.33). In a study by Shalaby R and Desoky A, the mean (S.D.) age of patients in the stapled and open groups was 44.1 (3.2) and 49.1 (12.2) years respectively.<sup>2</sup>In a study by Khan NF et al the mean age was 40.7±11.6 years.<sup>11</sup>

In open haemorrhoidectomy group 66% were males and 34% were females. And in stapled haemorrhoidopexy 54% were males and 46% were females. 47% (combined in both groups) patients had grade 3 haemorrhoids, and 53% had grade 4 haemorrhoids in our study. In a study by Khan NF et al majority (53.3%) of patients had third degree haemorrhoids.<sup>11</sup>

The mean duration of surgery in stapled group was 33 min, ranging from 25 to 55 minutes. In the open group, mean of 44 minutes, ranging from 25 to 55 minutes. Duration of surgery is significantly low in stapled group with  $t = 5.018$ ;  $P < 0.001^{**}$ . The studies by Tjandra JJ et al, Stolfi et al, Hetzer FH et al reported similar findings.<sup>9,12,13</sup> However, the duration is 5 to 10 minutes longer than observed by many others.<sup>4,5,14,15</sup> Ng KH et al reported that the median duration of operation was 15 minutes (range 5 to 45 minutes), much lower than most studies. Khan NF et al reported that the mean length of operative time was statistically insignificant between open and stapled groups.<sup>11,16</sup>

No major post-operative complications were reported in our study. Complete circumferential donut of the stapler line at the end of procedure was 92%. Urinary retention, bleeding and pain was found to be higher in the open group. Three patients in the open group reported incontinence to flatus and faeces. No report of incontinence in stapled group. Jayaraman S et al did a Cochrane Database Systematic review on stapled versus conventional surgery for hemorrhoids and noted that though associated with comparable short term results, stapled hemorrhoidopexy is associated with a higher long-term risk of hemorrhoid recurrence and the symptom of prolapse.<sup>17</sup> In a systematic review by Tjandra JJ, Chan MK stated that stapled hemorrhoidopexy is safe with many short-term benefits and the long-term results are similar to conventional procedure.<sup>12</sup> Laughlan K et al reported that stapled haemorrhoidopexy is associated with reduced post-operative pain and less bleeding but an increased rate of recurrent prolapse.<sup>18</sup>

In this study, post-operative pain was managed according to the guidelines of French Anaesthesia Society. Pain was assessed using a visual analog scale (VAS). The aim was to keep the VAS score below 3 with adequate analgesia classified using the world health organisation (WHO). Analgesics were administered on the basis of the VAS score. The pain scores were significantly higher in the open group at 6 hours, 12 hours, 24 hours and at first defecation. Tjandra JJ et al, Laughlan K et al, Rowsell M et al reported similar findings.<sup>5,12,18</sup> Stolfi et al reported that postoperative pain on first two postoperative days was similar.<sup>13</sup> Cheetham et al reported significantly more pain in stapled group.<sup>19</sup> The pain was probably due to low staple line.

In this study the mean duration of hospital stay (in days) was 2 days in the stapled group as compared to 4 days in the open group. Duration of hospital stay was significantly low in Stapled group. Our study supports the findings of shorter hospital stay in patients undergoing stapled hemorrhoidopexy as reported by Tjandra JJ et al, Laughlan K et al, and Khan NF et al<sup>11,12,18</sup>

The time taken for return to work was shorter in stapled group as compared to open group. Studies by Hetzer FH et al, Khan NF et al, Mehigan BJ et al and Rowsell M et al have reported similar findings.<sup>4,5,9,11</sup>

Significantly higher satisfaction score were noted in patients in Stapled group. There is a high patient satisfaction rate reported with stapled hemorrhoidopexy even from other studies.

The need for oral medication was double in the open group as compared to stapled group and the need for IV injections was nearly thrice. This is similar to studies by Tjandra JJ et al and Shalaby R et al.<sup>2,12</sup>

## 5. Conclusion

The study confirms that stapled hemorrhoidopexy is associated with shorter duration of surgery, less postoperative pain and need for analgesia, shorter duration of hospital stay and a quicker recovery, earlier return to work and a high patient satisfaction as compared with Milligan - Morgan open hemorrhoidectomy. The procedure is not associated with major post-operative complications. There is no recurrence, residual prolapse or incontinence in the follow up period of six months. Hence it was concluded that stapled hemorrhoidopexy is safe with many short-term benefits. It is a novel technique and has emerged as an alternative to open hemorrhoidectomy.

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