

# Stapled Versus Open Haemorrhoidectomy- Evaluation of Short Term Results

SRIKANTH KULKARNI, MANOHAR SHIVAMALAVIAH, RAJKUMAR JANVIKULAM SANKARAN, ANIRUDH JANVIKULAM RAJKUMAR

## ABSTRACT

**Introduction:** Haemorrhoids or 'Piles' is a frequently observed disease in surgical practice. Various non surgical and surgical treatments are available. Open haemorrhoidectomy (Milligan-Morgan) is a widely used procedure. A recent novel technique called 'Stapled haemorrhoidectomy', first described and performed by Italian surgeon Antonio Longo is gaining worldwide recognition for its benefits.

**Aim:** To compare Stapled haemorrhoidectomy with open (Miligan Morgan) haemorrhoidectomy in terms of post operative pain, resumption of daily activity, hospital stay, post operative bleeding, urinary retention and anal incontinence.

**Study Design:** Prospective, comparative study from August 2011 to September 2013.

**Materials and Methods:** A total of 100 patients between the age group of 20 and 70 years, diagnosed to have grade II, III or IV haemorrhoids were included in the study, divided into 2 groups, Group 1 undergoing Open haemorrhoidectomy (50 patients) and Group 2 undergoing Stapled haemorrhoidectomy (50 patients). Post operatively patients of both groups were reviewed at the time of discharge, at 7 days after discharge, at 1 month and 3 months post surgery. All patients were given

a questionnaire and data collected verbally and analysed statistically. Comparative analysis between the two groups were done based on Independent sample 't' test or students 't' test using a SPSS version 20.

**Results:** The mean age of patients in Open haemorrhoidectomy (OH) group was 40.68 and Stapler haemorrhoidectomy (SH) group was 39.52. 78% were males and 22% were females in OH group, 90% were males and 10% were females in SH group. Post operative bleeding in both OH and SH group had an incidence of 2%. Post operative urinary retention was seen in 4% and 8% in OH and SH group respectively. In both groups, post operative anal incontinence was not seen. Based on Independent sample 't' test the post operative pain, Post operative hospital stay and duration of resumption of daily activity was less in SH group compared to OH group and statistically significant with  $p < 0.001$ . However, complications like post operative bleeding, urinary retention and anal incontinence are almost same in both the groups.

**Conclusion:** Stapled Haemorrhoidectomy is less painful with shorter duration of hospital stay and resumption of daily activity is faster than the open haemorrhoidectomy. However, long term follow-up is required to know the recurrence rate in stapled haemorrhoidectomy.

**Keywords:** Anal incontinence, Haemorrhoids, Hospital stay, Post operative bleeding, Post operative complications, Urinary retention

## INTRODUCTION:

Haemorrhoids or commonly 'Piles' (Pila = a ball; Latin - Haima blood; Rheias – flowing in Greek) is a frequently observed day to day disease in surgical practice. Within the normal anal canal, is situated, highly vascularised Cushions forming discrete masses of thick submucosa containing blood vessels, smooth muscle, elastic and connective tissue [1]. The term "haemorrhoid" is restricted to clinical situations in which these "cushions" are abnormal and cause symptoms.

The exact cause is unknown. They are classified as internal or external depending on their site of origin with reference to dentate line. External haemorrhoids originate distal to dentate line, lined by modified squamous epithelium, richly innervated with somatic pain fibers (delta type, unmyelinated). Internal haemorrhoids originate proximal to the dentate line and are covered by mucosa and hence painless. Some haemorrhoids may be mixed (internal and external) [2]. Various nonsurgical and surgical treatments are available

for haemorrhoids based on the origin, extent of prolapse and symptoms of haemorrhoids. As stated in the revised practice parameters for the management of haemorrhoid [3] surgical treatment should be offered to patients in whom office procedures were unsuccessful, patients, not capable of tolerating office procedures, patients with large external haemorrhoids, grade III and IV mixed haemorrhoids. Open haemorrhoidectomy [Milligan-Morgan] is a widely used procedure for haemorrhoids. A recent novel technique called "Stapled Haemorrhoidectomy or Stapled Haemorrhoidopexy" as first described and performed by Italian surgeon Antonio Longo [4] is gaining worldwide recognition for its benefits.

## AIM

To compare the two techniques (Open and Stapled Haemorrhoidectomy) in terms of post operative pain, resumption of routine daily activity, Post operative hospital stay, post operative bleeding, urinary retention and anal incontinence.

## MATERIALS AND METHODS

This is a prospective, comparative study conducted in Lifeline Multispecialty Hospital, a 225 bedded multispecialty urban tertiary care hospital in Chennai. The duration of study is 2 years from August 2011 to September 2013.

A total number of 100 patients between the age group of 20 and 70 years who were diagnosed to have Grade II, III or IV Haemorrhoids, evaluated by Proctoscopy/ Colonoscopy and treated in Surgical Department were included in the study, after obtaining the approval from the Institutional Ethics Committee (IEC). They were divided into two groups, all odd numbers were assigned Open haemorrhoidectomy (OH) group and all even numbers were assigned Stapled haemorrhoidectomy (SH) group.

**Group I:** Patients undergoing open haemorrhoidectomy (OH).

**Group II:** Patients undergoing stapler haemorrhoidectomy (SH).

Patients who had concomitant diseases like fissure in ano, Fistula-in-Ano or perianal abscess, previously operated patients with recurrence, haemorrhoids in cirrhotic patients and patients with bleeding diathesis, patients with thrombosis of external haemorrhoids or Perianal haematoma were excluded.

All patients who presented to the outpatient department with symptoms suggestive of haemorrhoids were evaluated by-

1. Detailed history collection.
2. Systemic examinations.
3. Local examination (Digital rectal examination and proctoscopy).

After explaining the diagnosis to the patient and attenders, they were consented for surgery. Pre-anaesthetic assessment and relevant investigation were done. Pre-operative Investigations conducted were complete blood counts, blood grouping, random blood sugar, serum creatinine, chest X-ray, bleeding time and clotting time, Anti-HIV and HBsAG.

After relevant investigations and pre anaesthetic evaluation, the patients were subjected for either Open haemorrhoidectomy or Stapled haemorrhoidectomy. 50 patients underwent Open haemorrhoidectomy and 50 patients underwent Stapled haemorrhoidectomy. Post operative pain therapy consisted of Intravenous Paracetamol 12 hourly for the 1<sup>st</sup> post operative day, followed by oral NSAIDS in the form of Diclofenac 50mg 8<sup>th</sup> hourly was given for the next 5 post operative days in both the groups. Additional analgesia was supplemented on patient's request.

Post operatively patients of both groups were reviewed for the study at-

1. Time of discharge.
2. Time of first review i.e. after 7 days of discharge.
3. At 1 month post surgery.
4. At 3 months post surgery.

All patients were given a questionnaire or data collected verbally and analysed statistically.

## STATISTICAL ANALYSIS

Data were recorded on a predesigned proforma and managed on excel spread sheet. Comparative analysis between two groups were done based on, Independent sample 't' test or students 't' test using a SPSS version 20.

## RESULTS

Out of the total 100 patients, 78% were males and 22% females in OH arm, 90% were males and 10% females in SH arm, as shown in [Table/Fig-1]. Number of patients having Grade II, III and IV haemorrhoids in each group is shown in [Table/Fig-2]. The mean age of patients in the OH group was 40.68, its median 38.5, while for SH the mean was 39.52 and its median 39. [Table/Fig-3,4] show, the statistics of Age, Post operative pain Visual Analog Score (VAS), Resumption of daily activity and post operative Hospital stay of OH and SH group respectively.

Post operative bleeding in both OH and SH group had an incidence of 2% each, which is 1 out of 50 patients in each group. Post operative Urinary retention was 4% in OH and 8% in SH group. None of the patients had post operative Anal incontinence. [Table/Fig-5-7] show, these statistics. [Table/Fig-8] compares the post operative complications between OH and SH groups.

	Open Haemorrhoidectomy		Stapled Haemorrhoidectomy	
	Frequency	Percent (%)	Frequency	Percent (%)
Male	39	78	45	90
Female	11	22	5	10
Total	50	100	50	100

[Table/Fig-1]: Sex distribution among the two groups.

Grades of Haemorrhoids	Open Haemorrhoidectomy		Stapled Haemorrhoidectomy	
	Frequency	Percent (%)	Frequency	Percent (%)
Grade II	28	56	15	30
Grade III	20	40	29	58
Grade IV	2	4	6	12
Total	50	100	50	100

[Table/Fig-2]: Number of patients having Grade II, III and IV haemorrhoids in each group.

N= No. of cases	Age	Post OP Pain-Visual Analog Score	Resumption of daily activity	Post operative hospital stay
Valid (N)	50	50	50	50
Missing (N)	0	0	0	0
Mean	40.68	5.14	4.64	2.32
Std. Deviation	12.733	0.990	0.985	0.551

[Table/Fig-3]: Open Haemorrhoidectomy (OH).

N= No. of cases	Age	Post OP Pain-Visual Analog Score	Resumption of daily activity	Post operative hospital stay
Valid (N)	50	50	49	50
Missing (N)	0	0	1	0
Mean	39.52	3.24	3.49	1.72
Std. Deviation	12.397	0.797	1.003	0.757

[Table/Fig-4]: Stapler Haemorrhoidectomy (SH).

	Open Haemorrhoidectomy				
		Frequency	Percent (%)	Valid percent (%)	Cumulative percent (%)
Valid	Present	1	2	2	2
	Nil	49	98	98	100
	Total	50	100	100	
Stapled Haemorrhoidectomy					
Valid	Present	1	2	2	2
	Nil	49	98	98	100
	Total	50	100	100	

[Table/Fig-5]: Post operative bleeding.

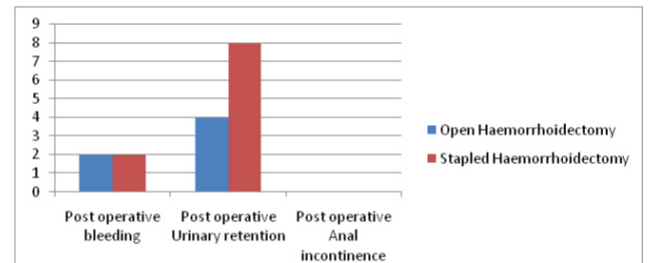
In group statistics [Table/Fig-9], the mean of post operative pain Visual Analog Score for OH was 5.14 and 3.24 for

	Open Haemorrhoidectomy				
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Present	2	4	4	4
	Nil	48	96	96	100
	Total	50	100	100	
Stapled Haemorrhoidectomy					
Valid	Present	4	8	8	8
	Nil	46	92	92	100
	Total	50	100	100	

[Table/Fig-6]: Post operative Urinary retention.

	Open Haemorrhoidectomy				
		Frequency	Percent (%)	Valid percent (%)	Cumulative percent (%)
Valid	Present	0	0	0	0
	Nil	50	100	100	100
	Total	50	100	100	
Stapled Haemorrhoidectomy					
Valid	Present	0	0	0	0
	Nil	50	100	100	100
	Total	50	100	100	

[Table/Fig-7]: Post operative Anal incontinence.



[Table/Fig-8]: comparing the post operative complications in OH and SH groups.

SH. The mean for resumption of daily activity following OH was 4.64 and 3.49 for SH and the mean for postoperative hospital stay for OH was 2.32 and for SH it was 1.72 as shown in [Table/Fig-9].

Based on independent sample 't' test [Table/Fig-10], in our study post operative pain according to visual analog score is greater for OH by 1.0 scores in comparison to SH which is statistically significant with  $p < 0.001$  and 95% confidence interval is 1.543 to 2.257.

Based on independent sample 't' test [Table/Fig-10], resumption of daily activity following SH is 1.15 days earlier to OH which is statistically significant with  $p < 0.001$  and 95% confidence interval is 0.754 to 1.547.

	Haemorrhoidectomy	N	Mean	Std. Deviation	Std. Error Mean
Post OP Pain-Visual Analog Score	Open	50	5.14	0.990	0.140
	Stapler	50	3.24	0.797	0.113
Resumption of daily activity	Open	50	4.64	0.985	0.139
	Stapler	49	3.49	1.003	0.143
Post operative hospital stay	Open	50	2.32	0.551	0.078
	Stapler	50	1.72	0.757	0.107
Age	Open	50	40.68	12.733	1.801
	Stapler	50	39.52	12.397	1.753

[Table/Fig-9]: Group Statistics.

		Non-Diabetic				
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Post OP Pain-Visual Analog Score	Equal variances assumed	.000	1.900	0.180	1.543	2.257
Resumption of daily activity	Equal variances assumed	.000	1.150	0.200	0.754	1.547
Post operative hospital stay	Equal variances assumed	.000	0.600	0.132	0.337	0.863
Age	Equal variances assumed	.645	1.160	2.513	-3.827	6.147

[Table/Fig-10]: Independent Samples Test.

Parameter	Open Haemorrhoidectomy		Stapled Haemorrhoidectomy		Z score	p value
	Frequency	Percent (%)	Frequency	Percent (%)		
Post Op Bleeding	1	2	1	2	-0.74	0.46
Post Op Urinary retention	2	4	4	8		
Post Op Anal Incontinence	0	0	0	0		

[Table/Fig-11]: Post operative Bleeding, Urinary retention and Anal incontinence in both the groups  
\*not statistically significant.

Based on independent sample 't' test [Table/Fig-10].post-operative hospital stay was less by 0.6 score for SH compared to OH which is statistically significant with  $p < 0.001$  and 95% confidence interval is 0.337 to 0.863.

[Table/Fig-11] shows, that complications like post operative bleeding, post operative urinary retention and anal incontinence is almost same in both the groups (p value 0.46, not statistically significant).

## DISCUSSION

Stapled haemorrhoidectomy is a novel technique in the treatment of haemorrhoidal disease. Various apprehensions exist of this technique and it is an unsafe and unworthy procedure in the wrong hands. Various studies have shown the indications, limitations, complications of this technique. The procedure invented by Italian colorectal surgeon Dr. Antonio Longo is now recognized to have less postoperative pain, less duration of hospital stay but few long term complications.

Pain, post surgery is an important criteria for any procedure. In our study post operative pain measured according to Visual Analog score was 1.9, scores lesser for stapler haemorrhoidectomy compared to open haemorrhoidectomy. This is comparable to a study by Palimento D et al., [5] who found that pain according to visual analog score was lower (Visual) analog score =4 (2 to 6) in SH versus 5 (2 to 6) in OH. A systematic review by Ttandea JJ and Chan MK [6] and a meta analysis by Nisar PJ et al., [7] , a study by P Thejeswi et al., [8] and a study by RS Bhandari et al., [9], also unequivocally proved lesser post operative pain in the stapled group. The reduction in pain is attributed to the procedure being carried out above the dentate line which has no nerve endings carrying pain.

Post operative hospital stay was found to be statistically significant with a 0.6 score, less for stapled group with  $p < 0.001$  and 95% confidence interval is .337 to .863. A study by Bikchandani J et al., [10]., showed mean hospital stay of 1.24 days compared to 2.76 days in open haemorrhoidectomy

with a  $p < 0.001$ . In a study by Khan NF et al., [11] the mean length of hospital stay was significantly less for stapled haemorrhoidectomy group  $3.37 \pm 2.2$  Vs  $2.03 \pm 0.81$ ,  $p = 0.003$ . In a study by Mehigon BJ et al., [12], hospital stay post-surgery was found not be statistically significant for stapled group. But a systemic review by Tjandea JJ et al., [6] a meta analysis by Nisar PJ et al., [7], a study by P Thejeswi et al., [8] and a study by RS Bhandari et al., [9], proved that the post-operative hospital stay was definitely less for stapled haemorrhoidopexy compared to open haemorrhoidectomy.

Resumption of daily routine activity is very important for any patient following any surgery. In our study routine daily activity were found to be carried out by patient 1.15 days earlier in stapled arm compared to open haemorrhoidectomy. The  $p$  value was less than 0.001 for this variable with a 95% confidence interval 0.754 to 1.547. This can be attributed to less post-operative pain and early discharge of the patient from the hospital. Various studies are comparable to this. Mehigan B J et al., [12] concluded an early resumption of routine daily activity. Systemic reviews by Tjandea J J et al., [6] and meta analysis by Nisar P J et al., [7] also proved beyond doubt that patients who underwent stapled haemorrhoidectomy resumed their daily routine activity earlier than patients who underwent open haemorrhoidectomy.

In terms of post-operative bleeding a 2% incidence was found in our study in both the stapled group and open group. While a study by Palimento D et al., [5], showed 21.6% patient in stapled group and 13.6% in open group to have post-operative bleeding. Contrary to this a systemic review by Tjandea JJ and Chan M K [6] showed less post-operative bleeding is stapled group. This wide discrepancy for this variable can be attributed to the individual skills of the operating surgeon to do a procedure with less post-operative bleeding.

In our study post-operative urinary retention was 8% in stapled haemorrhoidectomy whereas it was 4% for open haemorrhoidectomy. This could be due to the effect of spinal anaesthesia on the patient and whether the patient had passed urine prior to surgery. This could also be because of incidentally higher prostatic disease in the patients of the stapler arm the evaluation of which was beyond the scope of our study. Interestingly of the four patient with urinary retention in stapled group they were aged 60 years or above.

Anal incontinence was not found in any patients in both arms in our study. In a study by Dr. HO Yh et al., [13] showed similar rate of anal incontinence in both stapled group and conventional open haemorrhoidectomy. A study by KH Khalil et al., [14] also showed no incidence of anal incontinence in the stapled haemorrhoidectomy group.

## LIMITATIONS

Few criteria like pain, hospital stay and resumption of routine activity are subjective to each individual patient. Long term follow up of patients is not done. So long term complications cannot be commented upon. All patients in both arms were operated by a single surgeon with vast experience in both procedures. So the 'Learning curve' which is especially important for the stapler arm is surpassed by the operating surgeon during the period of this study. So we are found to have lesser complications. Finally, costs of both procedures are not compared.

## CONCLUSION

Stapled haemorrhoidectomy is associated with lesser post-operative pain than the conventional open haemorrhoidectomy. It is associated with shorter duration of hospital stay following surgery when compared to open haemorrhoidectomy. Patients resume their routine daily activity faster than patients with open haemorrhoidectomy. It is associated with almost same rate of immediate post-operative bleeding, urinary retention and anal incontinence.

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**AUTHOR(S):**

1. Dr. Srikanth Kulkarni
2. Dr. Manohar Shivamalavaiah
3. Dr. Rajkumar Janvikulam Sankaran
4. Dr. Anirudh Janvikulam Rajkumar

**PARTICULARS OF CONTRIBUTORS:**

1. Associate Professor, Department of Surgery, BGS Global Institute of Medical Sciences, Bangalore, India.
2. Senior Resident, Department of Surgery, BGS Global Institute of Medical Sciences, Bangalore, India.
3. Chairman, Lifeline Hospitals, Kilpauk, Chennai, India.
4. Resident, Department of Surgery, Lifeline Hospitals, Kilpauk, Chennai, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Srikanth Kulkarni,  
H. No. 29, 4<sup>th</sup> Main, Sarwabowmanagar, Chikallasandra,  
Bangalore-560061, India.  
E-mail: drsrikulk@yahoo.co.in

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