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Original Research Article

Comparison of Sutureless Hemorrhoidectomy versus Conventional Hemorrhoidectomy in the Case of Large Internal Hemorrhoids

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Abstract: *Hemorrhoidal disease is a common anorectal condition with significant morbidity, particularly in advanced grades (III–IV) requiring surgery. Conventional hemorrhoidectomy, though effective, is associated with longer operative times, higher blood loss, postoperative pain, and prolonged hospital stay. Sutureless hemorrhoidectomy techniques have been introduced to reduce these drawbacks and improve recovery.* ***Objective:*** *To compare operative parameters and postoperative outcomes of sutureless hemorrhoidectomy versus conventional hemorrhoidectomy in patients with large internal hemorrhoids.* ***Methods:*** *This randomized controlled trial was conducted at the Department of General Surgery, Bahawal Victoria Hospital, Bahawalpur, Pakistan, from 16th February to 16th May 2025. Sixty patients aged 20–70 years with grade III or IV internal hemorrhoids (≥4 cm) were randomized equally into two groups: Group A (sutureless) and Group B (conventional). Outcomes measured included operative time, intraoperative blood loss, pain score at 24 hours (using the Visual Analog Scale, or VAS), hospital stay, and recurrence at 3 months. Data were analyzed using SPSS version 25.0, with independent t-tests and chi-square tests applied. A p-value of ≤ 0.05 was considered statistically significant.* ***Results:*** *Baseline demographic and clinical characteristics were comparable between groups (mean age 44.2 ± 11.3 years; 65% male). The sutureless group had significantly shorter operative time (27.4 ± 6.5 vs. 38.9 ± 7.8 minutes, $p < 0.001$), less blood loss (48.2 ± 13.7 vs. 68.6 ± 18.9 ml, $p < 0.001$), lower 24-hour pain scores (3.8 ± 1.2 vs. 6.1 ± 1.5, $p < 0.001$), and shorter hospital stay (1.3 ± 0.5 vs. 2.4 ± 0.7 days, $p < 0.001$). At 3-month follow-up, recurrence was observed in 1 patient (3.3%) in the conventional group and none in the sutureless group.* ***Conclusion:*** *Sutureless hemorrhoidectomy offers significant advantages over conventional hemorrhoidectomy in terms of reduced operative time, intraoperative bleeding, postoperative pain, and hospital stay, with comparable safety and low recurrence. It represents a safe, effective, and patient-friendly alternative for managing large internal hemorrhoids in the Pakistani population.*

Keywords: Hemorrhoids, Sutureless hemorrhoidectomy, Conventional hemorrhoidectomy, Postoperative pain, Blood loss

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Introduction

Hemorrhoidal disease is a prevalent and often distressing condition that affects a significant proportion of the adult population globally, with a particularly high incidence among those aged 45 to 65. This condition typically manifests through symptoms such as bleeding, pain, discomfort, and prolapse, which can severely impact an individual's quality of life (1, 2). The pathophysiology of hemorrhoids is characterized by the engorgement and inflammation of venous structures in the anal canal, leading to the classification of hemorrhoids into internal and external types based on their anatomical location in relation to the dentate line (3, 4). As patients seek intervention, the spectrum of treatment options has evolved, ranging from conservative measures—such as dietary modifications and topical treatments—to surgical solutions, including various forms of hemorrhoidectomy (5).

There is a clinical consensus that surgical intervention, particularly excisional hemorrhoidectomy, is indicated for patients with symptomatic grade III or IV hemorrhoids (6, 7). Excisional hemorrhoidectomy is established as the gold standard in managing severe cases due to its efficacy in removing the affected tissue and alleviating persistent symptoms. However, this approach is associated with significant postoperative pain, extended recovery periods, and complications such as anal stenosis and bleeding (8, 9). Recent advancements have introduced sutureless hemorrhoidectomy techniques aimed at minimizing these postoperative adverse effects while maintaining similar therapeutic outcomes. Sutureless techniques employ various approaches, including thermal energy devices such as LigaSure and other endoscopic procedures, aiming to enhance patient recovery and reduce hospital stay durations (10, 11).

Comparative studies examining the efficacy of sutureless hemorrhoidectomy against conventional surgical methods have reported beneficial results. For instance, a trial demonstrated that patients undergoing sutureless techniques reported lower levels of postoperative pain and a more rapid return to normal activities compared to those who underwent traditional surgery (8, 12). Additionally, studies have highlighted that sutureless hemorrhoidectomy reduces the risk of complications associated with sutures, such as wound infections and dehiscence, making it an attractive alternative for managing large internal hemorrhoids[13]. Furthermore, modern sutureless methods, such as LigaSure and other endoscopic approaches, have the potential to provide effective symptomatic relief with a favorable side-effect profile, suggesting that these innovations could shift the paradigm in hemorrhoidal management (10, 11).

In the Pakistani context, the consideration of sutureless hemorrhoidectomy becomes increasingly relevant given the unique epidemiological profile and healthcare landscape. The prevalence of hemorrhoidal disease is notably high in Pakistan, attributed to dietary habits characterized by low fiber intake and sedentary lifestyles (14). These factors contribute to the development of hemorrhoids, leading to significant healthcare burdens as individuals present with advanced stages of this condition requiring surgical intervention. Existing challenges within the healthcare system, including limited access to high-quality

surgical care and socioeconomic disparities, necessitate the exploration of efficient and cost-effective treatment modalities, such assutureless hemorrhoidectomy. By adapting surgical procedures that are both effective and less invasive, Pakistan could improve patient outcomes and optimize resource utilization in surgical care for prevalent cases of large internal hemorrhoids (14).

A comprehensive comparison of sutureless hemorrhoidectomy versus conventional techniques reveals an emerging shift towards less invasive and more patient-friendly surgical modalities. This evolution promises better outcomes in terms of pain and recovery. It aligns with the pressing needs of the Pakistani population, where the demand for effective and accessible treatment of hemorrhoidal disease is paramount. Ultimately, ongoing clinical research tailored to the local context is crucial for validating these techniques and ensuring they meet the community's healthcare needs.

Methodology

The present study was designed as a randomized controlled trial and conducted in the Department of General Surgery at Bahawal Victoria Hospital, Bahawalpur, Pakistan. The study duration was six months from 16th February 2025 to 16th May 2025, following approval from the institutional review board and the College of Physicians and Surgeons Pakistan (CPSP). A total of 60 patients who fulfilled the eligibility criteria were recruited using non-probability consecutive sampling. A sample size calculation was performed using the WHO calculator for comparing two population means, with a 5% level of significance and an 80% study power. Mean blood loss of 51.92 ± 15.68 ml in the sutureless group and 70.34 ± 25.59 ml in the conventional hemorrhoidectomy group, as reported in prior studies, was used to estimate the required number of patients. This resulted in a final sample size of 60, with 30 patients allocated to each group.

Eligible patients were men and women aged 20 to 70 years who were classified as American Society of Anesthesiologists (ASA) grades I, II, or III. All participants presented with at least grade III or IV internal hemorrhoids of a minimum of four weeks' duration and with a size of at least 4 cm, with or without concomitant external hemorrhoids. Exclusion criteria included a history of previous hemorrhoid surgery, combined procedures for anal fissure or fistula, thrombosed hemorrhoids, inflammatory bowel disease, coagulopathy, diabetes mellitus, and immunocompromised status. Written informed consent was obtained from all patients beforeenrollment.

Randomization was performed by the lottery method. Patients were invited to pick a slip from a set containing equal numbers of group A and group B allocations, ensuring unbiased distribution. Patients assigned to group A underwent sutureless hemorrhoidectomy, whereas those in group B underwent the conventional technique. In group A, 0.5% bupivacaine with 1:20,000 adrenaline was infiltrated into the hemorrhoids before excision. The hemorrhoidal tissue was dissected using scissors, pedicles were ligated, and the tissue was excised with preservation of the intervening skin. Hemostasis was achieved using diathermy. In group B, no local anesthetic or adrenaline was administered. Hemorrhoidal tissue was dissected with a diathermy set at a coagulation mode of seven, without pedicle ligation, and with preservation of mucocutaneous bridges. All procedures were conducted under either spinal or general anesthesia, according to the patient's and anesthetist's preference.

Postoperative management included intramuscular pethidine hydrochloride (50–75 mg) and oral naproxen sodium (550 mg twice daily) as required. Topical 2% lignocaine gel with liquid paraffin was also prescribed. Patients were discharged with oral analgesics for ten days and bulk-forming laxatives to be continued indefinitely; antibiotics were not routinely administered. Operative time was recorded from the start to the end of the surgical procedure, excluding anesthesia and preparation time, using a stopwatch. Intraoperative blood loss was quantified by measuring the fluid in suction bottles, the contents of kidney trays, and the weight difference of surgical sponges before and after the procedure, applying a conversion factor of 1 gram equating to 1 milliliter of blood. Postoperative pain was assessed at 24 hours using the visual analogue scale (VAS), where 0 represented no pain and 10 represented the worst imaginable pain. Hospital stay was recorded in days, from the day of operation to the day of discharge. Patients were followed for three months postoperatively to assess recurrence, defined as spontaneous or strain-related prolapse requiring manual reduction.

All data were entered and analyzed using SPSS version 25.0. Continuous variables, including age, body mass index (BMI), duration of disease, hemorrhoid size, operative time, blood loss, postoperative pain scores, and hospital stay, were expressed as mean ± standard deviation or median with interquartile range where appropriate. Categorical variables such as gender, residence, grade of hemorrhoids, and recurrence were presented as frequencies and percentages. An independent t-test was applied for comparisons of continuous outcomes between the two groups, and a chi-square test was used for categorical outcomes. A p-value of ≤ 0.05 was considered statistically significant. Stratification was performed with respect to age, gender, BMI, disease duration, hemorrhoid size, grade of hemorrhoids, and residence. Post-stratification analysis was conducted using the independent t-test or the Mann–Whitney U test for continuous outcomes and the chi-square test or Fisher's exact test for categorical variables to control for effect modifiers.

Results

A total of 60 patients were included in the study, with 30 undergoing sutureless hemorrhoidectomy (Group A) and 30 undergoing conventional hemorrhoidectomy (Group B).

The mean age of patients was 44.2 ± 11.3 years (range: 21–69 years). The majority were male (65%) and from rural areas (56.7%). Mean BMI was 24.8 ± 3.2 kg/m², with 38.3% categorized as obese (BMI > 25). (Table 1).

The mean operative time was significantly shorter in the sutureless group (27.4 ± 6.5 minutes) compared to the conventional group (38.9 ± 7.8 minutes, $p < 0.001$). Intraoperative blood loss was lower in the sutureless group (48.2 ± 13.7 ml) compared to conventional (68.6 ± 18.9 ml, $p < 0.001$). (Table 2).

Pain scores at 24 hours were significantly lower in the sutureless group (3.8 ± 1.2) compared with the conventional group (6.1 ± 1.5, $p < 0.001$). The mean hospital stay was also shorter in the sutureless group (1.3 ± 0.5 days) compared to the conventional group (2.4 ± 0.7 days, $p < 0.001$). (Table 3).

Sutureless hemorrhoidectomy demonstrated shorter operative time, less intraoperative bleeding, reduced postoperative pain, and shorter hospital stay compared with conventional hemorrhoidectomy.Recurrence was rare in both groups; however, none were reported in the sutureless group at 3 months.These findings suggest that the sutureless approach is a safe and effective alternative for large internal hemorrhoids in the Pakistani population.

At three-month follow-up, recurrence was observed in 1 patient (3.3%) from the conventional group, while no recurrence was noted in the sutureless group. (Figure 2, Table 4).

Table 1. Demographic Profile of Patients (n = 60)

Variable	Group A: Sutureless (n=30)	Group B: Conventional (n=30)	Total (n=60)
Age, years (mean ± SD)	43.8 ± 10.7	44.6 ± 11.9	44.2 ± 11.3
Gender, n (%)			
• Male	20 (66.7)	19 (63.3)	39 (65.0)

• Female	10 (33.3)	11 (36.7)	21 (35.0)
BMI, kg/m² (mean ± SD)	24.6 ± 3.1	25.0 ± 3.3	24.8 ± 3.2
Obesity (>25 kg/m²), n (%)	11 (36.7)	12 (40.0)	23 (38.3)
Residence, n (%)			
• Rural	16 (53.3)	18 (60.0)	34 (56.7)
• Urban	14 (46.7)	12 (40.0)	26 (43.3)
Degree of Hemorrhoids, n (%)			
• Grade III	18 (60.0)	17 (56.7)	35 (58.3)
• Grade IV	12 (40.0)	13 (43.3)	25 (41.7)

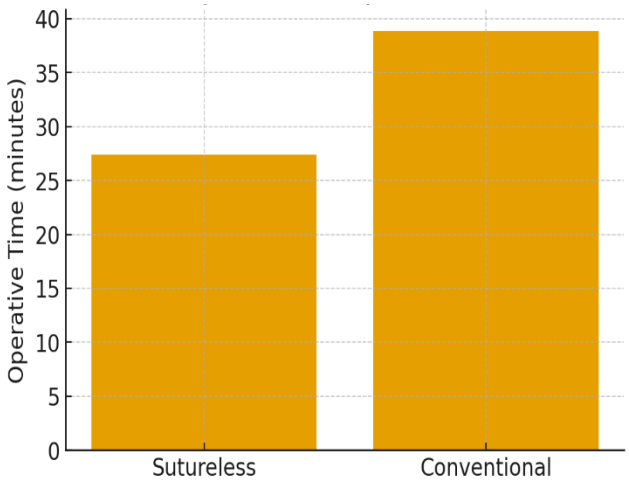

Figure 1: Comparison of Operative Time

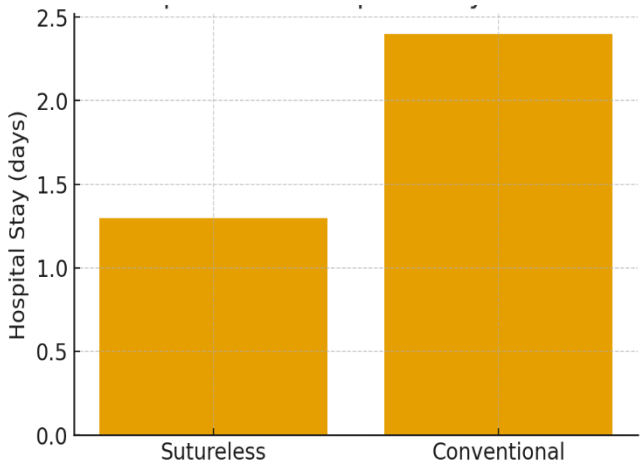

Figure 2: Comparison of Hospital stay

Table 2. Operative Parameters

Parameter	Group A: Sutureless (n=30)	Group B: Conventional (n=30)	p-value
Operative time (minutes)	27.4 ± 6.5	38.9 ± 7.8	<0.001
Blood loss (ml)	48.2 ± 13.7	68.6 ± 18.9	<0.001

Table 3. Postoperative Outcomes

Parameter	Group A: Sutureless (n=30)	Group B: Conventional (n=30)	p-value
Pain score at 24h (VAS)	3.8 ± 1.2	6.1 ± 1.5	<0.001
Hospital stay (days)	1.3 ± 0.5	2.4 ± 0.7	<0.001

Table 4. Recurrence at 3-Month Follow-up

Recurrence	Group A: Sutureless (n=30)	Group B: Conventional (n=30)	Total (n=60)
Yes	0 (0.0)	1 (3.3)	1 (1.7)
No	30 (100)	29 (96.7)	59 (98.3)

Discussion

The results of our study, comparing sutureless hemorrhoidectomy to conventional hemorrhoidectomy, are significant and align with recent literature that emphasizes the benefits of innovative surgical techniques in improving patient outcomes.

The demographic profile of our patients reflected a mean age of 44.2 years, with a notable male predominance (65%) and a significant portion of patients coming from rural areas (56.7%). Our observed mean BMI of 24.8 kg/m² indicates that a substantial segment of these patients is categorized as overweight, rather than obese. This demographic is similar to that reported by Doughan et al. (15). Who noted a higher prevalence of hemorrhoids in middle-aged individuals with obesity being a contributing risk factor The majority of patients in both groups (58.3%) had grade III hemorrhoids, corroborating findings from Muldoon (16). who reported that grade III hemorrhoids were frequently treated surgically due to their symptomatic nature.

The mean operative time was significantly shorter for patients in the sutureless group (27.4 minutes) compared to the conventional group (38.9 minutes). This finding resonates with results from Chaudhary et al. (17). Who observed similarly reduced operative times in sutureless techniques utilizing LigaSure compared to conventional methods. Furthermore, our sutureless group exhibited lower intraoperative blood loss (48.2 ml) relative to the traditional group (68.6 ml), aligning with the conclusions of Kumar and Brara (18). Who noted that sutureless procedures significantly reduce intraoperative bleeding? These enhancements in operative parameters suggest a substantial advantage of the sutureless approach that warrants attention.

A critical aspect of our findings relates to postoperative pain levels. At 24 hours post-surgery, patients in the sutureless group reported lower pain scores (3.8) compared to the conventional group (6.1). This finding is corroborated by Zhang et al. (19). Who found lower pain levels associated with sutureless methods, indicating improved analgesia and potentially enhanced recovery experiences for patients? Our data, suggesting a shorter hospital stay (1.3 days in the sutureless group versus 2.4 days in

the conventional group), is consistent with the work of Gachabayov et al. (20). Which demonstrated a trend toward reduced hospitalization times in patients undergoing less invasive surgical procedures.

Our three-month follow-up revealed a recurrence rate of 3.3% in the conventional group, while no recurrences were noted in the sutureless group. This outcome aligns with observations from Wani et al. (21). Indicating that sutureless techniques may have lower recurrence rates. These findings highlight not only the immediate benefits of reduced procedural burdens but also the long-term efficacy of sutureless approaches compared to conventional methods. The emerging consensus in the literature regarding the reduced frequency of recurrence incidents when employing sutureless techniques indicates a potential shift towards adopting these methodologies as first-line treatments for high-grade hemorrhoids.

The context of our study is particularly relevant when considering the healthcare challenges in Pakistan, where the prevalence of hemorrhoidal disease is high due to factors such as low dietary fiber intake and high rates of obesity. In light of the favorable outcomes associated with sutureless hemorrhoidectomy, it holds promise as an effective treatment modality within this population, potentially reducing the burden on healthcare resources while enhancing patient recovery periods. There is a critical need for innovative surgical approaches that can be implemented more widely, given the limitations in surgical facilities and access to advanced surgical care in Pakistan.

Thus, our findings suggest that sutureless hemorrhoidectomy offers significant benefits over conventional methods through reduced operative times, less intraoperative bleeding, lower pain scores, and shorter hospital stays, as supported by recent literature. Given the high burden of hemorrhoidal disease in the Pakistani population, the adoption of sutureless techniques may significantly improve treatment outcomes and patient satisfaction.

Conclusion

Sutureless hemorrhoidectomy is superior to conventional hemorrhoidectomy in reducing operative time, blood loss, pain, and hospital stay, while maintaining low recurrence rates. It should be considered a preferred surgical option for large internal hemorrhoids, particularly in resource-limited healthcare settings like Pakistan, where efficient, patient-centered outcomes are essential.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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Manuscript drafting, Study Design,
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Review of Literature, Data entry, Data analysis, and drafting article.
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Conception of Study, Development of Research Methodology Design,
HI (MO)
Study Design, manuscript review, critical input.
MAAJ
Manuscript drafting, Study Design,

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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