



## Original Article

### COMPARISON OF OUTCOME BETWEEN TRADITIONAL OPEN HAEMORRHOIDECTOMY AND STAPLED HAEMORRHOIDECTOMY OPERATION.

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#### Abstract

**Background:** Haemorrhoidectomy is a surgical excision and removal of the hemorrhoid used primarily only in severe cases. There are many different types of haemorrhoidectomy like open haemorrhoidectomy and stapled haemorrhoidectomy.

**Objective:** To compare the outcome of stapled haemorrhoidectomy and traditional open haemorrhoidectomy.

**Methods:** This is a cross sectional study of 72 cases who underwent open and stapled haemorrhoidectomy operation for symptomatic 2nd, 3rd and 4th degree haemorrhoids. Binomial probability pre-post test were used for statistical analysis, p value less than 0.05 was taken as significant.

**Results:** : Among 72 patients, 34 patients of conventional haemorrhoidectomy and 38 of stapled haemorrhoidectomy at 3 months post-surgery in conventional group 1 patient was unsatisfied, 12 patients were satisfied and 4 patients stated their condition good. In stapled group 14 patients stated their condition excellent and 5 patients stated their condition good. Statistical analysis shows that level of satisfaction at 3 months post-surgery in conventional group and stapled group was statistically significant(p-value<.001).

**Conclusion:** Stapled haemorrhoidectomy is a relatively new procedure. Stapled haemorrhoidectomy is a safe procedure, less pain and disabled than the conventional haemorrhoidectomy.

**Key Words:** Haemorrhoid, Stapled haemorrhoidectomy, Open haemorrhoidectomy, Bleeding, Pain.

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## Introduction

Haemorrhoids are the dilated veins of the anal canal. The external variety is covered by skin, while the internal variety lies beneath the anal mucous membrane<sup>1</sup>. The most common symptom is bleeding at defecation. Commonly this is bright red and follows immediately after defecation. Other symptoms include perianal swelling, pruritus and minor soiling<sup>2</sup>.

A visual examination of the anus and surrounding area may be able to diagnose external or prolapsed hemorrhoids. A rectal examination should be performed to exclude possible rectal tumors, polyps, an enlarged prostate, or abscesses. Visual confirmation of internal hemorrhoids is via proctoscopy<sup>3</sup>.

A number of surgical techniques may be used if conservative medical management fails. All are associated with some degree of complications including urinary retention, due to the close proximity to the rectum of the nerves that supply the bladder, bleeding, infection, and anal stricture<sup>4</sup>.

Haemorrhoidectomy is a surgical excision of the hemorrhoid. Traditional open haemorrhoidectomy is associated with significant postoperative pain and usually requires 2–4 weeks for recovery<sup>3</sup>. Stapled haemorrhoidectomy is a procedure that involves the resectioning of soft tissue proximal to the dentate line, disrupting the blood flow to the hemorrhoids. It is generally less painful than complete removal of hemorrhoids, and is associated with faster healing compared to a haemorrhoidectomy<sup>3</sup>.

## Materials and Methods

This study was conducted at surgery department in Uttara Adhunik Medical College and BSMMU over a period of six months. 72 patients patient who had underwent haemorrhoid operation by stapled method or open method was included in the study.

### Operative procedure of open haemorrhoidectomy

Under G.A. the patient is placed in full lithotomy position with the buttocks lifted over the edge of the table. The skin is painted by antiseptic and followed by toweling of the area.

1. A gentle two fingers dilatation of the anal canal is performed. Artery forceps are placed on the perianal skin just outside the muco-cutaneous junction opposite to each primary haemorrhoid cushion (3,7,11 o'clock position), apply gentle traction on the forceps to bring the internal haemorrhoids into view.
2. As the internal haemorrhoids are pull down, a second pair of artery forceps are placed on the main bulk of each haemorrhoidal mass. Further traction on forceps exposes the haemorrhoidal-pedicals and the haemorrhoids are ready to be dissected.
3. The haemorrhoids are divided in turn, started with no 3o'clock (left lateral one). The two artery forceps are held in the left hand of the surgeon

with his left index finger in the anal canal pressing on the pedicle to the out. By the right hand of the surgeon using scissors, the skin at mucocutaneous junction is cut in v shape manner, then the dissection of subcutaneous space is done, with care not to injure the external or internal sphincter till the pedicle of the haemorrhoid is reached.

4. After traction is applied on the haemorrhoid, transfixation and ligation of the pedicle by no 0 catgut with the knot tied on the lumen side.
5. Control the bleeding and oozing from subcutaneous raw area by ligation or cutterization.
6. The pedicle is cut through, leaving sufficient cuff.

### Procedure of stapled haemorrhoidectomy

The preparation of the patient is the same as conventional haemorrhoidectomy. The equipment came in as a kit, which consists of a 33mm stapling gun with a nondetachable anvil, a purse-string speculum, a transparent anal dilator with an operator, and a purse-string suture threader or crochet hook.

The anal dilator is inserted into the anal canal and secured in place with heavy sutures to the perianal skin (fig. 4a). The purse-string speculum is inserted into the anal dilator. By rotating the speculum, a purse-string of 2-0 prolene is placed in the rectum 4–5 cm above the dentate line in the rectal ampulla (fig. 4b). It is important to take only the mucosal-submucosal layer. The stapler with the anvil fully extended is inserted and positioned proximal to the purse-string, which is then tied over the shaft of the anvil. The purse-string suture tails are retrieved through the ports in the stapler gun using the crochet hook (fig. 4 c and d). The entire casing of the stapler is introduced into the anal canal. During the introduction, it is advisable to partially tighten the stapler. With moderate traction on the purse-string, a simple maneuver draws the prolapsed mucosa and submucosa into the casing of the stapler. The instrument is then tightened and fired. Compression on the gun is maintained for about 20–30 seconds for haemostasis before the stapler is opened and removed. It is easier to extract the anal dilator and the stapler simultaneously. There is only one donut ring, which should be checked for its completeness. The staple line should lie about 2 cm above the top of the internal hemorrhoids.

### Post-procedure advice and follows up

Post-procedure pain was relieved by oral analgesia. Warm sitz bath was also advised in case of pain. Patient was advised to take up liquids and semisolids for one day, following the procedure so that attempts at defecation are minimal. Oral intake of bulk forming agents for 6-8 weeks was advised to the patients.

The patient was watched for post procedure pain, discomfort, bleeding, urinary retention, sepsis, need for analgesia, cost of treatment and days off work were evaluated.



Patient was followed up regularly at intervals of one week, one, two and three months for symptoms as pain, bleeding, prolapse, irritation, mucous discharge and to look out for anal stenosis or incontinence and were enquired whether pre-procedure symptoms had

mostly resolved or residual symptoms were present. Patients were requested to assess the form of treatment as excellent, moderately successful or of little help based on their results post-procedure.

## Results

**Table- 1:** Pre-operative symptoms

Symptoms	Conventional	Stapled
	hemorrhoidectomy (n=34) no.(%)	hemorrhoidectomy (n=38)no.(%)
Per rectal bleeding	34(100%)	34(89.47%)
Swelling during defecation	26(76.47%)	30(78.95%)
Constipation	14(41.18%)	8(21.05 %)

**Table-2:** Procedures done according to degree of hemorrhoids

Degree	Conventional	Stapled
	Hemorrhoidectomy (n=34) no.(%)	H emorrhoidectomy (n=38) no.(%)
2 <sup>nd</sup> degree	8 (23.53%)	8 (21.05%)
3 <sup>rd</sup> degree	26 (76.47%)	30 (78.95%)

**Table-3:** Post-operative complications at a glance

Complications	Conventional	Stapled
	Hemorrhoidectomy (n=34)no.(%)	Hemorrhoidectomy (n=38)no.(%)
Postoperative bleeding (4wk)	26 (13.85%)	4 (1.15%)
Urinary retention relieved without intervention	8(23.53%)	2 (05.26%)
Anal stenosis	6(17.65%)	0(0 %)
Anal fissure(after 4wk)	8(23.52%)	0(0%)
Reduction of residual skin tag(ε 4 wk)	4(2.83%)	8(3.17%)

**Table 4:** Post-operative bleeding

Bleeding	Conventional hemorrhoidectomy (n=34) no.(Exp. Value)	Stapled hemorrhoidectomy (n=38) no.(Exp. Value)	Total	P-value
1 <sup>st</sup> week	26 (13.85)	4 (1.15)	30	P>0.05
2 <sup>nd</sup> week	16 (7.38)	0 (0.62)	16	
4 <sup>th</sup> week	6 (2.77)	0 (0.23)	6	

P-value were measured by Chi square test

**Table 5:** Length of hospital stay

Hospital stay	Conventional hemorrhoidectomy (n=34) no.(Exp. Value)	Stapled hemorrhoidectomy (n=38) no.(Exp. Value)	Total	p-value
1 day	0 (8.97)	38(10.03)	38	P<.0001
2-3days	14 (3.31)	0(3.69)	14	
3-4 days	16 (3.78)	0(4.22)	16	
>5 days	4 (0.94)	0(1.06)	4	

P-value was measured by Chi square test.

**Table 6:** Pain during bowel movement

Duration	Conventional hemorrhoidectomy (n=34) no.(Exp.Value)	Stapled hemorrhoidectomy (n=38) no.(Exp. Value)	Total	p-value
1 week	34(18.67)	8 (2.33)	42	p>.05
4 weeks	22 (9.78)	0 (1.22)	22	
3 months	8 (3.56)	0 (0.44)	8	

P-value was measured by Chi square test.

**Table 7:** Patient satisfaction at 4 weeks post-surgery

Level of satisfaction	Conventional hemorrhoidectomy (n=34) No. (%)	Stapled hemorrhoidectomy (n=38) No. (%)
Unsatisfactory	2 (5.88%)	0 (0%)
Satisfactory	26 (76.47%)	0 (0%)
Good	6 (16.65%)	12 (31.58%)
Excellent	0(0%)	26 (68.42%)



## Discussion

Several prospective randomized trials have demonstrated that, after short and medium follow-up, this new technique is as effective as the standard conventional operation, but better tolerated by patients owing to less postoperative pain and an earlier return to work. Stapled hemorrhoidectomy is associated with significantly less postoperative discomfort. This manifested as a shorter delay before the first bowel movement, a significantly lower degree of pain during defecation, a shorter hospital stay, the absence of any need for topical treatment (wound care), and quicker return to normal social and/or professional activities.

In our series among the 34 patients in conventional group 26 (76.47%) were male and 8 (23.53%) were female. In stapled group total number of patients were 38, 32 (84.21%) male and 6 (15.79%) female. In USA Hemorrhoidectomies are performed 1.3 times more commonly in males than in females<sup>6</sup>. In our country may be due to social cause less female patients come to physician for treatment of hemorrhoidal diseases.

Haemorrhage is by far the earliest and most worrisome complication. In our series, hemorrhage was reported in 4 (10.53%) of patients in stapled group and 26 (76.47%) patients in conventional group in 1st postoperative week. Incidence in the literature has been very variable from 0.6% to 10%<sup>6,7</sup>. The most frequent cause of hemorrhage is arterial, along the staple line. This can result from defective technique injuring the mucosa. Statistical analysis of postoperative bleeding in between two series was not found to be significant ( $p > .05$ ) in long term follow-up. 21.06% of patients in stapled complained of pain on the contrary about 100% patients complained of different degrees of pain. The cause of pain can be explained by a low staple line too close to the sphincter. A safety margin of 3 to 4 cm above the dentate line, recommended by Longo, is advocated by most authors<sup>5</sup>. Rosswell et al<sup>8</sup> also compared open hemorrhoidectomy with the stapled procedure and found significant postoperative pain reduction and a relevant decrease in hospital stay and time to return to work. In a survey by Ravo et al<sup>9</sup> of 20 Italian centers involving 1107 patients, 26% of patients had postoperative pain when there was no muscle incorporated in the donut compared to 66% when the donut contained muscle.

Pruritus was a common problem in conventional group. 34 patients in conventional group and 10 in stapled group experienced pruritus 1 week after operation. 30 in conventional group experienced pruritus upto 4 weeks after operation. ( $p$ -value  $< .05$ ). Study by Brown SR et al<sup>10</sup> anal discharge at two weeks was more prevalent following conventional haemorrhoidectomy. However, discharge had ceased in both groups by six weeks. In Shalaby series<sup>11</sup> at six months anal discharge was significantly more prevalent

following conventional haemorrhoidectomy.

Urine retention is not uncommon. The incidence was 2 (5.26%) patients in stapled hemorrhoidectomy and 8 (23.53%) patients in conventional operation, in our series. There does not appear to be any clear explanation. We believe that the anesthesia could be involved. This is a complication common to all proctology techniques. Four studies examined post-operative urinary retention after stapled and conventional hemorrhoidectomy operation<sup>12</sup>. The pooled relative risks of three of the studies were inconclusive. However there was a trend to a lower proportion of patients in the stapled group. In the randomized controlled trial series by Correa-Rovelo et al<sup>13</sup> urinary retention after stapled hemorrhoidectomy has been reported between 0% and 6%, which is not statistically significant from open or closed hemorrhoidectomy.

Anal stricture is the third leading late complication. But no patient of stapled hemorrhoidectomy group did complain of any degree of anal stenosis or stricture in 3 months follow-up. Rates have been reported to vary from 0.8% to 20%<sup>14</sup>. Anal stricture could be favored by two factors: residual sphincter hypertonia and scar tissue retraction. Dehiscence of the staple line could also be an important risk factor. One patient complained of Stenosis at 2-4 weeks follow-up, but on subsequent follow-up his sphincter tone was normal. Post-operative pain may cause this kind of muscle hypertonicity. Six patients (17.65%) of conventional operation group developed anal Stenosis in 3 months follow-up. Correa-Rovelo et al<sup>13</sup> reported only one of 42 patients with mild anal stenosis that did not require dilatation. In a one-year follow-up of 95 patients with stapled hemorrhoidectomy in Shalaby series<sup>11</sup>, five patients had anorectal stenosis; three patients responded well to anorectal dilatation, two patients did well after surgical treatment. Ho et al<sup>12</sup> reported mild stenosis in 12 of 57 patients with stapled hemorrhoidectomy, all occurred in patients who were noncompliant to fiber supplement and were usually detected at six weeks after surgery. Anal sphincter muscle injury or removal in conventional and stapled group was not found statistically significant ( $p > .05$ ). In a prospective study by Correa-Rovelo et al<sup>13</sup> in 100 patients who underwent stapled hemorrhoidectomy, examination of the donut rings showed that 55% contained smooth muscle from the rectum. In our series we did not perform any histopathological evaluation of the resected donut. On naked eye examination of the resected donut only 3 specimen i.e. 15.78% showed presence of smooth muscle fiber. We did not note any severe complications in particular extensive hematomas, pain and disabling persistent rectal syndromes, rectal perforations, and potentially life-threatening infections which required a colostomy. Such complications are not seen in conventional hemorrhoidectomy. Molloy et al<sup>7</sup> reported a case that was admitted the evening after discharge after an



uneventful stapled hemorrhoidectomy because of passing blood per rectum and mild fever. Computerized tomography of the abdomen showed extensive retroperitoneal gas enveloping the rectum, bladder, kidneys, and pancreas. In an anonymous survey of 1545 German Departments of Surgery in 1999, Harold and Kirsch<sup>15</sup> quoted 4635 patients with stapler hemorrhoidectomy. There were three rectal perforations requiring two temporary and one permanent stoma, one complete rectal obstruction and one large retrorectal hematoma, one lethal sepsis from Fournier's gangrene.

Wound healing was excellent in stapled group in comparison to conventional group. 34 patients wound healed within 1-2 weeks in stapled group, only 4 patients took more than 2 weeks for wound healing. In conventional group 6 patients wound healed within 3-5 weeks duration, and 28 patients wound healed within 6-8 weeks duration. Statistical analysis shows p-value<.001, which is very highly significant. No data was available regarding duration of wound healing in the available literature.

Length of hospital stay was very highly significant in these study (p-value<.0001). All the patients in stapled group stayed for 1 day and most of the patients in conventional group stayed for 3-5 days. Study by Ganio E et al<sup>16</sup> and Brown SR et al<sup>9</sup> showed that length of hospital stay was similar in both treatment groups; however there was heterogeneity in the pooled data.

8 patients in conventional group resumed their usual activities within 1 week and stapled group all the 38 patients resumed their usual activities within 1 week. Statistical analysis shows difference in resumption of usual activities in conventional group and stapled group are very highly significant (p-value<.001). A median 5-17 days was reported for members of the stapled group compared to a median 13-34 days for the conventional haemorrhoidectomy groups in study conducted by Brown SR et al<sup>9</sup> and Mehigan BJ et al<sup>17</sup>.

### Conclusion

Stapled haemorrhoidectomy is better in respect of cost, hospital stay, wound healing but it is expensive and technically the procedure is not well practiced among all surgeons. But in open haemorrhoidectomy the procedure is more painful, long hospital stay but less expensive than that one. In spite of best procedure with minimum complications, many patients could not afford stapled haemorrhoidectomy due to more expense. Moreover, most of the surgeons are not yet acquainted with this latest technique. So steps should be taken to encourage our surgeons to gain experience with stapled haemorrhoidectomy procedure.

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