

Study to compare stapled haemorrhoidectomy with conventional haemorrhoidectomy in terms of outcome variables

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Abstract

Aims: The aim of the study to compare stapled haemorrhoidectomy with conventional haemorrhoidectomy in terms of outcome variables. **Material and methods:** It was a prospective study comparing Milligan Morgan open hemorrhoidectomy and Stapled hemorrhoidectomy for the management of grade 3 and 4 hemorrhoids, in the Department of General Surgery, PMCH, Bihar, India for 8 month. The patients included in the study were divided into two groups. 60 patients underwent Milligan Morgan technique of open hemorrhoidectomy and 60 underwent longo technique of stapled hemorrhoidectomy. 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. **Results:** In stapled hemorrhoidectomy group, 53.33% were males and 46.67% were females. In open hemorrhoidectomy group 63.33% were males and 36.67% were females. Mean age of the patients was 38.60±9.69 years and 41.05±10.5 years in the stapled hemorrhoidectomy and open hemorrhoidectomy groups respectively. 46.67% patients had Grade 3 hemorrhoids in stapled hemorrhoidectomy and 41.67% in open hemorrhoidectomy groups, and 53.33% had grade 4 hemorrhoids in stapled hemorrhoidectomy and 58.33% in open hemorrhoidectomy groups. The mean duration of surgery was 35 min, ranging from 24 to 58 minutes. In the open hemorrhoidectomy group, mean duration was 47 minutes, ranging from 26 to 60 minutes. Complete circumferential donut of the stapler line at the end of procedure was 90%. Bleeding was seen in 15% of patients in stapled hemorrhoidectomy group and 23.33% of patients in open hemorrhoidectomy group. Residual prolapse was seen in 53.33% of patients in open hemorrhoidectomy group and none in stapled hemorrhoidectomy group. The mean duration of hospital stay was 2.2 days in the stapled group as compared to 4.5 days in the open group. 85 % were discharged within 2 days in the stapled group, whereas only 3 % in the open group. 77% were discharged at the end of 4 days in the open group. The pain scores were significantly higher in the open group at 6 hours, 12 hours, 24 hours and at first defecation. **Conclusion:** we conclude that stapled hemorrhoidectomy 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

Keywords: hemorrhoids, hemorrhoidectomy, study.

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Introduction

Haemorrhoids are cushions of submucosal tissue containing venules, arterioles, and smooth muscle fibres that are located in the anal canal.

Three haemorrhoidal cushions are found in the left lateral, right anterior and right posterior positions. Because haemorrhoids are a part of normal anorectal anatomy, treatment is only indicated if they become symptomatic. Excessive straining, increased abdominal pressure, and hard stools increase venous engorgement of the haemorrhoidal plexus and cause prolapse of haemorrhoidal tissue.[1]

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External hemorrhoids are the congested external perianal vascular plexus covered by perianal skin; while, internal hemorrhoids originate from the sub-epithelial plexus of the anal canal above the dentate line.[2] Internal hemorrhoids may be classified according to the degree of prolapse into four degrees, although this may not reflect the severity of a patient's symptoms. The symptoms include discomfort, itching, mucous discharge, bleeding, pain, and prolapse and are associated with a feeling of fullness and incomplete evacuation.[3] The best possible treatment of third and fourth degree haemorrhoids is haemorrhoidectomy. Milligan Morgan's Haemorrhoidectomy (MMH) is the most commonly used and is widely considered to be the most effective surgical technique for treating haemorrhoids.[4] Other techniques, such as Ferguson's closed haemorrhoidectomy and Parks sub-mucosal haemorrhoidectomy are still followed at many places. In this Stapled haemorrhoidectomy (PPH), was introduced in the 1990s by Dott Antonio Longo in Italy. In this procedure, a device is introduced into the anal canal which leads to the excision of a ring of mucosa proximal to the haemorrhoids, thus, interrupting the blood supply.[5]

The reports also suggest a better patient acceptance and a higher compliance with day-case procedures potentially making it more economical. In some other randomized controlled trial study has reported that patients undergoing circular stapled Haemorrhoidopexy were significantly more likely to have recurrent haemorrhoids in long term follow up as well as significantly higher proportion of patients with stapled haemorrhoidectomy complained of symptoms of prolapse than those receiving conventional haemorrhoidectomy (CH).[6,7] We designed a study to compare stapled haemorrhoidectomy with conventional haemorrhoidectomy in terms of outcome variables.

Material and Methods

It was a prospective study comparing Milligan Morgan open hemorrhoidectomy and Stapled hemorrhoidopexy for the management of grade 3 and 4 hemorrhoids, in the Department of General Surgery, PMCH, Bihar, India for 8 months after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

120 patients of Grade 3 and grade 4 hemorrhoids undergoing surgery for hemorrhoids were included in this study. Patients with Acute hemorrhoidal episodes with thrombosis prolapse of single anal cushion and anal stenosis were excluded from the study. The patients included in the study were divided into two

groups. 60 patients underwent Milligan Morgan technique of open haemorrhoidectomy and 60 underwent longo technique of stapled hemorrhoidopexy. Patients were clinically examined and routine laboratory investigations were done preoperatively.

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 re-examined under anaesthesia to confirm the grade of hemorrhoids and to rule out associated anal pathologies like anal fissure and fistula in ano.

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. The outcome measures were postoperative pain, analgesia requirement, operative time, hospital stay, time to return to normal activity, continence, patient satisfaction and complications.

Statistical analysis

The recorded data was compiled entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations were calculated. Statistical test applied for the analysis was chi-square test, Student t-test and Whitney U test. Level of significance was set at $p \leq 0.05$.

Results

A prospective comparative study consisting of 120 patients divided into two groups, 60 in stapled hemorrhoidopexy and 60 in open hemorrhoidectomy was undertaken to study the short term results. In stapled hemorrhoidopexy group, 53.33% were males and 46.67% were females. In open hemorrhoidectomy group 63.33% were males and 36.67% were females.

Out of 60 patients in the stapled hemorrhoidopexy group, 25% were in the age group 20-30 years, 28.33% in the age group 30-40 years, 33.33% in the age group 40-50 years, 10% in the age group 50-60 years and 3.33% in the age group >60 years. In the open hemorrhoidectomy group, 26.67% were in the age group 20-30 years, 25% were in the age group 30-40

years, 28.33% were in the age group 40-50 years, 15% in the age group 50-60 years and 5% in the age group >60 years. Mean age of the patients was 38.60 ± 9.69 years and 41.05 ± 10.5 years in the stapled hemorrhoidopexy and open hemorrhoidectomy groups respectively

Table 1: Comparison of Age and Gender distribution of patients

Parameter	Stapled=60	%	Open=60	%	Total	%
Male	32	53.33	38	63.33	70	58.33
Female	28	46.67	22	36.67	50	41.67
Age (years)						
Below 30	15	25	16	26.67	31	25.83
30-40	17	28.33	15	25	32	26.67
40-50	20	33.33	17	28.33	37	30.83
50-60	6	10	9	15	15	12.5
Above 60	2	3.33	3	5	5	4.17
Mean \pm SD	38.60 ± 9.69		41.05 ± 10.55			41.15 ± 10.14

Samples are not gender matched with $P = 0.03$, Samples are matched with $P = 0.65$

46.67% patients had Grade 3 hemorrhoids in stapled hemorrhoidopexy and 41.67% in open hemorrhoidectomy groups, and 53.33% had grade 4 hemorrhoids in stapled hemorrhoidopexy and 58.33% in open hemorrhoidectomy groups.

Table 2: Comparison of grade of disease

Grade	Stapled=60	%	Open=60	%	Total	%
Grade 3	28	46.67	25	41.67	53	44.17
Grade 4	32	53.33	35	58.33	67	55.83
Total	60	100.0	60	100.0	120	100.0

Samples are matched based on grade with $P = 0.812$

Table 3: Complete or incomplete circumferential donut in stapled haemorrhoidopexy group of patients

	Number	%
Complete	54	90
Incomplete	6	10
Total	60	100.0

The mean duration of surgery was 35 min, ranging from 24 to 58 minutes. In the open hemorrhoidectomy group, mean duration was 47 minutes, ranging from 26 to 60 minutes. Complete circumferential donut of the stapler line at the end of procedure was 90%. Bleeding was seen in 15% of patients in stapled hemorrhoidopexy group and 23.33% of patients in open hemorrhoidectomy group. Supportive stitch was required in 11.67% of patients in stapled hemorrhoidopexy group and 18.33% of patients in open hemorrhoidectomy group. Residual prolapse was seen in 53.33% of patients in open hemorrhoidectomy group and none in stapled hemorrhoidopexy group.

Table 4: Post-surgery findings

Post- surgery findings	Stapled (n= 60)	%	Open (n= 60)	%	P-value
Bleeding	9	15	14	23.33	0.251
Supportive stitch	7	11.67	11	18.33	0.238
Residual prolapse	0	0.0	32	53.33	<0.001**

Duration of hospital stay is significantly low in stapled group with $t = 10.14$; $P < 0.0001$ **

In this study the mean duration of hospital stay (in days) was 2.2 days in the stapled group as compared to 4.5 days in the open group. 85 % were discharged within 2 days in the stapled group, whereas only 3 % in the open group.

77% were discharged at the end of 4 days in the open group. The pain scores were significantly higher in the open group at 6 hours, 12 hours, 24 hours and at first defecation.

Table 5: Comparison of pain scores

Pain scores (VAS)	Stapled	Open	P-value
6hours	1.82±0.69	2.94±0.88	<0.001**
12 hours	1.84±0.75	2.09±0.77	0.051*
24 hours	1.45±0.55	1.91±0.69	0.002**
P values are obtained based on Mann Whitney U test			

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

No major post-operative complications were reported in our study. Urinary retention was found to be higher in the open group. Post-surgery seven (15%) patients in stapled group had bleeding as compared to 14 in the open group (23.33%). 28.33% patients in stapled group had pain as compared to 56.67% in open group. four patients in the open group reported incontinence to flatus and faeces. No report of incontinence in stapled group

Table 6: Complications

Complications	Stapled	%	Open	%	P value
Retention	10	16.67	19	31.67	0.081
Bleeding	9	15	14	23.33	0.251
Pain	17	28.33	34	56.67	0.006**
Incontinence	0	0.0	4	6.67	0.494

**indicates statistical significance

When comparing time taken for return to work in days in two groups of patients, a mean of 9 days in stapled group and 16 days in open group was noted. About 60 % of stapled group had returned to work at the end of one week and the rest by second week. Only 2 patients took 16 days to return to work. In the open group, 40% patients returned to work by 2 weeks and rest after 2 weeks. Significantly higher satisfaction score were noted among patients in stapled group. None in the stapled group had a residual prolapse. At 1 month, 4 patients in the open group reported incontinence to flatus and faeces. No report of incontinence in stapled group. There was no incontinence in any group at 6 months

Discussion

This was a hospital based study conducted in the Department of General Surgery, , in the Department of General Surgery, PMCH, Bihar, India from October 2018 to January 2020. It was a prospective study comparing Milligan Morgan haemorrhoidectomy and stapled haemorrhoidopexy for the management of grade 3 and 4 haemorrhoids. 120 patients undergoing surgery for hemorrhoids who fulfilled the criteria were included in our study. 60 patients underwent Longo technique of stapled hemorrhoidopexy and 60 underwent Milligan Morgan technique of open hemorrhoidectomy.

In our study the mean age of the patients was 38.60 ± 9.69 year's and 41.05 ± 10.5 years in the stapled

hemorrhoidopexy and open hemorrhoidectomy groups respectively. 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.[8] In a study by Khan NF et al the mean age was 40.7 ± 11.6 years.[9] In open haemorrhoidectomy group 63.33% were males and 36.67% were females and in stapled haemorrhoidopexy 53.33% were males and 46.67% were females.

46.67% patients had Grade 3 hemorrhoids in stapled hemorrhoidopexy and 41.67% in open hemorrhoidectomy groups, and 53.33% had grade 4 hemorrhoids in stapled hemorrhoidopexy and 58.33% in open hemorrhoidectomy groups in our study. In a study by Khan NF et al majority (53.3%) of patients had third degree haemorrhoids.⁹ The mean duration of surgery was 35 min, ranging from 24 to 58 minutes. In the open hemorrhoidectomy group, mean duration was 47 minutes, ranging from 26 to 60 minutes. The studies by Tjandra JJ et al, Stolfi et al, Hetzer FH et al reported similar findings.[10-12] However, the duration is 5 to 10 minutes longer than observed by many others.[13-16] 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.[9,17]

No major post-operative complications were reported in our study. Complete circumferential donut of the stapler line at the end of procedure was 90%. Urinary

retention, bleeding and pain was found to be higher in the open group. four 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.[18] 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.[11] 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.[19]

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.[14,11,19] Stolfi et al reported that postoperative pain on first two postoperative days was similar.[12] Cheetham et al reported significantly more pain in stapled group.[20] The pain was probably due to low staple line. In this study the mean duration of hospital stay (in days) was 2.2 days in the stapled group as compared to 4.5 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.[9,11,19] 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.[9,10,13,14] 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.

Conclusion

We conclude 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.

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