

## Comparative Evaluation of Stapled Haemorrhoidopexy versus Open (Milligan- Morgan) Haemorrhoidectomy

Ajay Chhikara<sup>1</sup>, Archana Bharti<sup>2</sup>, Gp Capt G S Sethi<sup>3</sup>

<sup>1</sup>Medical Officer, District Civil Hospital, Karnal, Haryana, India.

<sup>2</sup>Assistant Professor, Department of Obstetrics & Gynaecology KCGMC, Karnal, Haryana, India.

<sup>3</sup>Professor & Head, Department of Surgery, Command Hospital (WC), Chandimandir, Haryana, India.

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Corresponding Author:  
Dr. Ajay Chhikara  
Email:ajaychhikara8@gmail.com.

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### Abstract

**Background:** Haemorrhoids is one of the most common benign anorectal surgical problems worldwide. Traditionally Milligan-Morgan haemorrhoidectomy has been the most popular procedure for the treatment of haemorrhoids. Several studies have shown post-operative pain to be much less with stapled haemorrhoidopexy compared to conventional technique. The present study comparative cohort study aims to evaluate whether stapled technique offers any definite advantage over open method. **Material & Methods:** 20 patients underwent Open (Milligan - Morgan) haemorrhoidectomy (Group A) while an equal number underwent Stapled haemorrhoidopexy as per modified Longo technique (Group B). Following parameters were studied- operative time, intra-operative blood loss, post-operative pain and requirement of analgesia, duration of hospital stay and post-operative complications and recurrence. **Results:** There was a statistically significant difference between the two groups with respect to intra operative blood loss (P= 0.038), visual analogue scores for pain (P value <0.01 for scores at 6 and 24 hours and P value <0.05 for scores at 48 hours and 72 hours) and post-operative analgesia requirement. The difference in operative time and duration of hospital stay was not found to be statistically significant. **Conclusion:** The stapled procedure for haemorrhoids is superior to Milligan-Morgan haemorrhoidectomy in terms of intra-operative blood loss, post-operative pain and post-operative analgesia requirement.

## INTRODUCTION

Haemorrhoids is one of the most common benign anorectal surgical problems worldwide.<sup>[1]</sup> Goligher et al<sup>[1]</sup> reported that about 40% of haemorrhoid patients have to undergo haemorrhoidectomy at some time or the other. Traditionally Milligan-Morgan haemorrhoidectomy has been the most popular procedure for the treatment of haemorrhoids. The criticism directed at haemorrhoidectomy relate to the pain in the post-operative period, necessity for the patient to be absent from work for at least 2 to 3 weeks afterwards with a perineal wound which requires dressing.<sup>[2]</sup> Stapled haemorrhoidectomy, as proposed by Longo,<sup>[3]</sup> in 1998, represented a great modification in the treatment of advanced haemorrhoid disease. Several authors have shown post-operative pain to be much less than with conventional technique.<sup>[4-6]</sup> The present study aims to evaluate whether stapled technique offers any definite advantage over open method.

### Aims & Objectives

To compare the efficacy of stapled haemorrhoidopexy with open haemorrhoidectomy in the management of second, third and fourth degree haemorrhoids

### Factors to be studied

- Operative time and Intra-operative blood loss.
- Post-Operative Pain assessment using visual analogue scale and requirement of analgesia.
- Duration of hospital stay.
- Post-operative complications and recurrence.

## MATERIALS AND METHODS

This comparative cohort study was conducted in the Department of Surgery at Command Hospital, Chandimandir from October 2014 - Feb 2016. Ethical committee approval was obtained. Written informed consent was obtained from all the participants.

**Sample size:** Forty consecutive patients meeting the inclusion criteria, were allocated to either of the two treatment groups.

**Group A:** Underwent Open (Milligan - Morgan) haemorrhoidectomy (n=20).

**Group B:** Underwent Stapled haemorrhoidopexy as per modified Longo technique (n=20)

#### **Inclusion Criteria**

Adults with Symptomatic hemorrhoidal disease

- Second Degree haemorrhoids, not cured by non-operative treatments
- Third Degree haemorrhoids
- Fourth Degree haemorrhoids

#### **Exclusion Criteria**

- Patients with first degree haemorrhoids
- Patients with thrombosed/gangrenous haemorrhoids
- Patients with deranged coagulation profile
- Patients with presence of anal stenosis, perianal abscess and full thickness rectal prolapse
- Those who had undergone previous anorectal surgery with resultant scarring of the anal canal
- Patients not fit for anaesthesia

#### **Details recorded**

- Particulars of the patients
- A detailed history regarding the nature and duration of presenting complaints, details of the previous treatments if any, family history and personal history
- General Physical Examination
- Systemic examination of cardiovascular, respiratory and abdominal regions
- Local examination- Digital rectal examination and proctoscopic evaluation
- To assess the general condition of the patient, pre-operative investigations were done as indicated

#### **Preoperative workup**

Following assessment, the cases were allocated to one of the two treatment groups. The patients were prepared with proctoclysis enema a night before and on the morning of surgery. The patients were kept nil per orally at least 8 hours before the scheduled time of surgery.

All cases received Injection Ciprofloxacin 200 mg and Injection Metronidazole 500 mg intravenously at the commencement of the surgery for prophylactic antibiotic coverage. During the surgery the following parameters were recorded

- Operative time (in minutes)
- Intra-operative blood loss
- Need for complementary haemostasis
- Associated procedures and any unexpected events
- Intra-operative blood loss estimation was done by weighing of dry and wet surgical swabs before and end of surgery and difference was the blood absorbed by the swab.<sup>[2]</sup> Blood collected in the suction chamber was added to it to calculate total Intra-operative blood loss.

#### **Operative Procedure**

All patients were operated in lithotomy position under spinal anaesthesia and the techniques used were modified Milligan-Morgan<sup>[7]</sup> and modified Longo Stapled Haemorrhoidopexy<sup>[8]</sup> in group A and

Group B respectively. For stapled haemorrhoidopexy, Procedure for Prolapsed Hemorrhoids Stapler (PPHS), manufactured by Ethicon Endo-surgery was used in all cases.

#### **Postoperative care**

**In the postoperative period the parameters recorded were**

- Visual analogue score at 6h, 24h, 48 h and 72h or in between if the patients complained.
- Requirement of analgesia (injectable/oral)
- Any episode of bleeding per rectum
- Any other complications
- Duration of hospital stay

**Antibiotics:** All patients were given Injection Ciprofloxacin 200 mg i.v. single dose and Injection Metronidazole 500 mg i.v. single dose. They were permitted to take oral fluids after 6 h of surgery. Then the patients were put on tablet Ciprofloxacin 500 mg bd for 5 days' tablet Metronidazole 500 mg tds for 5 days.

#### **Analgesia**

- Inj. Diclofenac Sodium, 75 mg intramuscular, was administered to all patients on the operation theatre table after the surgery and thereafter, to those who had a Visual Analogue Score of more than 4
- Oral NSAID (combination of Ibuprofen 400 mg with Paracetamol 500 mg) was given to others with Visual Analogue Score scores 2-4.
- When necessary, intramuscular tramadol was administered as rescue analgesia.
- Analgesia was suspended when the patient was able to defecate without pain.

#### **Discharge**

Patients were discharged when there was no requirement for injectable analgesia in last 12 hours and had passed stools.

#### **Follow up**

- Patients were followed up at 1 week, 1 month and 3 months after the surgery.
- A gentle digital rectal examination and proctoscopic evaluation were done at first and subsequent visit.
- Patients were assessed using visual analogue scale and examined for anal stenosis, recurrent haemorrhoids, anal skin tag or fibrosis and Incontinence.

#### **Statistical Analysis**

Computerised analysis of data was done using SPSS 21. Significance levels were determined by averages, standard deviation, unpaired student t test, chi square test, Mann Whitney U test (For non-parametric skewed distribution). If P value <0.05, the difference was significant.

## **RESULTS**

Mean age in group A was 6.65± 14.12 years and in group B was 48.05±14.9 years. Table 1 shows baseline characteristics of the two groups.

The difference in intra operative blood loss between the two groups was statistically significant. Complementary haemostasis was required in 5% (n=1) patients in open group and 15% (n=3) patients in stapled group [Table 2].

The difference in operative time between the two groups was not statistically significant [Table 3].

The stapled group had statistically significant lower visual analogue scores at 6hrs, 24 hrs, 48 hrs and 72 hrs after surgery compared to the open group [Table 4].

The calculation of hospital stay was made from the day of surgery. The hospital stay was shorter in the stapled haemorrhoidopexy group compared to open haemorrhoidectomy group. However, the difference was not statistically significant(p=0.378) [Table 5].

The parenteral, oral as well as total post-operative analgesia requirement was statistically significant less in the stapled group compared to the open group. Two patients (10%) in the stapled group did not require even a single dosage of analgesia (parenteral or oral). Thirteen patients (65%) did not require parenteral analgesia in the stapled group. On the other hand, five patients (25%) in the open group did not require parenteral analgesia.

None of the patients in the stapled group required parenteral analgesia after 24 hours. On the other hand, eleven patients (55%) in the open group required parenteral analgesia after 24 hours [Table 6].

**Table 1: Baseline characteristics**

	Group A(n=20)	%	Group B(n=20)	%	P value
<b>Age (Years)</b>					
≤ 20	1	5	1	5	0.73
21-30	2	10	3	15	
31-40	4	20	3	15	
40-50	4	20	5	25	
50-60	3	15	3	15	
60-70	5	25	5	25	
>70	1	5	0	-	
<b>Sex Distribution</b>					
Males	17	85	18	90	0.633.
Females	3	15	2	10	
<b>Presenting Symptoms</b>					
Bleeding per rectum	16	80	16	80	1
Mass coming out of anus	20	100	20	100	1
Constipation	6	30	8	40	0.740
Anal itching	1	5	1	5	1
Painful defecation	2	10	-	-	-
<b>Duration of Symptoms</b>					
<1 month	1	5	1	5	0.916
1 month-1 year	4	20	3	15	
>1 year	15	75	16	80	
<b>Type of Haemorrhoids</b>					
Primary	13	65	12	60	0.515
Secondary	1	5	-	-	
Both	6	30	8	40	
<b>Degree of Haemorrhoids</b>					
Second Degree	7	35	6	30	0.815
Third Degree	8	40	10	50	
Fourth Degree	5	25	4	20	

**Table 2: Intra operative Blood Loss**

Blood loss(ml)	Group A(n=20)		Group B(n=20)		P value
	Mean (ml) ± SD	Median(ml)	Range(ml)		
≤ 60		11		17	P= 0.038
61-120		3		1	
121-180		4		0	
181-240		2		2	
Group A/ Group B	Mean (ml) ± SD	Median(ml)	Range(ml)		
Group A(n=20)	36.5 ± 59.5	60	10-200		
Group B(n=20)	77.0 ± 62.5	10	10-200		

**Table 3: Operative Time**

Operative Time (min)	Group A		Group B
	≤ 20	7	
21-40	7		15
41-60	6		1
Group A/ Group B	Mean (min) ± SD	Range (min)	P value
Group A(n=20)	34.75 ± 16.5	20-60	0.2655
Group B(n=20)	30.0 ± 9.03	20-60	

**Table 4: Visual Analogue Scores**

	Group A (n=20) Mean ± SD	Group B (n=20) Mean ± SD	P value(By Mann Whitney U test)
6 hrs	5.6±2.03	4.0±1.23	0.002
24 hrs	4.4±2.39	2.4±1.79	0.007
48 hrs	2.85±2.03	1.35±1.26	0.027
72 hrs	2.25±1.94	0.75±1.25	0.012

**Table 5: Hospital Stay**

Hospital Stay(Days)	Group A (n=20)	%	Group B (n=20)	%	P value (Mann Whitney U test)
1-4	15	75	16	80	0.378
5-8	2	10	4	8	
9-12	1	5	-	-	
13-16	2	10	-	-	

**Table 6: Post-Operative Analgesia Requirement**

Type of post-operative analgesia	No. of analgesia dosages (Mean ± SD)		P value(By Mann Whitney U test)
	Group A(n=20)	Group B(n=20)	
Parenteral	3.2±3.31	0.45±0.68	0.001
Oral	4.3±5.14	1.15±0.933	0.026
Total	7.5±8.22	1.6±1.09	0.004

**Table 7: Complications**

Complications	Group A		Group B	
	n (N=20)	%	n (N=20)	%
Reactionary haemorrhage	2	10%	3	15%
Secondary haemorrhage	1	5%	-	-
Strangulation of residual haemorrhoid	1	5%	-	-
Anal irritation	1	5%	1	5%
Urinary retention	1	5%	-	-
Anal fissure	-	-	1	5%

## DISCUSSION

In the present study, the mean intra-operative blood loss was significantly less in the stapled group as compared to the open group. Intra-operative blood loss was compared by Wilson et al,<sup>[9]</sup> and Senagore et al,<sup>[10]</sup> who reported significantly less intraoperative blood loss, favouring stapled haemorrhoidopexy (Wilson et al, 7 ml versus 39 ml,  $p < 0.001$ ; Senagore et al, 26.4 ml versus 46.9 ml,  $p = 0.016$ ). Bikhchandani et al,<sup>[11]</sup> in their study of 84 patients, reported a mean intra-operative blood loss of 63.3 ml and 148.0 ml in the stapled and open group respectively, the intra-operative blood loss being significantly less in the stapled group ( $p < 0.001$ ). The present study is in agreement with these studies.

In the present study, mean operative time in the open and the stapled group was  $34.75 \pm 16.5$  min and  $30 \pm 9.03$  min respectively. The operative time was shorter in the stapled group but the results were not significant ( $p = 0.2658$ ). Other studies by Ho et al,<sup>[8]</sup>

(17.6 versus 11.4 min,  $p < 0.01$ ), Pavalidis et al,<sup>[12]</sup> (35 versus 23 min,  $p < 0.05$ ) and Palimento et al,<sup>[13]</sup> (30 versus 25 min,  $p = 0.04$ ) have reported a statistically significant shorter operative time in stapled group compared to the open group. On the other hand, Kashani et al,<sup>[14]</sup> reported the duration of surgery as  $35 \pm 7$  minutes in the stapled group and  $23 \pm 13.5$  minutes in the open group and the difference was statistically significant.

In the present study, the stapled group had statistically significant lower visual analogue scores at 6hrs, 24 hrs, 48 hrs and 72 hrs after surgery compared to the open group (table 4). In their study, Mehigan et al,<sup>[15]</sup> used visual analogue scale for pain scoring. They confirmed that stapled haemorrhoidopexy patients showed lower mean values when compared to open Milligan-Morgan haemorrhoidectomy. Roswell et al,<sup>[16]</sup> also compared open haemorrhoidectomy with the stapled procedure and found significant less postoperative pain scores with the stapled procedure. The pain scores compared

between the two groups in various other studies also conclusively prove that the post-operative pain is much less after stapled haemorrhoidectomy than after open haemorrhoidectomy.<sup>[12,16-20]</sup> Garg et al,<sup>[21]</sup> in their study reported that all 20 patients who underwent stapled haemorrhoidectomy had visual analogue score of  $\leq 3$  at 24 hours postoperatively.

The hospital stay was shorter in the stapled haemorrhoidectomy group compared to open haemorrhoidectomy group. However, the difference was not statistically significant. The study group in the present study was small and a larger study is required to conclusively prove the impact of the type of procedure on hospital stay.

The duration of hospital stay was shorter in stapled group in studies conducted by Rowsell et al,<sup>[16]</sup> Pavlidis et al,<sup>[12]</sup> Shalaby et al,<sup>[18]</sup> and Ganio et al,<sup>[19]</sup> In a study conducted by Cosenza et al,<sup>[22]</sup> a total of 292 patients with third and fourth degree haemorrhoids underwent stapled haemorrhoidectomy as a day care procedure.

In the present study, the parenteral, oral as well as total dosages of analgesia required post-operatively were significantly less in the stapled group compared to the open group (table 6). Jaswal SS et al,<sup>[4]</sup> in their study performed stapled haemorrhoidectomy in forty patients and reported that in the first twenty-four hours,<sup>[17]</sup> patients required a single dose of injection Diclofenac Sodium while 19 patients required two doses and 4 patients had to be given three doses. Athar A et al,<sup>[23]</sup> reported that the mean parenteral analgesic doses for the stapled group during the first 24 hours were 2.1. All patients in their study received oral analgesics alone after 24 hours.

Two patients (10%) in the open group and three patients (15%) in the stapled group had reactionary haemorrhage (table 7). One patient in the open group had to be re-operated on the post-operative evening while the rest did not warrant any surgical measure. One patient (1%) in stapled group and 2 (2%) in open group had significant bleeding as reported by Shalaby.<sup>[18]</sup> Post-operative haemorrhage occurred in 4.5% of patients who underwent stapled procedure in a study conducted by Beattie GC.<sup>[24]</sup>

One patient (5%) in the open group had secondary haemorrhage on 10<sup>th</sup> post-operative day (table 7). It was managed by packing the anal canal. In the study by Ganio et al,<sup>[19]</sup> secondary haemorrhage occurred in 3% patients in each group. Secondary haemorrhage was reported in only one of the 28 patients in the conventional haemorrhoidectomy group and none of the 27 patients in the stapled group by Ortiz.<sup>[20]</sup>

Urinary retention was reported in only one patient (5%) in the open group (table 7). None of the patient in the stapled group had urinary retention. Garg et al,<sup>[21]</sup> reported urinary retention in 10% of the patients in their study of 20 patients who underwent stapled haemorrhoidectomy. Shalaby et al,<sup>[18]</sup> reported urinary retention in 14% in open group as compared to 7% in stapled group. Ganio et al,<sup>[19]</sup> reported urinary retention in 5 out of 50 (10%) patients after open

haemorrhoidectomy and 3 out of 50 (6%) patients after stapled haemorrhoidectomy.

In the study by Shalaby et al,<sup>[18]</sup> at 1-year follow up, 95% of patients in the stapled group and 80% in the surgical group were available for assessment. Recurrence was reported in one of the 95 patients of the stapled group. One patient each in both groups had recurrence at a follow up of one year in the study by Hetzer,<sup>[17]</sup> In the present study, none of the patients had recurrence in a mean follow up period of 10.8 (range 3-16) months. The short follow up period might be the reason for false sense of no recurrence. A longer follow up is required to validate the findings of the present study.

## CONCLUSION

The stapled procedure for haemorrhoids is superior to Milligan-Morgan haemorrhoidectomy in terms of post-operative pain, post-operative analgesia requirement and intra-operative blood loss. Within this short follow up, early outcomes have been satisfactory and appear similar or better to those achieved using conventional technique. However, long term follow up is necessary to compare the complications among these two procedures.

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