

## COMPARISON OF CONVENTIONAL HEMORRHOIDECTOMY TO STAPLED HEMORRHOIDECTOMY DURING SURGICAL MANAGEMENT OF THE HEMORRHOIDS

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### ABSTRACT

**Introduction:** Conventional/Milligan-Morgan hemorrhoidectomy was the most popular surgical hemorrhoid treatment until recently after the introduction of minimally invasive surgery which made stapler hemorrhoidectomy a popular daycare technique with minimum complications.

**Aim:** To comparatively assess the conventional hemorrhoidectomy to stapled hemorrhoidectomy for surgical management of the hemorrhoids.

**Methods:** 100 subjects scheduled for hemorrhoidectomy were divided into 2 groups of 50 subjects each where the group I subjects underwent stapled hemorrhoidectomy and group II subjects conventional hemorrhoidectomy. All subjects were assessed for anal stenosis, anal incontinence, urinary retention, wound infection, bleeding, and postoperative pain at 1<sup>st</sup> and 3<sup>rd</sup> weeks postoperative.

**Results:** Mean operative time was higher with the conventional technique with  $45.77 \pm 5.88$  minutes compared to stapler hemorrhoidectomy. VAS scores on days 1 and 3 were significantly higher in conventional hemorrhoidectomy compared to stapler hemorrhoidectomy with  $p < 0.001$ . Hospital stay duration was significantly more for conventional hemorrhoidectomy in comparison to stapler hemorrhoidectomy with mean stay duration of  $7.22 \pm 2.4$  and  $3.01 \pm 2.1$  days respectively with  $p < 0.01$ . The time to return to normal activities was lesser with stapler hemorrhoidectomy than with conventional hemorrhoidectomy ( $p < 0.01$ ). Postoperative bleeding was significantly higher in subjects who underwent conventional hemorrhoidectomy, anal stenosis was seen in 4% ( $n=2$ ) subjects with conventional hemorrhoidectomy, anal incontinence in 8% ( $n=4$ ) subjects of conventional hemorrhoidectomy, and wound infection in 8% ( $n=4$ ) subjects of conventional hemorrhoidectomy.

**Conclusion:** Stapler hemorrhoidectomy has lesser postoperative pain, hospital stay duration, and operative time with a faster return to normal activity. Hence, stapler hemorrhoidectomy is recommended in subjects undergoing hemorrhoidectomy.

**Keywords**---conventional haemorrhoidectomy, hemorrhoidectomy, hemorrhoids, post-operative pain, stapler haemorrhoidectomy

## **INTRODUCTION**

Hemorrhoids are one of the most common diseases affecting the human population, and their treatment is being considered since the ancient era of Papyrus dating back to earlier than 3000 BC. Burning, strangling, and excision was advised by Hippocrates in 400 BC.<sup>1</sup> Greek adjective hemorrhoids are the origin of the word hemorrhoid which means bleeding with haima meaning blood and rhoos meaning flowing which marks the most prominent symptom of hemorrhoids.

The Latin word pila mark the origin of the word piles meaning swelling around the anus. Piles and hemorrhoids are the terms used interchangeably.<sup>2</sup> It is difficult to get an accurate assessment of the incidence of hemorrhoids and the rate of surgery varies from the incidence. The incidence of surgery is reported to be 35/1 lakh and 50-60/1lakh in the UK and the US respectively and a reported prevalence of 4.4% in the US population.<sup>3</sup>

Different treatment modalities have been developed for hemorrhoids where the most commonly employed was Conventional or Milligan-Morgan hemorrhoidectomy introduced in 1937 and is still widely prevalent in recent surgical practice. Conventional hemorrhoidectomy yields good results. However, it is a relatively painful procedure with prolonged hospital stays and various complications including stenosis, urinary incontinence, urinary retention, and/or immediate hemorrhage.<sup>4,5</sup>

The scenario, however, is changed following the introduction of minimally invasive surgery. Recently, the use of circular stapler hemorrhoidectomy has been advocated by Dr. Antonio Longo in 1998 for the surgical treatment of hemorrhoids. Stapler hemorrhoidectomy has been termed PPH (procedure for prolapse and hemorrhoids) and is associated with early return to normal activities and lesser postoperative pain.<sup>6</sup> Stapler hemorrhoidectomy has shown early encouraging results, it has few limitations including learning curve limits, needs specialized training, and expensive instruments for the procedure, that's why it is cost effective procedure.<sup>7</sup> The present study was done to comparatively assess the conventional hemorrhoidectomy to stapled hemorrhoidectomy for surgical management of the hemorrhoids. The study compared conventional hemorrhoidectomy to conventional hemorrhoidectomy concerning anal stenosis, anal incontinence, urinary retention, hospital stay duration, wound infection, bleeding, and postoperative pain.

## **MATERIALS AND METHODS**

The present study was done to comparatively assess the conventional hemorrhoidectomy to stapled hemorrhoidectomy for surgical management of the hemorrhoids. The study compared conventional hemorrhoidectomy to conventional hemorrhoidectomy concerning anal stenosis, anal incontinence, urinary retention, hospital stay duration, wound infection, bleeding, and postoperative pain. The study was done at Department of General Surgery after the clearance was given by the concerned Ethical committee. The study population was contributed by the subjects from the Department of Surgery of the Institute. After explaining the detailed study design, informed consent was taken from all the subjects in verbal and written format.

The study included 100 eligible subjects undergoing stapled hemorrhoidectomy and conventional hemorrhoidectomy in the Department of Surgery of the Institute within the defined study period. The inclusion criteria for the study were subjects of age 18 years or more, having

symptomatic hemorrhoids, and subjects who were willing to participate in the study. The exclusion criteria for the study were subjects with other anorectal pathology, hemorrhoids with fistula in ano, thrombosed hemorrhoids, asymptomatic hemorrhoids, and subjects who did not sign the consent for study participation.

After the final inclusion of the study subjects, a detailed history was recorded for all the subjects followed by the general clinical examination including the proctoscopic and rectal examination which was done for the grading of the hemorrhoids. Grade 1<sup>st</sup> was not included in the study as they are not indicated for the surgery. Hence, Grade II, III, and IV were included for surgical management in the study.

Before the subjects were taken for the surgery, chest screening and routine blood and laboratory investigations were done for all the participants. Among 100 subjects, 50 subjects from group I underwent stapled hemorrhoidectomy and group II (n=50) subjects conventional hemorrhoidectomy. Following surgery, all subjects were assessed for postoperative parameters including anal stenosis, anal incontinence, urinary retention, wound infection, and bleeding. Also, postoperative pain was assessed using the VAS (visual analog scale). All the parameters were assessed on the first day postoperatively followed by the assessment on the day of discharge. After discharge, all the subjects were recalled for follow-up at 1<sup>st</sup> week and 3<sup>rd</sup> week postoperatively.

The data collected were assessed statistically using logistic regression and multivariate statistical techniques. The data were presented in tabulated and descriptive formats. SPSS version 22.0, 2013, Armonk, NY: IBM Corp and chi-square and Fisher exact test were utilized. The data were expressed as mean and standard deviations and as percentages and numbers with a 0.05% significance level.

## RESULTS

The present study was done to comparatively assess the conventional hemorrhoidectomy to stapled hemorrhoidectomy for surgical management of the hemorrhoids. The study included 100 subjects, 50 subjects from group I underwent stapled hemorrhoidectomy and group II (n=50) subjects conventional hemorrhoidectomy. The demographic data of the study participants are listed in Table 1. The mean age of the study subjects was  $48.88 \pm 2.24$  years. There were 58% (n=58) males and 42% (n=42) females in the present study. The most common presenting complaint was prolapse/ mass per anum seen in 71% (n=71) subjects followed by bleeding in 85% (n=85) study subjects, constipation in 37% (n=37) study subjects, and the least common complaint was pain reported in 19% (n=19) study subjects. For the grade of the hemorrhoids, grade II, III, and IV hemorrhoids were seen in 9% (n=9), 55% (n=55), and 36% (n=36) study subjects respectively with grade III being the most common finding.

On assessing the mean operative time in the study subjects based on the surgical technique used, it was seen that the mean operative time was higher with the conventional technique with  $45.77 \pm 5.88$  minutes compared to stapler hemorrhoidectomy where the mean operative time was  $39.14 \pm 6.24$  minutes. This difference was significantly higher for the conventional technique with  $p < 0.01$  as shown in Table 2.

Concerning the comparative assessment of postoperative parameters in the study subjects following stapler hemorrhoidectomy and conventional hemorrhoidectomy, it was noted that VAS (visual analog scale) scores on Day 1 were significantly higher in the conventional

hemorrhoidectomy group with a mean score of 4.62 compared to 1.82 for stapler hemorrhoidectomy with  $p < 0.001$ . On day 3, the results were similar to the day 1 VAS scores with respective mean VAS values of 0.87 and 3.19 for stapler hemorrhoidectomy and conventional hemorrhoidectomy respectively which was a significant difference with  $p < 0.01$ . The duration of hospital stay after hemorrhoidectomy was significantly more for conventional hemorrhoidectomy in comparison to stapler hemorrhoidectomy with a mean stay duration of  $7.22 \pm 2.4$  and  $3.01 \pm 2.1$  days respectively with  $p < 0.01$ . The time to return to normal activities was lesser with stapler hemorrhoidectomy with  $4.93 \pm 1.46$  days compared to  $13.82 \pm 2.22$  days with conventional hemorrhoidectomy ( $p < 0.01$ ) as depicted in Table 3.

The study results showed that the most common complication was bleeding which was seen in 16% ( $n=8$ ) subjects who underwent stapler hemorrhoidectomy and 28% ( $n=14$ ) subjects of conventional hemorrhoidectomy which was significantly higher in subjects who underwent conventional hemorrhoidectomy, anal stenosis was seen in 4% ( $n=2$ ) subjects with conventional hemorrhoidectomy, anal incontinence in 8% ( $n=4$ ) subjects of conventional hemorrhoidectomy, and wound infection in 8% ( $n=4$ ) subjects of conventional hemorrhoidectomy. Anal incontinence and stenosis and wound infection were not seen in any subject who underwent stapled hemorrhoidectomy. Urinary retention was reported in 16% ( $n=8$ ) subjects and 12% ( $n=6$ ) subjects in the stapler and conventional hemorrhoidectomy group. Complications were significantly higher in conventional hemorrhoidectomy than in stapler hemorrhoidectomy with  $p < 0.01$  (Table 4).

## DISCUSSION

The present study was done to comparatively assess the conventional hemorrhoidectomy to stapled hemorrhoidectomy for surgical management of the hemorrhoids. The study included 100 subjects, 50 subjects from group I underwent stapled hemorrhoidectomy and group II ( $n=50$ ) subjects conventional hemorrhoidectomy. The mean age of the study subjects was  $48.88 \pm 2.24$  years. There were 58% ( $n=58$ ) males and 42% ( $n=42$ ) females in the present study. The most common presenting complaint was prolapse/ mass per anum seen in 71% ( $n=71$ ) subjects followed by bleeding in 85% ( $n=85$ ) study subjects, constipation in 37% ( $n=37$ ) study subjects, and the least common complaint was pain reported in 19% ( $n=19$ ) study subjects. For the grade of the hemorrhoids, grade II, III, and IV hemorrhoids were seen in 9% ( $n=9$ ), 55% ( $n=55$ ), and 36% ( $n=36$ ) study subjects respectively with grade III being the most common finding. These findings were similar to the studies of Bikhchandani J et al<sup>8</sup> in 2005 where authors assessed subjects with a mean age of 47.32 comparable to the present study and also showed that hemorrhoids were more common in males Thejeswi P et al<sup>9</sup> who reported that grade II hemorrhoids were most common as in the present study.

On assessing the mean operative time in the study subjects based on the surgical technique used, it was seen that the mean operative time was higher with the conventional technique with  $45.77 \pm 5.88$  minutes compared to stapler hemorrhoidectomy where the mean operative time was  $39.14 \pm 6.24$  minutes. This difference was significantly higher for the conventional technique with  $p < 0.01$ . These findings were consistent with the studies of Shukla S et al<sup>10</sup> in 2016 and Gravie JF et al<sup>11</sup> in 2005 where authors reported that higher surgical time is needed in conventional hemorrhoidectomy compared to stapler hemorrhoidectomy which was similar to the present study.

The study results showed that for comparative assessment of postoperative parameters in the study subjects following stapler hemorrhoidectomy and conventional hemorrhoidectomy, it was noted that VAS (visual analog scale) scores on Day 1 were significantly higher in the conventional hemorrhoidectomy group with a mean score of 4.62 compared to 1.82 for stapler hemorrhoidectomy with  $p < 0.001$ . On day 3, the results were similar to the day 1 VAS scores with respective mean VAS values of 0.87 and 3.19 for stapler hemorrhoidectomy and conventional hemorrhoidectomy respectively which was a significant difference with  $p < 0.01$ . The duration of hospital stay after hemorrhoidectomy was significantly more for conventional hemorrhoidectomy in comparison to stapler hemorrhoidectomy with a mean stay duration of  $7.22 \pm 2.4$  and  $3.01 \pm 2.1$  days respectively with  $p < 0.01$ . The time to return to normal activities was lesser with stapler hemorrhoidectomy at  $4.93 \pm 1.46$  days compared to  $13.82 \pm 2.22$  days with conventional hemorrhoidectomy ( $p < 0.01$ ). These results were in agreement with the previous studies of Ebert KH et al<sup>12</sup> in 2002 and Tjandra JJ et al<sup>13</sup> in 2007 where authors reported higher VAS scores, hospital stay duration, and time to return to normal activity was significantly more than conventional hemorrhoidectomy compared to stapler hemorrhoidectomy.

The most common complication seen in the present study was bleeding which was seen in 16% (n=8) subjects who underwent stapler hemorrhoidectomy and 28% (n=14) subjects of conventional hemorrhoidectomy which was significantly higher in subjects who underwent conventional hemorrhoidectomy, anal stenosis was seen in 4% (n=2) subjects with conventional hemorrhoidectomy, anal incontinence in 8% (n=4) subjects of conventional hemorrhoidectomy, and wound infection in 8% (n=4) subjects of conventional hemorrhoidectomy. Anal incontinence and stenosis and wound infection were not seen in any subject who underwent stapled hemorrhoidectomy. Urinary retention was reported in 16% (n=8) subjects and 12% (n=6) subjects in the stapler and conventional hemorrhoidectomy group. Complications were significantly higher in conventional hemorrhoidectomy than in stapler hemorrhoidectomy with  $p < 0.01$ . These complications were comparable to the previous studies of Fazio VW et al<sup>14</sup> in 2002 and Mehigan BJ et al<sup>15</sup> in 2000 where authors reported significantly higher complications with conventional hemorrhoidectomy compared to stapler hemorrhoidectomy.

## CONCLUSION

Within its limitations, the present study concludes that Stapler hemorrhoidectomy has lesser postoperative pain, hospital stay duration, and operative time with a faster return to normal activity and it is cost effective procedure. Hence, stapler hemorrhoidectomy is recommended in subjects undergoing hemorrhoidectomy. The limitations of this study were smaller considered population, short monitoring, and biased related to the geographic location warranting further long-term studies planned longitudinally.

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## TABLES

Characteristics	%	n=100
Mean age (years)	48.88±2.24	
Gender		
Males	58	58
Females	42	42
Presenting complaints		
Pain	19	19
Prolapse/ mass per anum	71	71
Constipation	37	37
Bleeding	85	85

Hemorrhoid grades		
II	9	9
III	55	55
IV	36	36

**Table 1: Demographic and disease characteristics of the study subjects**

<b>Surgical technique used</b>	<b>Mean operative time (minutes)</b>
Stapler hemorrhoidectomy	39.14±6.24
Conventional hemorrhoidectomy	45.77±5.88
p-value	<0.001

**Table 2: Mean operative time with the stapler and conventional hemorrhoidectomy in the study subjects**

Postoperative parameters	Stapler hemorrhoidectomy	Conventional hemorrhoidectomy	p-value
VAS scores			
Day 1	1.82	4.62	<0.01
Day 3	0.87	3.19	
Hospital-stay duration (days)	3.01±2.1	7.22±2.4	<0.01
Time to return to normal activities	4.93±1.46	13.82±2.22	<0.01

**Table 3: Comparison of postoperative parameters with the stapler and conventional hemorrhoidectomy in the study subjects**

Postoperative parameters	Stapler hemorrhoidectomy n (%)	Conventional hemorrhoidectomy	p-value
Post-operative bleeding	8 (16)	14 (28)	<0.01
Anal stenosis	0	2 (4)	
Anal incontinence	0	4 (8)	
Urinary retention	8 (16)	6 (12)	
Wound infections	0	4 (8)	

**Table 4: Postoperative complications with the stapler and conventional hemorrhoidectomy in the study subjects**

## ATLAS



Figure 1: Clinical picture of haemorrhoids



Figure 2: Conventional haemorrhoidectomy

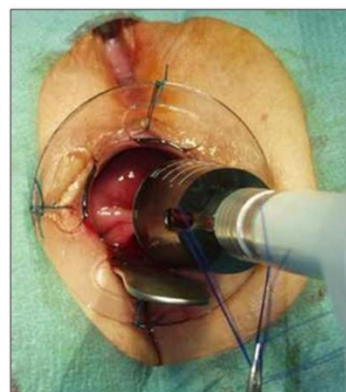


Figure 1: Stapled haemorrhoidectomy