International Surgery Journal
Batheja S et al. Int Surg J. 2025 Mar;12(3):311-317
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20250561

Original Research Article

Comparative study between stapler hemorrhoidectomy and open hemorrhoidectomy

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Received: 28 November 2024
Revised: 14 January 2025
Accepted: 24 January 2025

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ABSTRACT

Background: Hemorrhoids are very common condition, affecting approximately 1 in 4 individuals. The open hemorrhoidectomy, also known as the Milligan Morgan hemorrhoidectomy, is the gold normal for treating third- or fourth-degree hemorrhoids, The stapler hemorrhoidectomy was successfully introduced with enthusiasm because it is associated with low level of postoperative discomfort. The clinical result of stapler hemorrhoidectomy and open hemorrhoidectomy was compared in this research based on post-operative problems and return to regular activities.
Methods: This potential observational analytical study was led on 80 patients diagnosed with grade II-IV hemorrhoids over 18 months. Patients were owed into group A (OH, n=30) and group B (SH, n=50) based on surgeon in consultation with the patient after usual counselling. The above study arms group were studied and compared.
Results: Stapler hemorrhoidectomy demonstrated significant advantages, severity of pain was documented to be significantly lower, reduced hospital stay (2.06±0.77 days versus 3.57±0.73 days), earlier return to normal activities (1.82±0.75 versus 3.03±1.16), rate of complications in the form of pain and bleeding were significantly lower during 1st week and second week of follow up.
Conclusions: When compared to open hemorrhoidectomy, stapler hemorrhoidectomy has a better clinical outcome because it is linked to fewer postoperative complications, especially pain and bleeding, early bowel movements, early hospital discharge, and an early return to normal activities. To determine the incidence of recurrence after stapler haemorrhoidectomy, further clinical studies with long-term follow-up are necessary.

Keywords: Hemorrhoids, Open hemorrhoidectomy, Stapler hemorrhoidectomy

INTRODUCTION

Hemorrhoids are very common condition, affecting approximately 1 in 4 individuals. The estimated prevalence of hemorrhoids is 4.4% globally in the overall population. The exact prevalence of hemorrhoids in India is unknown as majority of patients do not seek treatment. hemorrhoids or hemorrhoidal disease commonly called as piles refers to state of symptoms attributing to pathological vicissitudes in the vascular pillows of the anal canal.[1] Initially, conservative management is done in which patients are managed medically and is mainly focused on modifying the stool by increasing dietary fiber and fluid intake.[2] When nonoperative and medicinal therapy are ineffective or the hemorrhoids are big, surgery is advised to remove the hemorrhoids. Open hemorrhoidectomy, stapler hemorrhoidectomy, and doppler guided trans-anal devascularization are among the surgical techniques for hemorrhoids.[3]

The open hemorrhoidectomy, also known as the Milligan Morgan hemorrhoidectomy, is the gold standard for giving third- or fourth-degree hemorrhoids because it is less expensive, has less postoperative problems, and has superior long-term results.[4]

In the year 1993, stapler hemorrhoidectomy technique was introduced by Longo Milton, which was refined again in 1998 by Longo. The stapler hemorrhoidectomy was successfully introduced with enthusiasm because it is associated with low level of postoperative discomfort. This is likely due to the fact that the extremely sensitive perianal skin is preserved and the mucosal incision and staple lines are located above the dentate line.[5]

Need for study

Various previous studies have proved that stapler and open technique have the same results in efficacy but the complications are lesser with stapler hemorrhoidectomy. Although there is now no evidence to support the usual use of stapler hemorrhoidectomy, certain patients may be a good candidate.[6] This bolsters the need to compare the efficacy of stapler hemorrhoidectomy versus open hemorrhoidectomy and determine which patient group is more likely to benefit from the treatment. Therefore, the purpose of this research was to compare the surgical results of open and stapled hemorrhoidectomy.[7]

Aim

To assess the surgical outcomes of stapler hemorrhoidectomy in comparison to open hemorrhoidectomy.

METHODS

This prospective observational analytical study was shown at the department of general surgery, People's College of Medical Sciences and Research Centre, Bhopal. The study spanned 18 months, from November 2022 to April 2024, and involved patients undergoing surgical treatment for symptomatic grade II-IV hemorrhoids. Selection of the procedure was done by the operating surgeon in consultation with the patient after usual counselling and consent as part of routine treatment, and investigator was not allowed to choose the procedure. Depending upon the procedure, patients were divided into two groups: group A- open hemorrhoidectomy; group B- stapler hemorrhoidectomy.

A total of 80 patients were enrolled in the study, with patients meeting specific inclusion and exclusion criteria.

Tool

MS Excel was used to generate the data, while IBM SPSS software version 20 was used for analysis. While mean and standard deviation were used to convey continuous data, frequency and percentage were used to express categorical data. The independent t-test for continuous variables and the chi square test for categorical variables were used to compare the two groups. A p value of less than 0.05 was considered significant.[8]

Ethical approval information

To guarantee that ethical criteria are fulfilled, the research has to be authorized by an ethics committee, get informed permission, reduce risk, protect privacy and confidentiality, manage data, and be continuously monitored.[9] Any unfavorable incidents or issues can need an independent audit or ethics board examination.

Inclusion criteria

Patients with grade II to IV hemorrhoids (except the complicated ones).

Exclusion criteria

Patients of grade I hemorrhoids. Patients of grade IV complicated hemorrhoids (ulceration, gangrene). Patients of anorectal carcinoma. Patients with bleeding diathesis. Patient with cirrhosis/portal hypertension. Full thickness rectal prolapse. Anal stenosis, anal fissure, fistula and abscess. Pregnancy

Outcome measures

Outcome measures were complications; local swelling: visible swelling/edema in the anal region; post operative pain: VAS score at 1st day, 7th day, 14th day and 1 month; reactionary bleeding: spontaneous bleeding on the day of operation or 1st post op day; post operative bleeding: spontaneous bleeding during sitz bath or while defecating during the hospital stay; pattern of first bowel movement; duration of hospital stay; and return to normal activities.

RESULTS

Patient demographics

Mean age for group OH was 46.3±9.7 years. Mean age for group SH was 50.06±11.6 years.

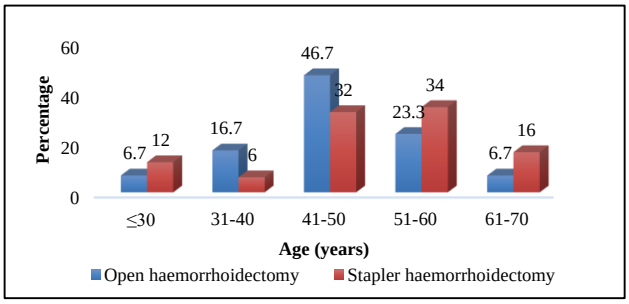

Figure 1: Comparison of age group between two groups.

Gender distribution showed predominantly male in both groups (OH: 76.7%, SH: 80%).

VAS score, pain scale ranged from 0 to 10. Mean VAS score in open hemorrhoidectomy group was 7.03±1.098

whereas that in stapler hemorrhoidectomy group was 2.54±1.18. Severity of pain was documented to be significantly lower in stapler hemorrhoidectomy group as compared to open hemorrhoidectomy group ($p<0.05$) (Table 1).

Reactionary bleeding was noted in 4% cases in stapler hemorrhoidectomy group and none of the cases in open hemorrhoidectomy group. However, the observed difference in reactionary bleeding between two groups was statistically insignificant ($p>0.05$) (Table 2).

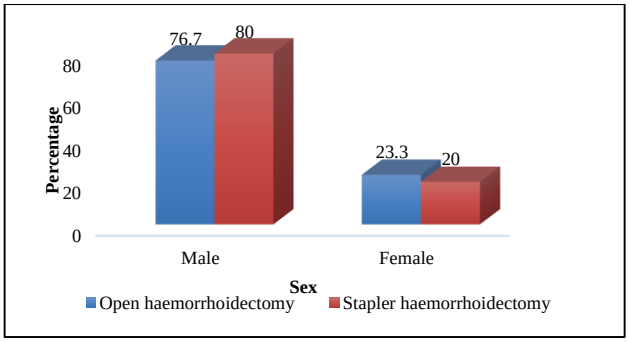

Figure 2: Comparison of sex between two groups.

Table 1: Comparison of post-operative pain between the groups.

Post operative pain (VAS)		Surgical procedure			
		Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)	
		N	%	N	%
Mild pain	1-3	0	0.0	42	84.0
Moderate pain	4-7	19	63.3	8	16.0
Severe pain	8-10	11	36.7	0	0.0
Mean±SD		7.03±1.098		2.54±1.18	
χ^2		69.943			
P value		0.001			

Table 2: Comparison of reactionary bleeding between two groups.

Reactionary bleeding	Surgical procedure			
	Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)	
	N	%	N	%
Absent	30	100.0	48	96.0
Present	0	0.0	2	4.0
χ^2	1.231			
P value	0.267			

Table 3: Comparison of length of hospital stay between two groups.

Length of hospital stay (days)	Surgical procedure			
	Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)	
	N	%	N	%
≤3	17	56.7	47	94.0
>3	13	43.3	3	6.0
Mean±SD	3.57±0.73		2.06±0.77	
χ^2	16.333			
P value	0.001			

Mean length of hospital stay in open and stapler hemorrhoidectomy group was 3.57±0.73 and 2.06±0.77 days respectively. Length of hospital stay was documented to be significantly higher (>3 days) in cases who underwent open hemorrhoidectomy as compared to those who underwent stapler hemorrhoidectomy (43.3% versus 6%; $p<0.05$) (Table 3).

Mean duration since surgery to return to normal activity was 3.03±1.16 weeks in open hemorrhoidectomy group and 1.82±0.75 weeks in stapler hemorrhoidectomy group. Approximately 88% cases could return to their normal activity within 2 weeks of stapler hemorrhoidectomy whereas patients in open hemorrhoidectomy group required significantly higher time to return to normal activity ($p<0.05$) (Table 4).

Table 4: Comparison of time taken to return to normal activity.

Return to normal activities (in weeks)	Surgical procedure			
	Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)	
	N	%	N	%
1	2	6.7	17	34.0
2	8	26.7	27	54.0
3	11	36.7	4	8.0
4	6	20.0	2	4.0
5	2	6.7	0	0.0
6	1	3.3	0	0.0
Mean±SD	3.03±1.16		1.82±0.75	
χ^2	27.118			
P value	0.001			

Table 5: Comparison of time taken from surgery to first bowel movement between two surgical groups.

1st bowel movement (POD)	Surgical procedure			
	Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)	
	N	%	N	%
1	3	10.0	17	34.0
2	17	56.7	30	60.0
3	8	26.7	3	6.0
4	2	6.7	0	0.0
Mean±SD	2.30±0.75		1.72±0.57	
χ^2	13.513			
P value	0.004			

Table 6: Comparison of complications between two groups at 1 week, 2 week and 1 month follow up.

Complications			Surgical procedure				χ^2	P value
			Open hemorrhoidectomy (n=30)		Stapler hemorrhoidectomy (n=50)			
			N	%	n	%		
Pain	1 week	No	16	53.3	48	96.0	25.39	0.001
		Mild	9	30.0	2	4.0		
		Moderate	5	16.7	0	0.0		
		Mean	1.47±0.717		0.06±0.03			
	2 weeks	No	23	76.7	50	100.0	12.79	0.002
		Mild	7	23.3	0	0.0		
		Mean	0.40±0.08		0			
	1 month	No	27	90.0	50	100.0	5.195	0.074
		Mild	2	10.0	0	0.0		
		Mean	0.13±0.04		0			
Bleeding	1 Week	Absent	24	80.0	50	100.0	10.81	0.001
		Present	6	20.0	0	0.0		
	2 weeks	Absent	27	90.0	50	100.0	5.195	0.023
		Present	3	10.0	0	0.0		
	1 month	Absent	29	96.7	50	100.0	1.688	0.194
		Present	1	3.3	0	0.0		
Swelling	1 Week	Absent	30	100.0	50	100.0	NA	NA
		Present	0	0.0	0	0.0		
	2 Weeks	Absent	30	100.0	50	0.0	NA	NA
		Present	0	0.0	0	0.0		
	1 month	Absent	30	100.0	50	100.0	NA	NA
		Present	0	0.0	0	0.0		

First bowel movement was noted within mean postoperative day of 2.30±0.75 and 1.72±0.57 in open and stapler hemorrhoidectomy group respectively. The observed difference in first bowel movement following the procedure was found to be statistically significant ($p<0.05$) (Table 6).

The Table 6 illustrates that in the first and second weeks after follow-up, a significantly higher proportion of patients in the open hemorrhoidectomy group had pain and bleeding problems compared to the stapler hemorrhoidectomy group ($p<0.05$). The difference in complications was statistically negligible ($p>0.05$), despite the fact that 3.3% and 10% of patients in the open hemorrhoidectomy group had mild bleeding and pain at the one-month follow-up. None of the patients in either group had any oedema at any follow-up ($p>0.05$).[10]

DISCUSSION

Those in the stapler hemorrhoidectomy group were mostly between the ages of 51 and 60, whereas those in the open hemorrhoidectomy group were mostly between the ages of 41 and 50 (46.7%). The mean ages of patients having stapler hemorrhoidectomy and those having open hemorrhoidectomy were 50.06±11.6 and 46.30±9.7 years, respectively. Males made up the bulk of the patients in our study: 80% of the stapler group and 76.7% of the open hemorrhoidectomy group.[11] Consequently, we discovered that hemorrhoids were more prevalent in males. The two groups' sexes and ages were comparable ($p>0.05$).

The majority of cases in the stapler group (35.7%) and the open group (31%), respectively, were between the ages of 41 and 50. Rahman et al found that the average age of hemorrhoid patients was 39.05±5.29 years.[8] The fact that more than half of the cases in both groups were male and that the two groups were comparable in terms of age and sex provided support for our research findings. The results of Salama et al, which revealed no discernible difference between the two groups' age and sex composition ($p>0.05$), corroborated those of our investigation.[12] They discovered that men made up the majority of hemorrhoidectomy cases in both groups (73.7% in the stapler group and 57.9% in the open group), and that the average patient age in the stapler and open hemorrhoidectomy groups was 41.71±11.43 and 39.34±12.50 years, respectively.

In our study, post-operative pain was measured as soon as feasible (within a day) after surgery using the VAS score. In comparison to the stapler hemorrhoidectomy group (mean VAS-2.54±1.18; mild pain in most, i.e. 84% cases), the open hemorrhoidectomy group had significantly higher pain and its severity after surgery (mean VAS 7.03±1.098; 63.3% moderate discomfort) ($p<0.05$). According to Rahman et al, the stapler hemorrhoidectomy group's mean VAS scores were significantly lower than those of the open hemorrhoidectomy group at 6 hours (1.83±0.72 versus 2.91±0.89; $p=0.001$), 12 hours (1.88±0.63 versus 2.22±0.84; $p=0.043$), and 24 hours (1.51±0.66 versus 1.90±0.82; $p<0.05$) following the procedure. Additionally, the mean (pain) VAS score of the stapler group was significantly lower than that of the open group (1.82±1.14 versus 4.89±1.59; $p<0.01$), according to Salama et al.[14] The open hemorrhoidectomy group outperformed the stapler hemorrhoidectomy group in terms of mean VAS score (5.19±0.41 versus 1.92±0.23), although the difference was not statistically significant ($p>0.05$), according study by Kumar et al.[9] According to Sachin et al, the open hemorrhoidectomy group's mean VAS scores at 6 hours (2.89±0.86 versus 1.78±0.77; $p<0.001$), 12 hours (2.13±0.82 versus 1.82±0.61; $p=0.047$), and 24 hours (1.89±0.80 versus 1.42±0.62; $p=0.003$) were significantly higher than those of the stapler hemorrhoidectomy group.[11] In the present research, 4% of the stapler hemorrhoidectomy group had reactive bleeding, but none of the patients in the open hemorrhoidectomy group did. Nonetheless, it was determined that there was no statistically significant difference in the incidence of reactive bleeding between the two groups ($p>0.05$). Postoperative bleeding occurred in 14% of cases in the stapler group and 22% of patients in the open hemorrhoidectomy group, according to a study by Sachin et al, however the difference was not statistically significant.[11]

An extended hospital stay was substantially associated with open hemorrhoidectomy, with a mean hospital stay of 3.57±0.73 days compared to 2.06±0.77 days in the stapler hemorrhoidectomy group.[15] About 43.3% of cases in the open hemorrhoidectomy group required more than three days of hospitalization, while 94% of patients in the stapler hemorrhoidectomy group were discharged within three days after the procedure ($p<0.05$). Similar findings were reported by Salama et al, who found that the mean length of hospital stay for the open hemorrhoidectomy group was significantly greater than that of the stapler hemorrhoidectomy group (1.20±0.43 versus 0.93±0.44 days; $p=0.10$).[10] The findings of this study were in line with those of Rahman et al, who discovered that the mean duration of hospital stay for the stapler group was much shorter (1.42.94 days) than for the open haemorrhoidectomy group (3.32.9 days).[8] While the majority of cases (73.8%) in the open hemorrhoidectomy group had LOHS of two to four days ($p<0.05$), the majority of patients (78.6%) in the stapler group had LOHS of less than two days.

It was discovered that patients who underwent stapler hemorrhoidectomy returned to their regular activities considerably sooner than those who underwent open hemorrhoidectomy; 88% of the stapler hemorrhoidectomy group did so within two weeks of surgery, while 33.5% of the open hemorrhoidectomy group did so ($p<0.05$). Returning to normal activities required an average of 3.03±1.16 weeks for the open hemorrhoidectomy group and 1.82±0.75 weeks for the

stapler hemorrhoidectomy group. Kumar et al observed that the stapler group's mean time to return to normal activity was significantly shorter than that of the open hemorrhoidectomy group (4±1.2 versus 14±3.4 days; p=0.0423).[9] These findings were similar to those of that study. According to Salama et al, individuals who had stapler hemorrhoidectomy resumed their regular activities much sooner (2.24±1.08) than those who underwent open hemorrhoidectomy (3.39±1.28 days). The findings of Rahman et al, who reported a notably faster recovery in terms of returning to their usual activities, were in line with the findings of the present investigation. Resuming usual activities took an average of 13.1±7.1 days for the stapled group and 22.08±9.9 days for the open group. After two weeks, a significantly higher proportion of patients (>90%) in the stapler group resumed their usual activities than 33.3% in the open group (p<0.05).

Approximately 34% and 60% of patients in the stapler hemorrhoidectomy group had their first bowel movement on postoperative days 1 and 2, respectively, but only 66.7% of patients in the open hemorrhoidectomy group had their first bowel movement within the first two postoperative days. There was a statistically significant difference (p<0.05). After resuming their regular activities, the mean duration for the open and stapled hemorrhoidectomy groups was 2.30±0.75 and 1.72±0.57 days, respectively. The average time for the first stool to pass after a stapler hemorrhoidectomy was 20 hours, whereas the average time for an open hemorrhoidectomy was 24.9 hours, according to Thejaswi et al.[13] Baliga et al discovered that the stapler group took 18.37±6.31 hours to pass their first stool, whereas the open group took 37.23±5.88 hours (p<0.05).[14]

In our study, postoperative pain was measured one week, two weeks, and one month after surgery using the VAS score. The open hemorrhoidectomy group had significantly higher discomfort and its severity at one week and two weeks of follow-up than the stapler hemorrhoidectomy group (p<0.05). The results of Rahman et al, who reported discomfort in considerably larger proportions of patients who had open hemorrhoidectomy (57.1%) compared to the stapler hemorrhoidectomy group (31%); (p<0.05) postoperatively, corroborated the findings of the current research. In contrast to 13.3%, 10%, and none after one week, one month, and three months of stapler hemorrhoidectomy, Kumar et al reported discomfort in 36.7%, 23.3%, and 3.3% of patients after open hemorrhoidectomy, respectively.[9] The results of Sachin et al, who found that discomfort was a complication in 56% of open hemorrhoidectomy patients compared to 30% of stapler hemorrhoidectomy cases, and that the difference was statistically significant (p<0.05), corroborated the findings of our investigation.[16] While none of the patients in the stapler hemorrhoidectomy group had postoperative bleeding at 1 or 2 weeks, we discovered that 20% and 10% of individuals in the open hemorrhoidectomy group did. There was a statistically significant difference (p<0.05). One (3.3%) bleeding incident occurred in the open hemorrhoidectomy group at the one-month follow-up, and there was no statistically significant difference in bleeding between the two study groups (p>0.05).[17] In a research by Rahman et al, postoperative bleeding was discovered in a greater percentage of patients in the open hemorrhoidectomy group (21.4%) compared to the stapler hemoroidopexy group (14.3%), although the difference was deemed statistically insignificant.[18] In their research, Sachin et al also found that the open hemorrhoidectomy group had a greater incidence of bleeding (22%), compared to the stapler hemorrhoidectomy group (14%).[11] However, the difference was not statistically significant (p>0.05).

We found that none of the patients in either group had any post-operative oedema.

The sample size of the study was small. The period of follow up was short (1 month), thus longterm complications associated with the procedure could not be assessed and cost effectiveness of both the procedures was not taken into account which may have impact on out-of-pocket expenditure of the patients.

CONCLUSION

The study found that stapler hemorrhoidectomy is associated with fewer postoperative complications, particularly pain and bleeding, early bowel movements, early hospital discharge, and an early return to normal activities, making it superior to open hemorrhoidectomy for the treatment of grade II to IV hemorrhoids in terms of clinical outcome. For the treatment of grade II to IV hemorrhoids, stapler hemorrhoidectomy may thus be the initial option. To determine the incidence of recurrence after stapler hemorrhoidectomy, further clinical studies with long-term follow-up are necessary.

ACKNOWLEDGEMENTS

Authors would like thankful to my HOD general surgery, PCMS and RC for his continuous support and motivation and also thankful to my postgraduate student peers who helped me to carry out this research work.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Batheja S, Mhaske A, Dausage C. Comparative study between stapler hemorrhoidectomy and open hemorrhoidectomy. Int Surg J 2025;12:311-7.