ORIGINAL ARTICLE

Short and Long-Term Results of Stapled Vs Conventional Hemorrhoidectomy; Our Experience

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ABSTRACT

Aim: To assess the short and long term results of stapled hemorrhoidectomy (SH) vs conventional hemorrhoidectomy (CH) and to define the role of SH in the treatment of hemorrhoids.

Study design and settings: A randomized prospective trial conducted between January 2012 to January 2015 in the department of Surgical Unit 2 at Jinnah Hospital/ AIMC, Lahore.

Method: Seventy five patients with grade III or IV hemorrhoids were randomized to undergo either stapled or conventional hemorrhoidectomy. All patients were subjected to a followup examination by an independent surgeon at 1 week, 4 weeks, 6 months, 1 year, 2 years and 3 years postoperatively.

Outcome measures: Short term outcomes included operative time, intraoperative and postoperative bleeding, wound healing, postoperative pain, hospital stay, return to work and cost of treatment. Long term outcomes measured were residual anal pain, recurrent disease, anal stenosis.

Results: Stapled vs Conventional hemorrhoidectomy was associated with significantly reduced operating time(28 vs 41 min; p=0.000) , reduced postoperative pain scores (visual analogue scores) on the first four postoperative days (day 1 : 2.5 vs 5.7; day 2 : 1.5 vs 5.9; day 3 : 0.6 vs 4.5; day 4: 0.4 vs 3.9 where 0 indicates no pain and 10 maximum pain; p=0.000) , hospital stay (2.4 vs 3.9 days; p=0.000) , time to return to normal activity (8.5 vs 21.5 days ; p=0.000) , wound healing (0 vs 10 patients with persistant mucoid discharge and pruritis; p=0.001). On long term followup the incidence of anal stenosis in SH group was significantly low (0vs 2 patients; p=0.151) whereas other outcome measures like residual pain, recurrent disease.

Conclusion: Stapled hemorrhoidectomy is associated with reduced postoperative time, postoperative pain, hospital stay, return to work, lower incidence of anal stenosis and wound complications. Provided further clinical trials confirm these findings, stapled hemorrhoidectomy can become a viable addition for the therapy of hemorrhoides.

Keywords: Hemorrhoides, Stapled hemorrhoidectomy, Conventional hemorrhoidectomy

INTRODUCTION

In recent times, surgical management of hemorrhoids should aim to provide a definitive cure or long term relief of symptoms using operative techniques that are safe, preserve the anorectal function, and makes the patient's quality of life an important priority.

In 1998, a transanal circular stapling instrument, initially used on mucosal prolapses[1] was used to treat hemorrhoids via a procedure called stapled hemorrhoidopexy[2]. The technique introduced a completely new concept for treating hemorrhoidal disease. It consisted of a circumferential rectal mucosectomy that performed a mucosal lifting (anopexy), aimed not at excision of the diseased hemorrhoidal cushions but rather at reconstitution of the healthy anatomical and physiological aspects of the hemorrhoidal plexus[2]. It is believed that the stapling device works by repositioning the rectal mucosa higher (mucosal lifting)[2] restoring the normal anatomy of the anal canal and enabling the hemorrhoidal cushions to perform their role in continence, as opposed to hemorrhoidectomy techniques that only excise abundant tissues.However, the stapler operation also influences the blood flow, affecting venous vessels and leading to an improvement of the venous reflux[1,2,3,4,5].

Since the introduction of this procedure, several studies[3,4,5] have endorsed its safety and efficacy. The short term advantages of SH have clearly been exhibited in studies on short term outcomes and recent reviews. Undoubtedly SH is quicker to perform, and patient experience less post operative pain, have a shorter hospital stay, and return to normal activities earlier. Other short term outcome measures also seem to favor SH. In a review[4] of almost 2000 patients, although the overall postoperative complication rate was comparable in both procedures, SH had less postoperative bleeding, p=0.001, fewer wound complications p=0.005 and less constipation p= 0.02 furthermore the requirement for nonsurgical and surgical re

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intervention and the re admission rate was similar after SH and conventional hemorrhoidectomy(CH)[4].

However most of the initial trials reported on short term outcomes and until recently only a few data are available on long term safety and effectiveness but none in the local population. The aim of this study was to assess both short and long term outcomes of SH vs CH in our population.

MATERIALS AND METHODS

This prospective randomized study was conducted in Surgical Unit 2, Jinnah Hospital Lahore from January 2012 to January 2015, whereupon 70 consecutive patients presenting with symptomatic grade III and IVhemorrhoids and no concomitant anal disease were enrolled in this project after taking their informed consent and were then randomly allocated to either Group A (SH) or Group B (CH). Patients with co-morbid conditions like diabetes, ischemic heart disease, CLD and pregnancy were excluded from the study. The comparison criteria between two groups were:

Short term outcomes	Long term outcomes
Operative time	Residual pain
Intraoperative & postoperative bleeding	Recurrent disease
Wound healing	Anal stenosis
Postoperative pain	Patient satisfaction
Hospital stay	
Return to work	
Cost of treatment	

The p value of each criterion was calculated and considered significant if less than 0.05.All the operations were performed under general anesthesia and in lithotomy position by surgical teams who were experienced in both the surgical techniques. No antibiotics or laxatives were used in the study population. The hemorrhoidectomy in conventional group (Group B) was done by Milligan-Morgan Technique. Stapled hemorrhoidectomy (Group A) was done by the purpose designed PPH staples anoplastykit by Ethicon Endo surgery group.

After inspection of the prolapsing hemorrhoids, the anal retractor and obturator were lubricated and introduced. After removal of the obturator, the purse string anoscope was inserted, A 2/0 prolene purse string was placed about 5 cm above the dentate line. A belt suture was then passed at 9'0 clock position at the same level with silk 2/0. The anoscope was then withdrawn and the stapling device introduced with the anvil fully extended. The purse string suture was tightened, and booth tails were pulled through the lateral ports of the stapler with aid of the suture grasper. The close stapling instrument was then fired and held close for 30 seconds to aid hemostasis. The stapler was then slackened and removed with the retractor and doughnuts were inspected for completeness. The staple line, which was in every case 3cms about the dentate line was inspected with the aid of anal retractor and obturator. Any bleeding point was over sewn.

At the end of the operation in both the groups the anal canal was lightly packed with gauze dressing impregnated with lignocaine gel which was removed the following morning.

All the patients received a normal diet post operatively but were encouraged to increase the fluids and fiber intake. Same cleaning ritual of anal region by Sitz bath 2 to 3 times per day and the same type of external anal dressing was applied in both the groups.

A pain score data sheet (VAS) was filled out by the patients 12hrs post operatively (0= no pain, 10= Maximum) and later on next three consecutive days. Pain therapy included injection Nalbin Hydrochloride 10 mg intravenously 8 hourly and oral analgesia in the form of Tab Paracetamol 500mg 2 tabs thrice daily and Naproxen Sodium 550mg twice regularly for next 4 days and then as per needed.

In case of an uneventful recovery, the patients were discharged within 24 hours of operation. They were reviewed at 1 week 4 week 6 months 1 year 2 year and finally 3 year after surgery. All the patients were clinically evaluated for postoperative complaints, returned to work and overall satisfaction with the procedure by an independent surgeon who was not part of the operating team. On long term follow up special emphasis was made to pick up the complications of hemorrhoidal recurrence and anal stenosis.

RESULTS

Operative time, duration of hospital stay and return to normal activity was compared between two groups. Mean operative time in group A was 28.8571$\pm$2.88 range of 10 minutes. Mean operative time in group B was 41.8571±3.98 range of 15 minutes. Operative time was statistically significant (t= -14.608, p= 0.000). Mean length of hospital stay was 2.358±0.631 range of 1.5 days. Mean length of hospital stay in group B was 3.957±1.08 range of 3.5 days and was statistically significant (t= -7.395, p=0.000) (FIG 1). Mean time for return to normal activity among group A was 8.549±3.363 range of 9 daysand in group B it was 21.571±7.22 range of 20 days and was statistically significant (t= -9.677, p = 0.000) (Fig. 1).

Intraoperative bleeding occoured in 2 patients in Group A and 5 in Group B, all were controlled by suture ligation. Postoperative bleeding occurred in 4 patients in Group B and none in Group A.Urinary

retention was not found in any case. Ten patients in Group B complained of persistent mucoid discharge and pruritis continuing 4 weeks after the operation while none of the patients in Group A had any of these complaints (Pearson's Chi square = 11.667, p = 0.001).

After one year of operation 4 patients in Group B presented with second degree hemorrhoidal disease while only one was found in Group A (Perason's Chi square = 1.938, p = 0.164). All were treated by band ligation. There were no reported cases of fecal incontinence or perirectal fistula formation in either of two groups. Anal stenosis was found in 2 out of 35 cases in Group B (which was managed by anal dilatation) while none was found in Group A (Pearson's Chi square = 2.059, p = 0.151).

2 patients were also found suffering from residual anal pain which got resolved in the second postoperative year. None was reported in Group A (Pearson's Chi square = 2.029, p = 1.54).

Follow up at the end of 2 years after surgery showed that most of the complaints had resolved in patients of both the groups. Similarly patient evaluation at the end of 3 years showed no long term complications in either of two groupsbut in the third postoperative year we lost 5 patients to follow up; 2 in Group A and 3 in Group B.

Thus the overall complication rate was higher in Group B (29 in number) and much lower in group A (3 in number). There were no deaths in our series. As far as patient's satisfaction was concerned, it was found that patients in the stapler group expressed greater satisfaction (33 out of 35 would recommend the procedure to others) as compared to those undergoing conventionalhemorrhoidectomy (28 out of 35 would recommend the procedure to others) (Pearson's Chi square = 3.188, p = 0.074).

Table 1: Patients demographics

Patient characteristics	Group A (SH)	Group B (CH)
3rd degree haemorrhoids	18	14
4th degree haemorrhoids	17	21
Mean age in years	45	42
Male:female	4:3	5:3

Table II: The operative time, duration of hospital stay and return to normal activity was compared between the two groups.

Variables	n	Mean	Std. Deviation	Range	Independent t test	p value
Operative Time (minutes)						
GROUP A	35	28.8571	2.88141	10	-14.608	0.000
GROUP B	35	41.0000	3.98527	15		
Time of hospital stay (days)						
GROUP A	35	2.3857	0.63113	1.50		
GROUP B	35	3.9571	1.08717	3.50	-7.395	0.000
Time to return to normal activity (days)						
GROUP A	35	8.5429	3.36367	9.00		
GROUP B	35	21.5714	7.22042	20.00	-9.677	0.000

Table III: Using the visual analogue score (VAS) mean scores were compared between the two groups.

Patient groups	n	Mean	Std. Deviation	Range	Independent t test	p value
Post operative pain on day 1						
Group A	35	2.5143	1.85300	6.00	-8.185	0.000
Group B	35	5.7143	1.38418	4.00		
Post operative pain on day 2						
Group A	35	1.5429	1.33599	5.00	-11.554	0.000
Group B	35	5.9429	1.81404	7.00		
Post operative pain on day 3						
Group A	35	0.6000	0.73565	2.00	-10.572	0.000
Group B	35	4.5143	2.06328	9.00		
Post operative pain on day 4						
Group A	35	0.4000	0.81168	3.00	-12.359	0.000
Group B	35	3.9714	1.50461	5.00		

Mean VAS scores in group A on first, second, third and fourth postoperative days were 2.5 (range 0 – 6), 1.5 (range 0 – 5), 0.6 (range 0 – 4) and 0.4 (range 0 – 3) respectively. In Group B the respective values were 5.7 (range 0 – 4), 5.9 (range 0 – 7), 4.5 (range 0 – 9) and 3.9 (range 0 – 5), the average amount of pain in the stapler group thus being significantly lower than the conventional hemorrhoidectomy group (t = -12.977, p = 0.000) (FIG 2).

Table IV

Variables	SH	CH	Pearson's Chi square	p Value
Residual pain	0	2	2.029	1.540
Recurrent disease	1	4	1.938	0.164
Anal stenosis	0	2	4.242	0.039
Patient satisfaction	33	28	3.188	0.074

Figure 1

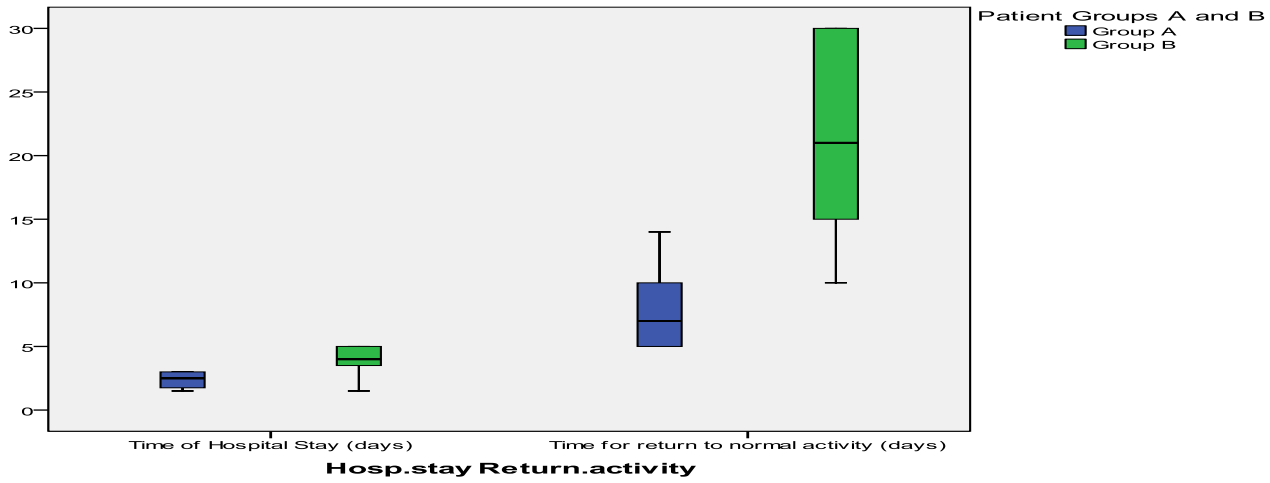
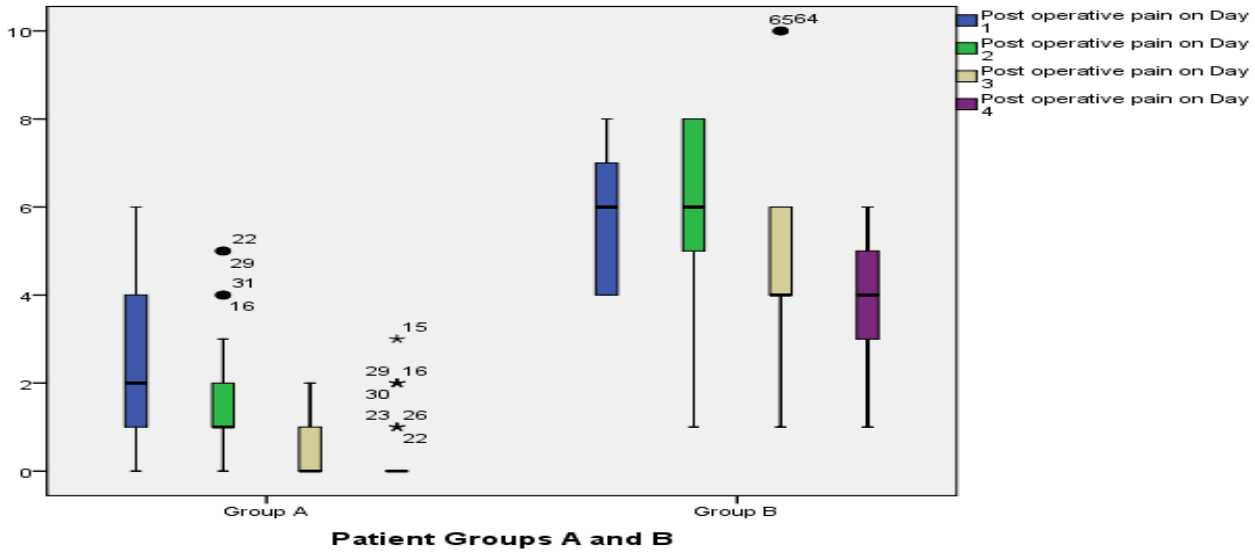


Figure 2



DISCUSSION

Excision hemorrhoidectomy is associated with significant postoperative pain because of trauma of the sensitive anal mucosa. Furthermore, the patients have to maintain a precise wound dressing to prevent local infection, because local wound exposure may lead to fecal contamination and prolonged wound healing[6]. In a small series including 23 patients[7]it was shown that the stapled hemorrhoidectomy initially described by Longo[8] leads to less postoperative pain, a shorter postoperative hospital stay and shorter recovery time in patients with 3rd degree hemorrhoids compared with conventional hemorrhoidectomy[9]. Larger studies[9,10,11]comparing the two techniques confirmed less postoperative pain and an earlier return to work in the stapler group but showed no difference in total hospital stay and overall complications. 0.12% of the cases undergoing SH can develop severe complications including sphincter lesions, persistent postoperative pain, rectal perforations and even lethal sepsis[12,13,14,15].

These results suggested the need for further prospective evaluation and randomized comparison of stapled vs conventional hemorrhoidectomy.To our knowledge, there are few data comparing the long term results of stapled vs excision hemorrhoidectomy[16]especially in our population. This prospective randomized study analyse the outcome of stapled vs excision hemorrhoidectomy in patients with 3rd or 4th degree hemorrhoid disease, with

special regard to the long term results and recurrence rate.

The pathophysiological background of the treatment of hemorrhoidal disease by stapler is different than that for excision hemorrhoidectomy. The complete circular mucosa cranial to the hemorrhoidal plexus is resected, allowing reduction of mucosa prolapse by mucosa lifting and by fixing the prolapse mucosa at the rectum wall. The reduction of the arterial blood flow to the hemorrhoidal plexus is probably not the main point of treatment. A Doppler investigation with preoperative and post operative management of the arterial in flow to the hemorrhoidal cushion did not show any significant differences[17].The repositioning of the prolapsed mucosa and thereby the improvement of venous reflux may be the key of treatment, but further investigations are necessary to clarify this point.

The indication for stapled hemorrhoidectomy in our study was 3rd and 4th degree hemorrhoids.Although patients in bothgroups had free access to oral analgesics, the stapler group had significantly less pain than the excision group both in the early (Table III, p= 0.00) and late (Table IV, p= 1.540) post operative period. In a randomized trial, Mehigan et al (10) reported a 50% reduction in postoperative pain medication consumption in patients who underwent stapled hemorrhoidectomy compared with patients who underwent Milligan Morgan hemorrhoidectomy. The results of our perspective randomized study are in accordance to the results of 4 other studies as well comparing stapled hemorrhoidectomy with excision hemorrhoidectomy[7,9,10,11].

This reduction in post-op operative pain relative to the excisional technique is likely to become the primary benefit of this procedure and drive patient's demand. Since post operative pain is the principal reason that makes the patient avoid or delay hemorrhoidal operations[18].

As far as residual pain scores at first, second and third year of follow-up are concerned we found that the overall scores were again lower in SH group than CH group (Table IV, p=1.540). The analysis of the results showed a gradual and comparable improvement in symptoms in both the groups with all the patients free of pain in SH group at the end of first year and only three patients in CH group (2 suffering from anal stenosis and 1 from anal fissure) suffered from residual pain due to the above mentioned complications.

At the end of three years we did not find any patient suffering from pain at rest or associated with bowel movements in either of the 2 groups. These observations are consistent with those observed by Brown, Shalaby and others[19,20,21,22].

Other outcomes like postoperative bleeding, pruritis and mucoid discharge were also less frequent in SH group (Table IV). This was reported in several studies and our report showed similar results.With less pain and fast recovery of bowel movement and normal passage of stool, stapled hemorrhoidectomy has been reported to have a faster functional recovery and shorter time off work[23,24], clearly illustrated by our results as well (Table II) which shows a clear advantage of group A patients over Group B in terms of shorter hospital stay (p = 0.00) and earlier return to normal activities (p = 0.00).

In long term follow-up, two patients in CH group were found suffering from anal stenosis and one from anal fissure,while none of the patients in SH group reported these complications. This is probably because we have included fourth degree hemorrhoids as well in our study and during conventional hemorrhoidectomy in these patients the surgeons sometimes over excise the mucocutaneous tissue. Repeated self anal dilatations and other conservative measures were employed and these patients were treated successfully in outpatient clinic. None of the patients in SH Group reported with this complication. This finding is explained by our careful placement of purse string sutures. We take bites that are shallow and broad which only incorporates mucosa and sub mucosa, as well as avoiding excess traction on the purse string which avoids full thickness rectal wall into the stapler and thus prevents damage to the internal sphincter.

Recurrence rate was higher in SH group in some series but our results showed that four patients in CH group and only one in SH group presented with second degree hemorrhoids during the first year of follow-up which were easily managed by band ligation. Similar results were noted by Rowsell, Wilson and Chung[25,26,27].

Although it has been stated that stapled hemorrhoidectomy is a relatively safe procedure for hemorrhoids[28,29], severe surgical related complications were still noted from literature. The severity of the surgical related complications vary from bleeding, thrombosis, urinary retention, wound dehiscence to major complications like rectal perforation, rectovaginal fistula formation, pelvic abscess[30,31]etc., but we did not encounter any of these serious complications in our patients. In our opinion most of these complications and morbidities can be avoided by paying special attention to meticulous surgical technique and tissue handling.

The operative treatment cost of all the 70 patients in this study was borne by the hospital. Yet we do realize that the cost difference associated with the two procedures is an important consideration. However, social and economic savings incurred by

shorter convalescence, early return to comfortable daily life routine probably off set this initial adjunctive cost of the stapler device.

CONCLUSION

There is reasonably clear evidence in favor of stapled hemorrhoidectomy for operative time, length of hospital stay, return to work, pain, anal discharge, recurrence, stenosis and patient satisfaction. We therefore conclude that it is a safe and effective alternative to conventional open hemorrhoidectomy.

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