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Original Research Article

Perioperative and postoperative morbidity following open hemorrhoidectomy

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ABSTRACT

Background: Open hemorrhoidectomy (Milligan-Morgan technique) remains a standard procedure for advanced hemorrhoidal disease, particularly in low- and middle-income countries. This study evaluated perioperative and postoperative morbidity, recovery patterns, and cost-effectiveness in a Bangladeshi cohort.
Methods: A prospective observational study was conducted on 65 patients undergoing open hemorrhoidectomy for grade III and IV hemorrhoids. Data were collected on demographics, intraoperative bleeding, postoperative pain (VAS score), complications, hospital stay, recovery time, and total cost. Descriptive statistics were applied.
Results: The mean age was 40.52±10.75 years, with a male predominance (56.9%). Grade IV hemorrhoids were present in 55.4% of cases. Intraoperative bleeding was minimal in 95% of patients. Postoperative pain was significant, with 80% experiencing moderate-to-worst pain in the first 24 hours. Urinary retention occurred in 40%, while reactionary and secondary hemorrhage were noted in 6.2% and 3.1%, respectively. The mean hospital stay was 7.12±2.58 days, and the mean time to return to normal activities was 14.29±3.57 days. Treatment costs were below 10,000 BDT for 98.5% of patients.
Conclusions: Open hemorrhoidectomy is a cost-effective procedure with minimal intraoperative morbidity but significant postoperative pain and delayed recovery. Tailored perioperative care protocols could further enhance recovery and improve patient experience.

Keywords: Open hemorrhoidectomy, Milligan-Morgan technique, Postoperative morbidity, Pain management, Resource-limited settings

INTRODUCTION

Symptomatic hemorrhoidal disease (HD) represents one of the most prevalent benign anorectal disorders worldwide, constituting a significant global health burden due to its high incidence and profound impact on patient quality of life.[1,2] Epidemiological studies indicate that while precise prevalence is challenging to ascertain due to underreporting and asymptomatic cases, it is estimated that over 40% of the general population will experience hemorrhoidal symptoms at some point in their lives.[1,3] In the United States alone, HD ranks as the fourth leading outpatient gastrointestinal diagnosis, accounting for approximately 3.3 million ambulatory care visits annually, with a self-reported incidence of 10 million per year, corresponding to 4.4% of the population.[2] The disease demonstrates a peak incidence in adults aged 45 to 65 years, affecting both genders equally but with a higher prevalence among Caucasians and individuals of higher socioeconomic status.[2,3] Critically, although many cases are managed conservatively, surgical intervention is required in approximately 10% of patients due to the severity of symptoms or failure of non-operative

management, highlighting the substantial clinical and healthcare resource implications of advanced disease.[1,4]

Anatomically, hemorrhoids are normal vascular cushions within the anal canal, contributing to continence. However, the pathological state—hemorrhoidal disease—arises from the symptomatic enlargement and distal displacement of these cushions due to the deterioration of supporting connective tissues, a concept known as the sliding anal canal lining theory.[2,5] This leads to the cardinal symptoms of bleeding, prolapse, pain, and irritation. The Goligher classification system categorizes internal hemorrhoids into four grades based on the degree of prolapse, with grades III (requiring manual reduction) and IV (irreducible prolapse) representing the most advanced and debilitating forms.[1,2] Beyond the immediate physical discomfort, advanced HD significantly impairs daily activities, psychological well-being, and economic productivity. The persistent symptoms of pain, itching, and the worry about sudden prolapse or soiling lead to social embarrassment, anxiety, and a decreased overall quality of life, creating a substantial hidden burden for affected individuals.[3,6]

For the definitive management of these advanced stages, the Milligan-Morgan open hemorrhoidectomy (OH) has been established as the longstanding "gold standard" surgical procedure for decades.[6,8] First described in 1937, this technique involves the excision of the primary hemorrhoidal bundles with ligation of the pedicle, leaving the wounds open to heal by secondary intention.[6] Its enduring status as the criterion standard is founded on its proven high efficacy in eliminating prolapse and symptoms, exceptional durability, and the lowest long-term recurrence rates compared to other interventions.[5,7] Furthermore, its technical reproducibility, requiring no specialized or expensive equipment, makes it a particularly cost-effective and reliable cornerstone of surgical practice, especially in resource-limited settings.[5,8]

However, this proven efficacy and durability come at a significant cost, creating a well-established morbidity paradox. Despite being the gold standard for effectiveness, open hemorrhoidectomy is consistently associated with considerable and well-documented perioperative and postoperative morbidity, which remains its most formidable drawback.[4,5] This challenging morbidity profile primarily manifests through several specific and often severe complications. The most prominent is intense postoperative pain, considered among the most severe following any common surgical procedure, with the incidence of moderate to severe pain reported to be as high as 65%.[4] This pain is largely due to hypertonicity of the exposed anal sphincter and the presence of wounds in the highly sensitive anoderm. This is frequently compounded by high rates of urinary retention, often resulting from postoperative pain, fluid overload, or the effects of spinal anesthesia, occurring in over 20% of cases.[4,6] Furthermore, the open wounds are prone to delayed healing and require diligent perianal hygiene, increasing the risk of infection. Potential hemorrhagic complications, both immediate (reactionary) and delayed (secondary), also present a significant concern, with rates varying between 2.4% to 6%.[6] Collectively, these morbidities contribute to a prolonged and uncomfortable recovery period, significant patient distress, and a delayed return to normal activities and work, thereby offsetting some of the procedure's long-term benefits.[5,6]

While this morbidity profile is recognized globally, the precise quantification and characteristics of these complications can be influenced by regional factors, including surgical protocols, perioperative care practices, and patient demographics. In the Bangladeshi context, where hemorrhoidal disease is a common surgical presentation, a detailed and focused analysis of the morbidity profile of OH is crucial. Such data is needed to inform local surgical decision-making, improve patient counseling, and develop targeted strategies to mitigate these complications within the specific socioeconomic and clinical context of the country's healthcare system. Therefore, this study aims to comprehensively analyze the perioperative and postoperative morbidity profile, including pain, complications, and recovery metrics, associated with open hemorrhoidectomy (Milligan-Morgan) in a cohort of patients at a tertiary care center in Bangladesh.

METHODS

This prospective observational study was conducted in the surgical units of Mymensingh Medical College Hospital, Bangladesh, from July 2019 to September 2020 to analyze the morbidity profile of open hemorrhoidectomy. A cohort of 65 patients with grade-III or IV hemorrhoids, who were surgically fit (ASA I/II) and provided informed consent, were included. Patients with thrombosed hemorrhoids, concurrent anal pathology, or an inability to report outcomes were excluded. All patients underwent the Milligan-Morgan open hemorrhoidectomy procedure: hemorrhoidal bundles were excised up to the anorectal ring, pedicles were suture-ligated, hemostasis was achieved with diathermy, and wounds were left open to heal by secondary intention. Data were collected on perioperative bleeding (measured objectively using a Gauze VAS scale), postoperative pain within the first 24 hours (assessed using a visual analog scale, VAS, categorized as mild: 0-2, moderate: 3-5, severe: 6-8, worst: 9-10), and specific complications including urinary retention, reactionary hemorrhage, and secondary hemorrhage. Recovery was measured by the duration of hospital stay and the time taken to return to normal activities. All patients were followed up at 1 week, 3 weeks, and 3 months postoperatively. Data were analyzed using statistical package for the social sciences (SPSS) version 26 with descriptive statistics presented as mean±standard deviation for continuous variables and frequencies with percentages for categorical variables. The study protocol was approved by the institutional ethical review board.

RESULTS

The study analyzed 65 patients who underwent open hemorrhoidectomy. The cohort had a mean age of 40.52±10.75 years, with the highest proportion of patients (41.5%, n=27) belonging to the 31-40 year age group. A majority of the patients were male (56.9%, n=37). Regarding disease severity, over half of the patients (55.4%, n=36) presented with grade IV hemorrhoids, while 44.6% (n=29) had grade III disease (Table 1).

Table 1: Patient demographics and disease characteristics (n=65).

Characteristics	N (%)
Age (years)	
21-30	10 (15.4)
31-40	27 (41.5)
41-50	19 (29.2)
51-60	6 (9.2)
61-70	3 (4.6)
71-80	0 (0.0)
Mean±SD	40.52±10.749
Gender	
Male	37 (56.9)
Female	28 (43.1)
Hemorrhoid grade	
Grade III	29 (44.6)
Grade IV	36 (55.4)

Intraoperative bleeding was minimal for most procedures. The vast majority of patients (78.5%, n=51) experienced negligible blood loss, classified as 'no bleeding'. Mild bleeding occurred in 16.9% (n=11) of cases, while moderate bleeding was uncommon, observed in only 4.6% (n=3) of patients (Table 2).

Table 2: Perioperative morbidity (n=65).

Intraoperative bleeding	N (%)
No bleeding	51 (78.5)
Mild bleeding	11 (16.9)
Moderate bleeding	3 (4.6)

*No bleeding: negligible bleeding (equivalent to <12 ml blood loss); **mild bleeding: partial gauze soaking (equivalent to 50-100 ml blood loss); ***moderate bleeding: complete gauze soaking (equivalent to >100 ml blood loss)

Postoperative pain within the first 24 hours was a significant finding. Assessment using the visual analog scale (VAS) revealed that only 20.0% (n=13) of patients reported mild pain. The vast majority (80%) experienced substantial discomfort, with 40.0% (n=26) reporting moderate pain, 33.8% (n=22) reporting severe pain, and 6.2% (n=4) experiencing the worst imaginable pain (Figure 1).

The most frequent early postoperative complication was urinary retention, which occurred in 40.0% (n=26) of patients. Hemorrhagic complications were less common; reactionary hemorrhage was observed in 6.2% (n=4) of cases, while secondary hemorrhage occurred in 3.1% (n=2) of patients (Table 3).

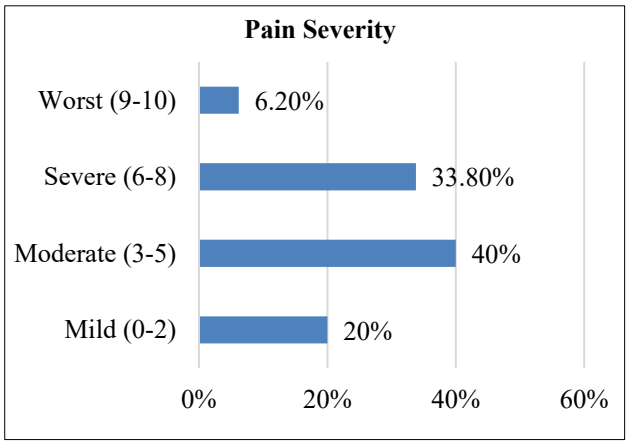

Figure 1: Postoperative pain severity (first 24 hours).

Table 3: Early postoperative complications (n=65).

Complications	N (%)
Urinary retention	26 (40.0)
Reactionary hemorrhage	4 (6.2)
Secondary hemorrhage (after 24 hours - 2 weeks)	2 (3.1)

The postoperative course was characterized by a prolonged hospital stay. The mean duration of hospitalization was 7.12±2.58 days. Only a small minority of patients (3.1%, n=2) were discharged within the first 3 days. The majority of patients (53.8%, n=35) were discharged after 4 to 7 days, while a significant proportion (36.9%, n=24) required a stay of 8 to 10 days. A small number of patients (6.1%, n=4) had extended stays lasting between 11 to over 15 days (Table 4).

Table 4: Healthcare resource utilization (n=65).

Hospital stay duration (days)	N (%)
1-3	2 (3.1)
4-7	35 (53.8)
8-10	24 (36.9)
11-12	2 (3.1)
13-15	1 (1.5)
>15	1 (1.5)
Mean±SD	7.12±2.583

Functional recovery after surgery was prolonged. The mean time taken for patients to return to their normal daily activities was 14.29±3.57 days. Only one patient (1.5%) resumed normal activities within one week. The majority of patients (55.4%, n=36) returned to normal activities between 8 to 14 days postoperatively, while a substantial proportion (43.1%, n=28) required more than two weeks for functional recovery (Table 5).

Table 5: Functional recovery outcomes (n=65).

Return to normal activities (days)	N (%)
≤7	1 (1.5)
8-14	36 (55.4)
>14	28 (43.1)
Mean±SD	14.29±3.574

Open hemorrhoidectomy was a highly cost-effective intervention. The total treatment cost was less than 10,000 Bangladeshi Taka (BDT) for the vast majority of patients (98.5%, n=64). Only one patient (1.5%) incurred a cost between 10,000 and 20,000 BDT. No patient's treatment cost exceeded 20,000 BDT (Table 6).

Table 6: Economic impact analysis (n=65).

Total treatment cost (BDT)	N (%)
<10,000	64 (98.5)
10,000-20,000	1 (1.5)
20,000-30,000	0 (0.0)
>30,000	0 (0.0)

DISCUSSION

The present study examined perioperative and postoperative outcomes following open hemorrhoidectomy (Milligan-Morgan technique) in a Bangladeshi cohort, with emphasis on morbidity, recovery, and cost-effectiveness. The findings underscore both the clinical efficacy and limitations of this traditional surgical technique, especially in low-resource contexts.

Our cohort demonstrated a mean patient age of 40.52±10.75 years, with the highest concentration of cases in the 31–40 age group (41.5%) and a modest male predominance (56.9% male). This aligns with regional and global data suggesting a middle-aged adult predominance in hemorrhoid disease requiring surgery.[9] Furthermore, grade IV hemorrhoids were more prevalent (55.4%), indicating late-stage presentation. This trend may reflect delayed care-seeking behavior, commonly noted in South Asian settings where conservative treatments are often exhausted before surgical referral.[10]

A significant proportion of patients (78.5%) experienced negligible intraoperative bleeding (<12 ml), affirming the procedural safety of open hemorrhoidectomy in skilled hands. Only 4.6% of patients had bleeding over 100 ml. These findings are consistent with previous studies by Nasr et al, which identified minimal intraoperative bleeding as a hallmark advantage of the Milligan-Morgan approach when proper hemostasis techniques are employed.[9]

Pain was a predominant early morbidity in this study: 80% of patients reported moderate to the worst imaginable pain within the first 24 hours. This is consistent with reports from Kumar, who also documented high VAS scores in the early postoperative period, and with Bhatti et al's meta-analysis that ranked Milligan-Morgan as the most painful hemorrhoidectomy technique.[11,12] While the open approach provides long-term relief, its association with substantial acute pain remains a major limitation and highlights the need for improved perioperative analgesic strategies.

The most frequent early complication was urinary retention, affecting 40% of patients. This is in line with findings by Chishti et al, who observed that open hemorrhoidectomy, particularly under spinal or saddle block anesthesia, was significantly associated with urinary retention due to reflex inhibition of detrusor activity.[13] Hemorrhagic complications in our study were less frequent — reactionary hemorrhage (6.2%) and secondary hemorrhage (3.1%) — comparable to the ranges reported by Arun et al, confirming that while bleeding risk exists, it is relatively manageable.[10]

Our study recorded a mean hospital stay of 7.12±2.58 days, with over 36.9% staying 8–10 days. This is notably longer than hospital stays reported by Bhatti et al and Azhari and Bawazer, who found mean durations of 3–4 days in settings using enhanced recovery protocols and local anesthesia.[11,14] The extended hospitalizations in our cohort may be reflective of limited outpatient pain management, delayed mobility, and logistical barriers to early discharge.

The mean time for patients to return to normal activities was 14.29±3.57 days, with 43.1% requiring more than 14 days. This recovery duration is consistent with outcomes reported by Bhatti et al and Kumar, who both observed prolonged functional downtime with the open approach.[11,12] The delayed recovery reaffirms the physical toll and slow convalescence associated with traditional excisional techniques.

Despite the morbidity burden, the procedure proved economically accessible, with 98.5% of patients incurring costs below 10,000 BDT. This confirms findings by Azhari and Bawazer and Kilonzo et al, who emphasized that open hemorrhoidectomy remains the most cost-effective surgical option, especially when compared to stapled or laser techniques.[14,15] Singh et al. further argue for the ethical and practical suitability of traditional methods in low-income healthcare systems, where advanced surgical tools may not be feasible.[16]

Even in the absence of advanced statistical modeling, several trends observed in this study carry strong clinical relevance. The high incidence of pain (80%), urinary retention (40%), and delayed recovery (43.1%) point to the need for enhanced postoperative care pathways.

Conversely, the minimal bleeding (95%) and cost-effective delivery (98.5%) reinforce the safety and economic utility of the procedure.

Limitations

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

Open hemorrhoidectomy (Milligan-Morgan technique) remains a safe, effective, and economically feasible procedure for the management of advanced-grade hemorrhoids in resource-limited settings such as Bangladesh. Although the operation is associated with high rates of postoperative pain, urinary retention, and delayed functional recovery, intraoperative morbidity is minimal, and the overall procedure is cost-effective. These findings highlight the need for enhanced perioperative pain management protocols, early mobilization strategies, and standardized discharge pathways to optimize recovery and reduce hospital stay. Future prospective, multicentric studies incorporating advanced pain control and outpatient care protocols are warranted to further improve patient outcomes while maintaining the cost advantages of this traditional surgical approach.

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