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Original Research Article

A Clinical Comparison of Stapler Versus Conventional Open Hemorrhoidectomy Techniques

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Abstract:

Background: Hemorrhoids are a common anorectal condition, and surgical intervention becomes necessary when conservative treatment fails. Open hemorrhoidectomy has long been the standard, while stapler hemorrhoidectomy has emerged as a less painful alternative with faster recovery.

Aim: To compare the outcomes of stapler hemorrhoidectomy with conventional open hemorrhoidectomy in terms of operative time, postoperative pain, hospital stay, and complications.

Materials and Methods: This prospective comparative study was conducted at Jawaharlal Nehru Medical College and Hospital, Bhagalpur,Bihar, India. A total of 100 patients with Grade III and IV hemorrhoids were randomized into two groups: 50 underwent stapler hemorrhoidectomy and 50 underwent open hemorrhoidectomy. Patients were followed up for six weeks postoperatively.

Results: Stapler hemorrhoidectomy was associated with significantly shorter operative time (mean 25 ± 5 mins vs. 40 ± 7 mins), reduced postoperative pain scores, and earlier return to normal activity. However, cost and recurrence in a few cases were noted as limitations. Open hemorrhoidectomy, while effective, showed higher postoperative discomfort and longer recovery.

Conclusion: Stapler hemorrhoidectomy offers distinct advantages in terms of reduced postoperative pain and faster recovery compared to open hemorrhoidectomy. It can be considered a preferable option in suitable candidates, though cost considerations may limit its widespread use.

Keywords: Stapler hemorrhoidectomy, open hemorrhoidectomy, postoperative pain, recovery time, hemorrhoid surgery, comparative study

Introduction

Hemorrhoids are among the most common anorectal disorders encountered in clinical practice, affecting a significant proportion of the adult population worldwide. They are vascular structures located in the anal canal that aid in continence [1]. However, when these structures become symptomatic due to factors such as increased intra-abdominal pressure, chronic constipation, prolonged straining, or pregnancy, they present as bleeding, prolapse, pain, and discomfort, significantly impairing the quality of life [2].

The classification of hemorrhoids is based on the degree of prolapse, ranging from Grade I (non-prolapsing) to Grade IV (irreducible prolapse). While Grade I and II hemorrhoids are usually managed conservatively with dietary modifications, pharmacological agents, and office-based procedures such as rubber band ligation or sclerotherapy, Grade III and IV hemorrhoids often require surgical intervention for definitive treatment [3].

Open hemorrhoidectomy, particularly the Milligan-Morgan technique, has long been considered the gold standard for surgical treatment of advanced hemorrhoidal disease. It involves excision of the hemorrhoidal tissue and is associated with effective long-term results and low recurrence rates [4]. However, it is also associated with considerable postoperative pain, longer hospital stays, and delayed return to normal activities, which can affect patient satisfaction and compliance.

In contrast, stapler hemorrhoidectomy (also known as Procedure for Prolapse and Hemorrhoids – PPH), introduced by Longo in 1998, is a newer technique that addresses the pathophysiology of hemorrhoids by excising a circumferential ring of prolapsed mucosa and submucosa above the dentate line [5]. This not only restores the normal anatomical position of hemorrhoidal cushions but also disrupts the blood flow to the hemorrhoids. As the procedure is performed above the dentate line, where pain sensation is minimal, it results in significantly less postoperative pain and faster recovery [6]. Despite these benefits, stapler hemorrhoidectomy has been associated with certain limitations, including higher cost and potential for specific complications like staple line bleeding, rectal perforation, or recurrence in select cases.

Several studies across the globe have attempted to compare these two techniques, but the results have often been varied and influenced by regional surgical practices, patient demographics, and healthcare infrastructure [7]. In the Indian healthcare setting, where cost-effectiveness and accessibility play crucial roles in decision-making, evaluating these two surgical modalities becomes even more relevant.

This study aims to provide a comprehensive comparative analysis of stapler hemorrhoidectomy and open hemorrhoidectomy in Department of General Surgery, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India. By evaluating parameters such as operative time, postoperative pain, hospital stay, complications, and overall outcomes, we hope to contribute meaningful insights into the decision-making process for optimal surgical management of hemorrhoidal disease.

Methods

This prospective comparative study was conducted in the Department of General Surgery at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, over a period of 12 months. A total of 100 patients diagnosed with Grade III and IV internal hemorrhoids, who were indicated for surgical intervention, were included in the study after obtaining informed written consent. The study population was divided into two groups of 50 patients each: Group A underwent stapler hemorrhoidectomy, while Group B underwent conventional open hemorrhoidectomy using the Milligan-Morgan technique. Patients were randomly allocated into the two groups using a computer-generated randomization table to eliminate selection bias.

All patients included in the study were between the ages of 20 and 60 years, of both genders, and fit for surgery under spinal or general anesthesia. Exclusion criteria included patients with associated anorectal conditions such as fissures, fistulas, or malignancy, those with a history of previous anorectal surgery, bleeding disorders, or those unfit for anesthesia. Preoperative evaluation included detailed clinical history, physical examination including per rectal and proctoscopic evaluation, routine blood investigations, and fitness for anesthesia.

Surgical procedures were performed under spinal anesthesia in all cases, with standard aseptic precautions. In the stapler hemorrhoidectomy group, a circular anal dilator and a purse-string anoscope were used to place a purse-string suture in the submucosa above the dentate line, followed by insertion and firing of the circular stapling device to excise the prolapsed tissue and reposition the hemorrhoids. In the open hemorrhoidectomy group, hemorrhoidal masses were excised using electrocautery, and hemostasis was secured with ligatures. Postoperatively, all patients received similar analgesic regimens and stool softeners, and were monitored for pain, bleeding, urinary retention, infection, and other complications.

Pain was assessed using a Visual Analog Scale (VAS) at 6, 12, 24, and 48 hours postoperatively. Duration of surgery, intraoperative blood loss, length of hospital stays, time to resume normal activities, and any postoperative complications were recorded and compared between the two groups. Patients were followed up for six weeks to assess wound healing, recurrence, and overall satisfaction. Statistical analysis was performed using appropriate tests, and a p-value of less than 0.05 was considered statistically significant.

Results

This study included 100 patients with Grade III and IV hemorrhoids, divided equally between the stapler hemorrhoidectomy and open hemorrhoidectomy groups. Results showed that the stapler group had shorter operative times, less postoperative pain, and faster recovery. However, the open technique had a slightly lower recurrence rate during short-term follow-up.

Table 1: Demographic distribution of patients in both groups

Parameter	Stapler Group (n=50)	Open Group (n=50)
Mean Age (years)	41.2 ± 8.3	42.5 ± 7.9
Male (%)	34 (68%)	36 (72%)
Female (%)	16 (32%)	14 (28%)
Mean BMI (kg/m²)	24.6 ± 2.5	24.9 ± 2.3
Grade III (%)	30 (60%)	28 (56%)
Grade IV (%)	20 (40%)	22 (44%)

Table 2: Comparison of operative time (in minutes)

Group	Mean Operative Time	Standard Deviation
Stapler Group	25.4	4.8
Open Group	39.7	6.1
p-value	**<0.001**	

Table 3: Postoperative pain score (VAS)

Time After Surgery	Stapler Group (Mean ± SD)	Open Group (Mean ± SD)	p-value
6 hours	3.1 ± 1.0	6.4 ± 1.2	<0.001
12 hours	2.8 ± 1.1	6.0 ± 1.4	<0.001
24 hours	2.1 ± 0.9	5.2 ± 1.1	<0.001
48 hours	1.4 ± 0.7	4.1 ± 1.0	<0.001

Table 4: Mean hospital stay (in days)

Group	Mean Stay (Days)	Standard Deviation	p-value
Stapler Group	2.1	0.6	<0.001
Open Group	4.3	0.9	

Table 5: Time to return to normal activity (days)

Group	Mean Time (Days)	Standard Deviation	p-value
Stapler Group	6.2	1.5	<0.001
Open Group	11.8	2.2	

Table 6: Mean intraoperative blood loss (ml)

Group	Mean Blood Loss	Standard Deviation	p-value
Stapler Group	18.3	6.2	<0.001
Open Group	42.6	10.1	

Table 7: Postoperative urinary retention

Group	Patients with Retention	Percentage (%)
Stapler Group	3	6%
Open Group	9	18%

Table 8: Mean time for complete wound healing (days)

Group	Mean Time (Days)	Standard Deviation	p-value
Stapler Group	13.4	2.6	<0.001
Open Group	20.5	3.3	

Table 9: Postoperative complications

Complication	Stapler Group (n=50)	Open Group (n=50)
Secondary Bleeding	2 (4%)	6 (12%)
Wound Infection	1 (2%)	5 (10%)
Anal Stenosis	0 (0%)	2 (4%)
Recurrence at 6 wks	2 (4%)	1 (2%)

Table 10: Patient satisfaction (at 6 weeks follow-up)

Satisfaction Level	Stapler Group (n=50)	Open Group (n=50)
Very Satisfied	34 (68%)	21 (42%)
Satisfied	12 (24%)	18 (36%)
Neutral	3 (6%)	7 (14%)
Dissatisfied	1 (2%)	4 (8%)

Discussion

The surgical management of hemorrhoids, particularly in advanced stages (Grade III and IV), remains a crucial component of proctological practice. Traditional open hemorrhoidectomy has long been the standard approach owing to its definitive nature and low recurrence rates. However, its association with significant postoperative pain, prolonged hospital stays, and delayed return to daily activities has prompted the exploration and adoption of alternative techniques [8]. In this context, stapler hemorrhoidectomy—introduced by Longo in the late 1990s—has emerged as a minimally invasive, less painful option, showing promising results in multiple clinical settings. The present study provides a comparative evaluation of these two techniques, focusing on operative and postoperative parameters to determine their relative advantages and limitations [9].

The demographic profile of patients in both groups was comparable, indicating proper randomization and reducing confounding factors related to age, sex, or BMI. The mean operative time was significantly shorter in the stapler group, reflecting the procedural efficiency once the surgeon is adequately trained [10]. This is consistent with global literature, which highlights the stapler technique's quicker execution due to avoidance of meticulous tissue dissection and ligation. A major differentiating factor between the two groups was postoperative pain, with patients undergoing stapler hemorrhoidectomy reporting significantly lower VAS scores at all time intervals [11]. This finding can be attributed to the fact that stapling is performed above the dentate line, an area with sparse somatic sensory innervation, thereby minimizing pain perception.

Further reinforcing the advantages of the stapler technique, our study demonstrated reduced intraoperative blood loss and shorter hospital stays in this group [12]. Faster return to normal activities is a direct consequence of both reduced pain and quicker wound healing, which was observed in our series. These parameters are especially important in a developing country setting, where socioeconomic factors often necessitate early recovery and return to work [13]. However, the stapler technique is not without its drawbacks. The high cost of the stapler device significantly increased the overall expenditure for the patient, a factor that can limit its accessibility in low-resource settings [14]. Additionally, while recurrence was slightly higher in the stapler group, the difference was not statistically significant within the six-week follow-up. Nonetheless, long-term follow-up studies are warranted to fully understand the implications on recurrence.

Complication rates, including urinary retention, secondary bleeding, and wound infection, were lower in the stapler group, although not completely absent. Notably, the open group had a higher incidence of wound-related complications, possibly due to the raw wounds created by excisional surgery [15]. Anal stenosis, though rare, was observed in the open technique group, underlining the need for careful postoperative monitoring and wound care. Patient satisfaction, an often underemphasized yet critical metric, was markedly higher in the stapler group. This may reflect the cumulative benefits of reduced pain, faster recovery, and improved quality of life post-surgery.

In conclusion, this study affirms that stapler hemorrhoidectomy offers several perioperative and postoperative advantages over open hemorrhoidectomy, particularly in terms of pain control, early mobilization, and wound healing. However, the increased cost and potential for slightly higher recurrence necessitate careful patient selection. Open hemorrhoidectomy, though more invasive and painful, remains a cost-effective and reliable option, especially in resource-constrained settings. Ultimately, the choice of procedure should be individualized, taking into account patient preferences, financial considerations, and the surgeon's expertise. Future multicentric studies with long-term follow-up are essential to validate these findings and guide evidence-based surgical practice.

Conclusion

The present comparative study between stapler hemorrhoidectomy and open hemorrhoidectomy demonstrates clear distinctions in surgical outcomes, patient experience, and healthcare resource utilization. Stapler hemorrhoidectomy emerged as a superior technique in terms of shorter operative time, significantly reduced postoperative pain, minimal blood loss, quicker wound healing, shorter hospital stay, and earlier return to daily activities. These advantages collectively translated into higher patient satisfaction, making it an attractive option for both patients and surgeons in modern surgical practice.

However, the benefits of stapler hemorrhoidectomy are accompanied by certain limitations. The most notable among these is the significantly higher cost, which can be prohibitive in low-resource settings or for patients without financial coverage. While the recurrence rate within the short-term follow-up period was marginally higher in the stapler group, it was not statistically significant, indicating comparable effectiveness with open surgery in the short term. Nevertheless, long-term studies are necessary to establish its efficacy in preventing recurrence and chronic complications.

Open hemorrhoidectomy, though associated with greater postoperative discomfort and longer recovery time, remains a reliable, cost-effective, and widely practiced procedure. It is particularly suitable in settings where affordability and long-term outcomes are paramount. Both procedures have a place in clinical practice, and the selection should be individualized, balancing clinical indications, patient expectations, cost considerations, and surgeon expertise.

In conclusion, stapler hemorrhoidectomy offers substantial postoperative benefits and can be considered a preferred technique for patients prioritizing quicker recovery and reduced pain, provided economic feasibility is addressed. Open hemorrhoidectomy continues to be a dependable standard, especially in resource-constrained environments. A tailored approach, supported by informed patient consent and surgical judgment, will ensure optimal outcomes in the management of hemorrhoidal disease.

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