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Original Research Article

Stapled haemorrhoidopexy vs. open haemorrhoidectomy: a comparative study

Naman Aggarwal[1], Saurabh Agrawal[2]*, Jitendra P. Ray[1]

Department of General Surgery, [1]Himalayan Institute of Medical Sciences, SRHU, Dehradun, Uttarakhand, [2]Heritage Institute of Medical Sciences, Bhadwar, Varanasi, Uttar Pradesh, India

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***Correspondence:**
Dr. Saurabh Agrawal,
E-mail: saurabhms005@yahoo.co.in

ABSTRACT

Background: Haemorrhoidal disease is one of the most common anorectal disorders. The grading of haemorrhoids depend on their severity and tendency to prolapse. Surgery is essential for grade 3 and 4 haemorrhoids. This study aims to compare the outcomes of the stapled haemorrhoidopexy and open haemorrhoidectomy in terms of intra and postoperative complications in terms of pain, return to activity of daily living (ADL) i.e. return to functional activity.
Methods: A single-centred observational follow-up study on patients undergoing surgery for haemorrhoids between 2016-2017. Total number of patients operated were 106. Total cases included in the study are 95, out of which 59 were in open haemorrhoidectomy group and 36 in stapled haemorrhoidopexy group. Data was collected and the various parameters compared between the two groups.
Results: The most common symptom found in the study was bleeding per rectum (91%). Intraoperative bleeding was more in open group compared to the stapled group ($p<0.005$). The pain experienced in the immediate postoperative period was higher for the open group ($p<0.005$). Noticeable difference in the hospital stay between the two groups was observed, with stapled group being discharged earlier ($p<0.005$). The immediate postoperative complications were not significantly different in the two groups. The need for postoperative analgesia was seen to be lesser in the stapled group compared to the open group ($p<0.005$).
Conclusions: Our study confirms that stapled haemorrhoidopexy is better than open haemorrhoidectomy in terms of intra operative duration and pain experienced by the patient with an early return to activities of daily living.

Keywords: Haemorrhoids, Open haemorrhoidectomy, Stapled haemorrhoidopexy

INTRODUCTION

Haemorrhoidal disease is one of the most common anorectal disorders, affecting more than 15 million people annually in the United states.[1] Thompson postulated that the disintegration of Park's ligament, in patients with haemorrhoids, caused the specialized 'cushions' of sub mucosal tissue, lining the anal canal and anal mucosa to slide outwards.[2] The internal haemorrhoids develop when these vascular cushions experience pathological changes. The anal canal maintains continence by the action of these cushions, along with the internal sphincter**.** Bleeding, mucosal or faecal soiling, itching and occasional pain are caused by the symptomatic aggregations of this sub epithelial tissue, present in haemorrhoidal disease.[3] The prevalence of haemorrhoids is projected at between 4% to 34%.

The grading of haemorrhoids depends on their severity and tendency to prolapse. Rubber band ligation and/or injection sclerotherapy are reserved for grade 1 and 2 haemorrhoids. Surgery is essential for grade 3 and 4 haemorrhoids owing to persistent prolapse. Until the 1900's, the two main modalities of treatment for grade 3

and 4 haemorrhoids were open (Milligan Morgan) and closed (Ferguson) techniques, through the years, alterations have been made, but still causing patient distress. Various procedures have been devised to combat the complications occurred in conventional open haemorrhoidectomy, such as rubber band ligation, injection sclerotherapy, infrared photocoagulation, cryotherapy, diathermy haemorrhoidectomy and stapled haemorrhoidopexy amongst others. Numerous vital questions need to be answered before these procedures can be taken up unconditionally. First, is the postoperative pain considerably improved? Second, what are the complications associated with this procedure? Third, is the operation relevant to all patients who require surgical excision of haemorrhoids? Fourth, is the postoperative stay any decreased? Fifth, what is the monetary advantage or disadvantage to this procedure?" This study compares the few outcomes of the treatment The Milligan Morgan's open haemorrhoidectomy and The Longo's stapled haemorrhoidopexy.

Aims and objectives

This study aims to compare the outcomes of the stapled haemorrhoidopexy and open haemorrhoidectomy in terms of intra and postoperative complications and pain, return to activity of daily living (ADL) i.e. return to functional activity.

METHODS

The study was conducted in the Department of General Surgery, Himalayan Institute of Medical Sciences (HIMS), Dehradun, over a period of 15 months. It is an observational- follow up study. Sampling Method is purposive sampling.

Inclusion criteria include age group between 20 and 75 years, symptomatic grade 2 and 3 haemorrhoids, undergoing either open or stapled haemorrhoids surgery.

Exclusion criteria were patients with deranged coagulation profile, previous ano-rectal surgeries, associated anal pathologies like acute anal fissure, anal stenosis, fistula-in-ano, abscess and rectal prolapse, secondary causes of haemorrhoids like portal hypertension, pregnancy and rectal malignancy.

The various parameters compared between the two groups were duration of surgery (from positioning the patients in lithotomy position to placement of anal pack), intra-operative bleeding (measured with the number of gauze pieces used, with one quantifying to 5ml of blood loss), post-op pain (VAS), analgesics requirement, immediate post op complication like bleeding, urinary retention and anal incontinence, time to first post op bowel motion, pain on defecation, duration of post-op stay at the hospital.

Interpretation and analysis of obtained results was carried out using tests of significance. Statistical analysis was done on SPSS version 22. Non parametric tests and parametric tests were used to compare the outcomes between the groups.

RESULTS

Total number of patients operated were 106 (41 stapled and 65 open). Total cases included in the study are 95, out of which 59 were in open haemorrhoidectomy group and 36 in stapled haemorrhoidopexy group.

This study confirms the superiority of the stapled procedure over the open procedure as far as postoperative pain score (Table 1 and 2 respectively) and immediate postoperative complications (Figure 2).

The open group had significantly higher mean duration of surgery compared to the stapled group. It was 29 minutes in the staple group and 36 minutes in the open group. The per operative bleeding, which was measured in terms of number of gauze pieces, was significantly lower in stapled group compared to the open group (20 ml v/s 31 ml respectively).

Stapled haemorrhoidopexy is succeeded with significantly lesser postoperative pain, as in the other trials done by various authors. This was evident by a lesser duration to first postoperative defecation, shorter hospital stay (Figure 1), lesser pain during defecation, lesser cases of urinary retention and lesser need for injectable analgesics in the stapled group compared to the open group in our study.

Table 1: VAS score (stapled group).

	POD 0 (evening)	POD 1 (morning)	POD 1 (evening)	POD 2 (morning)
Stapled group	6	4	4	2
Interquartile range	2	2	2	2

Mann- Whitney's test; $p<0.005$.

Table 2: VAS score (open group).

	POD 0 (evening)	POD 1 (morning)	POD 1 (evening)	POD 2 (morning)
Open group	8	6	4	2
Interquartile range	2	2	0	2

Mann- Whitney's test; $p<0.005$.

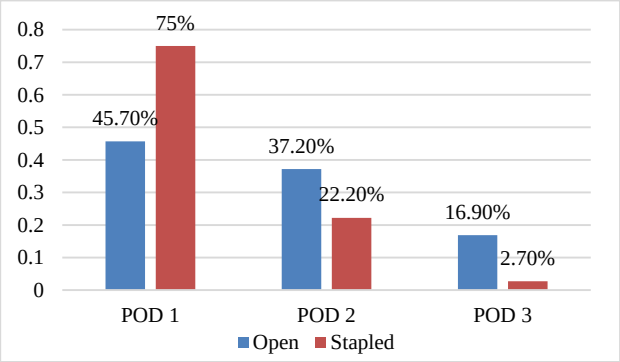

Figure 1: Discharge post-op day.

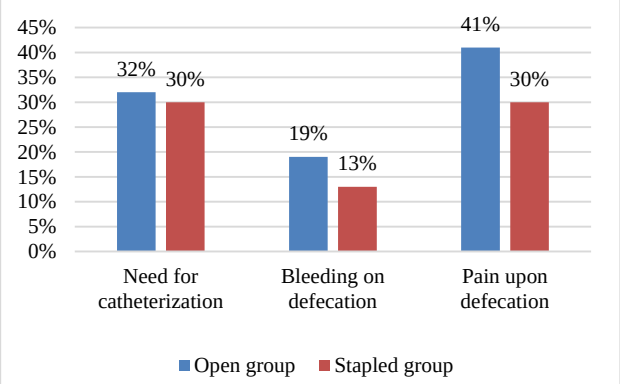

Figure 2: Postoperative complications.

The duration to return to functional state was higher in open group compared to the stapled group, it took an average of 5.9 days for the patient in open group to start the routine activities compared to stapled group that took a mean of 4.8 days.

The probable early postoperative benefits of stapled haemorrhoidopexy must be equated against the greater cost of surgery and rare but severe, even life threatening complication, as seen in one case in this study.

DISCUSSION

In 1998, Longo was the first to give an understanding of the stapled haemorrhoidopexy. Since then, third and fourth degree haemorrhoids have had a considerable alternative to conventional techniques. All excisional technique requires excision at highly sensate anoderm, which can be omitted in stapled haemorrhoidopexy. In stapled haemorrhoidopexy, a certain thickness staple line is created within the anal canal which returns the anal cushions to their normal location and secure the position of the internal haemorrhoids. Significant reduction in internal haemorrhoid size is achieved due to interruption of the arterial inflow and restoration of the venous outflow, which further prevents prolapse and ultimately the symptoms disappear. In comparison to various studies, this study confirms the superiority of the stapled procedure over the open procedure as far as postoperative pain score and immediate postoperative complications.

The open group had significantly higher mean duration of surgery compared to the stapled group. It was 29 minutes in the staple group and 36 minutes in the open group. The per operative bleeding, which was measured in terms of number of gauze pieces, was significantly lower in stapled group compared to the open group (20 ml v/s 31 ml respectively). Stapled haemorrhoidopexy is succeeded with significantly lesser postoperative pain, as in the other trials done by various authors. This was evident by a lesser duration to first postoperative defecation, shorter hospital stay, lesser pain during defecation, lesser cases of urinary retention and lesser need for injectable analgesics in the stapled group compared to the open group in our study. The duration to return to functional state was significantly higher in open group compared to the stapled group, it took an average of 5.9 days for the patient in open group to start the routine activities compared to stapled group that took a mean of 4.8 days. In contrast to what other reports mention, this study resulted in similar pain scores amongst the two groups by POD 2.[4] Urinary retention, need for significant doses of analgesia and higher visual analogue score was noted in a small number of patients in the staple group. This may be attributed to the fact that a lower stapler line may be the cause of such a pain. The same patients also had comparatively slower recovery and had pain at first follow up at 1 week with bleeding and pain on defecation also. This suggests the importance of a higher stapler line and confirms the fact that the purse string suture should be taken at least 1-2 cm above the dentate line. Major, persisting continued pain was experience into patients till 3 months post-surgery. The cause of persistent pain is difficult to elucidate.

An effective step to reduce pain in a correctly done open Milligan Morgan procedure is to avoid including smooth muscle fibres while fixing the vascular pedicels.[5] Cheetham et al, refers to this pathogenic theory to explain the persistence of the symptoms in the stapled group: in almost all the cases of the series in which this complication occurred, the doughnuts included smooth muscle fibres, probably suggesting the cause of persistent pain due to deep bites of sutures through the muscle layer.[6] Different hypothesis has been postulated to describe discomfort during and immediately after passing stools. Narrowing of the anal canal and the occurrence of surfeit sphincter tone and spasticity, are some of the morphological and functional changes which are the result of the staple procedure, and have frequently resulted in the pathogenesis of the symptom. Other possible theories for the pain could be a lower staple line and a small fissure in ano. No difference in pain experienced was found with the excision of a skin tag or an isolated external haemorrhoid at the same time as stapled haemorrhoidopexy. Gravie et al reported that a small number of patients (10%) in the staple group needed prolonged analgesic relief.[7] He did not find any

correlation in the stapled group between the intensity of pain, total analgesia requirement, frequency of administration and the height of staple line as contradicted by Pavfidis et al, who had found one. Also the removal of skin tags at the same time as stapled procedure did not seem to exacerbate the pain. Both the types of treatment are equally effective in curing the symptoms because both resolved the prolapse that was causing them.[8] The duration it took for the anal wounds to heal and associated mucus discharge and pain at defecation were the major inconvenience reported by the patient in the open group. The presence of large hypertrophic external haemorrhoids for grade 4 haemorrhoids do not seem to contradict stapled haemorrhoidopexy.

Immediate postoperative bleeding which is mentioned as quite a frequent possible complication of stapled haemorrhoidectomy, was not seen in this study. In one case of stapled group after the stapler was fired at the last step, there was torrential bleed from the operative side with a blood loss of about 150 ml in post-op opposed as an emergency situation and haemostasis was achieved eventually with difficulty taking few haemostatic sutures and anal packing.[9] The patient had a painful and slow recovery. An interesting conclusion was made by John where in a study of 82 cases of stapled haemorrhoidopexy, inflammatory polyps at the stapled line were found to be the cause of late bleeding.[10] In the first postoperative week itself, majority of the complications arose. At the first review, at first week after surgery, significant increase in pain upon defecation and mucus discharge was found in open group accounted by the large exposed wound at the perianal region. At the review at 3rd month post op, again pain and mucoid discharge was significantly higher in the open group compared to the stapled group confirming the slow healing rate of perianal wound caused by the open technique and the inconvenience caused by it. On examination at 1 week, some patients revealed fissure in ano, accounting for their complaints. The cause of fissure maybe anal stretching which was done before inserting the anal dilator or reduced blood supply to the distal anoderm, post stapled haemorrhoidopexy.

Ortiz et al, concluded from his study that due to the accidental placement of low rectal sutures, 40% stapled group patients developed tenesmus, compared to none in the open group.[11] Similar symptoms were experienced in patients of rectosigmoid cancer, who underwent low anterior resection (which he described as 'low anterior resection syndrome'). Anatomical remodelling of the anal canal post-surgery, can also be the cause of such symptoms. Certain modification to the anal sphincter have been studied on various sonographic and manometric test, although no correlation has ever been defined in terms of clinical outcome. The complications like anal incontinence, sphincter damage or rectovaginal fistula were not seen in this study. Brusciano showed concerns related to internal sphincter damage and long-term continence problem. Anal incontinence had been attributed to the anal dilatation by 35 mm diameter anoscope or by the Lord's dilatation carried out by some before inserting anoscope, causing anatomical remodelling and anal sphincter disintegration.[12]

Stapled haemorrhoidopexy was originally presumed to be operator independent. The extent of prolapse determines the amount of mucosa to be excised. This bears a practical difficulty in identifying the amount of mucosa to be removed.[13] This somewhat explains why anterior haemorrhoids are associated with the most instances of residual prolapse after stapled haemorrhoidopexy. In cases of inadequate reduction of haemorrhoids post stapling, complementing with resection of the protruding tissue is only prudent.

Few of the technical difficulties faced by surgeon in performing stapled haemorrhoidopexy are limited operator space available while taking purse string suture (anal stretching may help), recognition of dentate line in chronic cases of prolapsed haemorrhoid is difficult, taking anterior bites of the purse string suture, hematoma caused if a bite taken through the pile mass, the depth at which the mucosa is stapled depending upon traction to purse string knot, the temptation to excise associated external skin tags.

In 2007, the first papers on long-term outcomes of stapled haemorrhoidopexy came out and in a review of 12 randomized trials by Shiva stapled haemorrhoidopexy was found to have a higher recurrence rate that the open method.[1] However, in another multi-centric long-term study comparing two groups, they found no statistical difference in the outcomes and recurrent rates but concluded that fourth degree haemorrhoids operated by stapled haemorrhoidopexy, are prone for recurrences. This study too shows that recurrences are present in both stapled and open group but no statistical correlation could be found. The persistence of large prolapsed haemorrhoids that cannot be assimilated in the stapler, partial mucosal resection owing to procedural error or a true recurrence are the likely justifications.

Many studies found that stapled procedures to be expensive as compared to the open.[14] But they also argue that, in the long run, the short term benefits that the stapled procedure offers, may equalize the cost factors in term of hospital stay and duration to normal activities.

CONCLUSION

To conclude, this study confirms that Stapled haemorrhoidopexy is better than open haemorrhoidectomy in terms of intra operative and immediate postoperative complications, with an early return to activities of daily living. The most common symptom found in the study was bleeding PR (per rectum), being present in almost all patients. Intra operative bleeding was significantly lower in the Stapled group. The total

duration of surgery was also lower in the stapled group compared to open group. The pain experienced in immediate postoperative period was higher for open group, as assessed by VAS score. The time to first defecate by the Stapled group was slightly lower compared to open group. There was a noticeable difference in the hospital stay between the two groups, with stapled group being discharged earlier. The immediate postoperative complications were not significantly different in the two groups. The need for postoperative analgesia was seen to be lesser in the stapled group compared to the open group. The duration to return to functional activity was significantly earlier in stapled group compared to open group. The complications/ recurrence at 3 months were similar between the two groups.

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REFERENCES

1. Jayaraman S, Colquhoun PH, Malthaner RA. Stapled haemorrhoidopexy is associated with a higher long term recurrence rate of internal hemorrhoids compared with conventional excisional hemorrhoid surgery. Dis Colon Rectum. 2007;50(9):1297-305.
2. Ganio E, Altomare DF, Milito G, Gabrielli F, Canuti S. Prospective randomized multicentre trial comparing stapled with open hemorrhoidectomy. Br J Surg. 2001;88;669-74.
3. Sutherland LM, Burechard AK, Matsuda K, Sweeney JL, Bokey EL, Childs PA, et al. A systematic review of stapled hemorrhoidectomy. Arch Surg. 2002;137:1396–407.
4. Ganio E, Altomare DF, Milito G, Gabrielli F, Canuti S. Long term outcomes of a multicentric randomized trial of stapled haemorrhoidopexy versus Milligan-morgan haemorrhoidectomy. Br J Surg. 2007;94:1033-7.
5. Mattana C, Caco C, Manno A, Verbo A, Rizzo G, Petito L, et al. Stapled hemorrhoidopexy and Milligan Morgan Hemorrhoidectomy in the cure of fourth degree hemorrhoids: Long term evaluation and clinical results. Dis Colon Rectum. 2007;50:1770-5.
6. Cheetham MJ, Cohen CRG, Kamm MA, Philips RKS. A randomized controlled trail of diathermy hemorrhoidectomy versus stapled hemorrhoidectomy in an intended day care setting with longer follow up. Dis Colon Rectum. 2002:46;491–7.
7. Gravié JF, Lehur PA, Huten N, Papillon M, Fantoli M, Descottes B, Pessaux P, Arnaud JP. Stapled hemorrhoidopexy versus milligan-morgan hemorrhoidectomy: a prospective, randomized, multicenter trial with 2-year postoperative follow up. Annals Surg. 2005;242(1):29.
8. Pavlidis T, Papaziogas B, Souparis A, Patsas A, Koutelidakis I, Papaziogas T. Modern stapled Longo procedure vs. conventional Milligan-Morgan hemorrhoidectomy: a randomized controlled trial. International J Colorectal Dis. 2002;17(1):50-3.
9. Singer M, Cinton J. New techniques in the treatment common perianal diseases; Stapled haemorrhoidopexy, Botulinum toxin and Fibrin sealant. Surgical Clin N Am. 2006;86:937–67.
10. John C, Joel A, Frederick A. Inflammatory polyps: A cause of late bleeding in stapled hemorrhoidectomy. Dis Colon Rectum. 2006:49;1910–3.
11. Ortiz H, Marzo J, Armendariz P. Randomized clinical trial of stapled haemorrhoidopexy versus conventional diathermy hemorrhoidectomy. Br J Surg. 2002;89:1376–81.
12. Brusciano L, Ayabaca SM, Pescatori M. Reinterventions after complicated or failed stapled hemorrhoidopexy. Dis Colon Rectum. 2002:47;1846–51.
13. Kairraluaoma M, Nuorva K, Kellokunpu. Day case stapled versus Diathermy hemorrhoidectomy – A randomized control trial evaluating surgical and functional outcomes. Dis Colon Rectum. 2003;46:93–9.
14. Senagore AJ. Singer M. Ebcarian H. A prospective randomized control multicentric study comparing stapler hemorrhoidopexy and Ferguson hemorrhoidectomy – Perioperative and 1 year results. Dis Col Rectum. 2004;47;1824-36.

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