

Original Research Article

CLINICAL PROFILE OF PATIENTS WITH GRADE III AND IV INTERNAL HEMORRHOIDS AND OUTCOMES OF CLOSED HEMORRHOIDECTOMY: A PROSPECTIVE STUDY AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Hemorrhoids are among the most common anorectal disorders worldwide. Grade III and IV internal hemorrhoids typically require surgical intervention. Closed (Ferguson) hemorrhoidectomy is a widely used technique, but contemporary data on patient profiles and outcomes in rural Indian tertiary centers are limited. This study aimed to evaluate the clinical profile of patients with Grade III and IV internal hemorrhoids and assess the role of closed hemorrhoidectomy in their management.

Materials and Methods: A prospective observational study was conducted from May 2024 to July 2025 at a tertiary care hospital in Maharashtra. Fifty-three patients aged >18 years with symptomatic Grade III or IV internal hemorrhoids who underwent closed hemorrhoidectomy were included. Data on demographics, symptoms, disease severity score (DSS), pain (visual analogue scale, VAS), complications, length of stay (LOS), satisfaction, and recurrence were collected and analyzed.

Results: Mean age was 46.2 ± 13.1 years (range 20–75); 62.3% were male. Non vegetarian diet was reported in 71.7%. Housewives (28.3%) and farmers (24.5%) were the most common occupational groups. Grade III hemorrhoids accounted for 77.4% and Grade IV for 22.6%. The most frequent symptoms were bleeding (98.1%) and prolapse (84.9%). Mean symptom duration was 9.0 weeks (Grade III) vs. 10.0 weeks (Grade IV) ($p=0.86$). Postoperative pain declined progressively; all patients were pain free by week 6. Early complications occurred in 7.5% (Grade IV: 16.7%; Grade III: 4.9%; $p=0.17$). Late complications (16.7%) occurred only in Grade IV ($p=0.008$). High patient satisfaction was reported in 83.0% (Grade III: 87.8%; Grade IV: 66.7%; $p=0.08$). One recurrence (1.9%) occurred in the Grade IV group ($p=0.06$). Mean LOS was 6.02 days (Grade III) vs. 6.67 days (Grade IV) ($p=0.11$). DSS improved markedly from 8.34 (Grade III) and 8.25 (Grade IV) preoperatively to 1.71 and 2.00 at 6 weeks, respectively ($p=0.29$).

Conclusion: Closed hemorrhoidectomy is a safe and effective treatment for Grade III and IV internal hemorrhoids, with high patient satisfaction, low recurrence, and significant symptom relief. Grade IV patients have a higher risk of late complications and slightly lower satisfaction, warranting enhanced perioperative care. The technique is particularly suitable for resource limited settings.

Keywords: Hemorrhoids, closed hemorrhoidectomy, Ferguson hemorrhoidectomy, Grade III hemorrhoids, Grade IV hemorrhoids, clinical profile, postoperative pain.

INTRODUCTION

Hemorrhoidal disease is one of the most common anorectal conditions encountered in surgical practice, with a global prevalence ranging from 4.4% to 39%.^[1] Symptomatic hemorrhoids affect approximately 44.7% of the population, but the actual prevalence may be even higher, as up to 88% of individuals undergoing endoscopic examination show some degree of hemorrhoidal change.^[2] Only about one third of affected individuals seek medical attention.^[3]

Internal hemorrhoids are classified according to the degree of prolapse using the Goligher classification: Grade I – bleeding without prolapse; Grade II – prolapse on straining that reduces spontaneously; Grade III – prolapse requiring manual reduction; and Grade IV – irreducible prolapse.^[4] Grade III and IV hemorrhoids usually require surgical treatment because conservative measures and office based procedures (e.g., rubber band ligation, sclerotherapy) are often inadequate.^[5]

The pathophysiology of hemorrhoids is multifactorial. The “sliding anal canal theory” proposes that degeneration of the supporting connective tissue of the anal cushions leads to downward displacement of the hemorrhoidal plexus.^[6] Other contributing factors include chronic straining, constipation, low fiber diet, pregnancy, and prolonged standing.^[7] Hereditary weakness of the vein wall and increased arterial flow have also been implicated.^[8]

Surgical hemorrhoidectomy remains the gold standard for advanced hemorrhoids. Among the various techniques, the open (Milligan Morgan) and closed (Ferguson) hemorrhoidectomies are the most widely practiced.^[9,10] Closed hemorrhoidectomy involves complete excision of the hemorrhoidal bundles followed by primary wound closure with absorbable suture. It has been associated with faster wound healing, less postoperative pain, and earlier return to work compared to open techniques, although some studies report comparable outcomes.^[11–13]

Despite the abundance of literature on hemorrhoidectomy, there is a relative paucity of prospective data from rural tertiary care centers in India, where patient profiles and healthcare resources may differ significantly from urban settings. This study was therefore undertaken to evaluate the clinical profile of patients with Grade III and IV internal hemorrhoids and to assess the outcomes of closed hemorrhoidectomy in a tertiary care hospital in Maharashtra, India.

MATERIALS AND METHODS

Study Design and Setting: This prospective observational study was conducted at the Department of General Surgery, Dr. Ulhas Patil Medical College and Hospital (DUPMCH), a

tertiary care center in rural Maharashtra, India. The study period was from 13 May 2024 to 30 July 2025.

Ethical Considerations: The study was approved by the Institutional Ethics Committee. Written informed consent was obtained from all participants in their preferred language (Marathi, Hindi, or English). The study was conducted in accordance with the Declaration of Helsinki.

Participants: Consecutive patients aged >18 years with a diagnosis of symptomatic Grade III or IV internal hemorrhoids who underwent closed hemorrhoidectomy were eligible. Exclusion criteria included bleeding disorders, pregnancy, anal cancer, and refusal to consent.

Sample Size Calculation: Sample size was calculated using the formula for estimating a population proportion: $n = Z^2pq/d^2$, where $p = 0.95$ (expected success rate of closed hemorrhoidectomy, based on previous studies [14]), $q = 0.05$, $Z = 1.96$ ($\alpha = 0.05$), and $d = 0.06$ (absolute precision). The minimum required sample size was 53 patients.

Surgical Technique (Closed Hemorrhoidectomy – Ferguson): All operations were performed under spinal anesthesia with the patient in the lithotomy position. After infiltration with 0.5% bupivacaine with epinephrine (1:200,000), a Hill-Ferguson retractor was inserted. The hemorrhoidal pedicle was mobilized, suture-ligated with absorbable 2-0 polyglactin, and the hemorrhoid excised. The wound was closed completely with a continuous absorbable suture. Typically, three columns (left lateral, right posterior, right anterior) were treated. Postoperative care included sitz baths, stool softeners, and oral analgesics as needed.

Data Collection

A structured proforma was used to collect demographic data, occupation, diet, symptom duration, and clinical findings. Disease severity was assessed using the Disease Severity Score (DSS, 0–12, higher scores indicating greater severity). Pain was evaluated using a 10-point Visual Analogue Scale (VAS) on postoperative day 1 (POD1), day of discharge (DOD), at week 1, and week 6. Early complications (<15 days) and late complications (>15 days) were recorded. Length of hospital stay (LOS) was noted. Patient satisfaction was graded as high, moderate, or low. Recurrence was defined as return of prolapsed hemorrhoids during follow-up.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using IBM SPSS version 25. Descriptive statistics (frequencies, percentages, mean $\pm$ SD) were computed. Comparison between Grade III and Grade IV groups was performed using the unpaired t-test for continuous variables and the chi-square test (or Fisher’s exact test) for categorical variables. A p-value <0.05 was considered statistically significant.

RESULTS

Demographic and Clinical Profile

A total of 53 patients underwent closed hemorrhoidectomy. The mean age was 46.2 ± 13.1 years (range 20–75), with the largest group aged 40–50 years (32.1%). Males comprised 62.3% of the

cohort (Table 1). Housewives (28.3%) and farmers (24.5%) were the most common occupational groups. A non-vegetarian diet was reported by 71.7% of patients (Table 2). Grade III hemorrhoids were present in 77.4% and Grade IV in 22.6% [Table 3]

Table 1: Age distribution

Age group (years)	Frequency	Percent
20–30	6	11.3
30–40	12	22.6
40–50	17	32.1
50–60	10	18.9
60–70	6	11.3
>70	2	3.8
Total	53	100

Table 2: Diet distribution

Diet	Frequency	Percent
Non-vegetarian	38	71.7
Vegetarian	15	28.3

Table 3: Grade distribution

Grade	Frequency	Percent
III	41	77.4
IV	12	22.6

The most common presenting symptoms were bleeding per rectum (98.1%) and prolapse (84.9%). Mean symptom duration was 9.0 ± 14.4 weeks for Grade III and 10.0 ± 4.8 weeks for Grade IV ($p=0.86$).

Postoperative Pain: Pain scores decreased progressively in both groups. On POD1, mean VAS

was 4.83 (Grade III) and 5.25 (Grade IV) ($p=0.43$); at discharge, 1.71 vs. 2.00 ($p=0.28$); at week 1, 0.73 vs. 0.92 ($p=0.30$). By week 6, all patients reported no pain. [Table 4] Differences between grades were not statistically significant at any time point.

Table 4: Postoperative pain (VAS, mean $\pm$ SD)

Time point	Grade III	Grade IV	p-value*
POD1	4.83 $\pm$ 1.61	5.25 $\pm$ 1.66	0.43
Day of discharge	1.71 $\pm$ 1.84	2.00 $\pm$ 0.74	0.28
Week 1	0.73 $\pm$ 0.50	0.92 $\pm$ 0.67	0.30
Week 6	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00	–

*Unpaired t-test.

Complications

Early complications occurred in 7.5% of all patients (Grade III: 4.9%, Grade IV: 16.7%; $p=0.17$). [Table 5] Late complications were observed exclusively in

the Grade IV group (16.7%, $p=0.008$). No major complications (e.g., fecal incontinence, severe sepsis) were recorded. All complications were managed conservatively.

Table 5: Complications by grade

Complication period	Grade III (n=41)	Grade IV (n=12)	p-value*
Early (<15 days)	2 (4.9%)	2 (16.7%)	0.17
Late (>15 days)	0 (0.0%)	2 (16.7%)	0.008

*Chi square test.

Satisfaction and Recurrence

High patient satisfaction was reported by 83.0% overall (Grade III: 87.8%, Grade IV: 66.7%;

$p=0.08$). [Table 6] Only one recurrence (1.9%) was documented, occurring in the Grade IV group (8.3% of Grade IV, $p=0.06$).

Table 6: Patient satisfaction

Satisfaction	Grade III (n=41)	Grade IV (n=12)	Total (%)
High	36 (87.8%)	8 (66.7%)	44 (83.0%)
Moderate	5 (12.2%)	4 (33.3%)	9 (17.0%)
Low	0	0	0

$p=0.08$ (chi square).

Length of Stay and Disease Severity Score: Mean LOS was 6.02 ± 1.04 days for Grade III and 6.67 ± 1.72 days for Grade IV ($p=0.11$). Preoperative DSS was similar: 8.34 ± 1.15 (Grade III) vs. 8.25 ± 1.42 (Grade IV) ($p=0.82$). At 6 weeks, DSS improved markedly to 1.71 ± 1.81 (Grade III) and 2.00 ± 0.95 (Grade IV) ($p=0.29$), indicating excellent symptom relief irrespective of grade.

DISCUSSION

This prospective study evaluated the clinical profile and outcomes of closed hemorrhoidectomy in 53 patients with Grade III and IV internal hemorrhoids. The mean age (46.2 years) and male predominance (62.3%) are consistent with previous reports from India and worldwide.^[15–17] The predominance of non-vegetarian diet (71.7%) in our cohort supports the association between low-fiber intake and hemorrhoidal disease, as a diet low in fiber can lead to constipation and straining.^[18,19] Housewives and farmers, who often have prolonged standing or heavy lifting duties, were the most affected occupational groups, reinforcing the role of intra-abdominal pressure in hemorrhoid pathogenesis.^[20]

Bleeding per rectum (98.1%) and prolapse (84.9%) were the dominant symptoms, similar to the findings of Shinde et al. (98% bleeding),^[21] and Gunasekaran & Narayanasamy (96% bleeding).^[22] The mean symptom duration was longer in Grade IV patients (10.0 vs. 9.0 weeks), although not statistically significant, suggesting that patients with higher-grade disease may delay seeking surgical care.

Postoperative pain is the most feared complication of hemorrhoidectomy.^[23] In our series, pain decreased rapidly and resolved completely by week 6, with no significant difference between Grade III and Grade IV patients. This is in line with Salman et al., who reported good pain control after closed hemorrhoidectomy.^[24] The comparable pain scores between grades indicate that closed hemorrhoidectomy provides acceptable immediate postoperative discomfort even in advanced disease.

Early complications occurred in 7.5% of patients, with a non-significant trend toward higher rates in Grade IV (16.7% vs. 4.9%). This is similar to the 7–10% complication rates reported in large series.^[25] However, late complications (16.7%) were seen exclusively in Grade IV patients ($p=0.008$). These included minor anal stenosis and delayed wound healing, which have been described as more common in advanced hemorrhoids due to greater tissue disruption and larger wounds.^[26]

This finding underscores the need for meticulous technique and prolonged follow-up for Grade IV disease.

Patient satisfaction was high overall (83%), but Grade IV patients reported lower satisfaction (66.7% high satisfaction vs. 87.8% for Grade III),

though the difference was not statistically significant ($p=0.08$). This trend may reflect the higher complication rate and prolonged recovery in advanced disease. Recurrence was rare (1.9% overall) and occurred only in one Grade IV patient (8.3% of Grade IV, $p=0.06$). This is comparable to recurrence rates of 2–5% reported for closed hemorrhoidectomy,^[27] and lower than open techniques in some meta-analyses.^[28]

Length of hospital stay (mean 6.0–6.7 days) was longer than that reported in Western studies (1–2 days) but typical for Indian tertiary centers where patients often stay until complete wound healing and return of normal bowel function.^[29] The DSS showed dramatic improvement postoperatively, confirming the efficacy of closed hemorrhoidectomy in relieving symptoms regardless of initial grade.

Comparison with Previous Studies

Our results align with those of Mohapatra et al., who found no significant difference in pain between open and closed techniques but noted faster wound healing with the closed method.^[30] In contrast, Rijal & Basnet reported less pain with semi-open hemorrhoidectomy.^[31] The differences may be due to variations in anesthesia, postoperative analgesia protocols, and patient expectations. The high success rate of closed hemorrhoidectomy in our study (98.1% free of recurrence at short-term follow-up) supports its continued use as the standard surgical treatment for advanced hemorrhoids, especially in resource-constrained settings where expensive energy devices or staplers are not available.^[32,33]

Limitations

This study has several limitations. First, it was a single-center prospective study with a relatively small sample size ($n=53$), which may limit generalizability and the power to detect small differences between groups. Second, follow-up was limited to 6 weeks; longer-term outcomes (e.g., recurrence at 1–2 years) were not assessed. Third, the disease severity score was not validated in the local population, though it has been used in similar studies. Fourth, the lack of a comparison group (e.g., open hemorrhoidectomy or stapled hemorrhoidopexy) precludes direct comparative conclusions. Fifth, we did not assess quality of life using a standardized instrument.

Clinical Implications

Despite these limitations, our findings have practical implications. Closed hemorrhoidectomy is a safe, effective, and reproducible technique for Grade III and IV internal hemorrhoids, even in a rural tertiary care setting. It provides rapid symptom relief, low recurrence, and acceptable complication rates. Grade IV patients require closer postoperative surveillance due to higher risk of late complications. Preventive strategies (high-fiber diet, avoiding straining) should be emphasized, especially in high-risk groups such as farmers, housewives, and those on non-vegetarian diets.

CONCLUSION

Closed hemorrhoidectomy (Ferguson technique) is an effective and safe surgical treatment for patients with Grade III and IV internal hemorrhoids. It results in significant reduction of symptoms, low recurrence (1.9%), and high patient satisfaction (83%). Grade IV hemorrhoids are associated with a higher incidence of late complications (16.7%) and a trend toward lower satisfaction, but overall outcomes remain good. The procedure is well suited for resource-limited healthcare settings. Larger, multicenter randomized trials with longer follow-up are needed to compare closed hemorrhoidectomy with newer minimally invasive techniques.

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