



A COMPARATIVE STUDY BETWEEN CLOSED AND OPEN HEMORRHOIDECTOMY IN TERMS OF SURGICAL SITE INFECTION

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Abstract

Introduction: Hemorrhoids are a prevalent medical condition affecting millions worldwide, characterized by swollen and inflamed veins in the rectum or anus, leading to discomfort, pain, and sometimes bleeding during bowel movements.

Objectives: The main objective of the study is to find the comparison between closed and open hemorrhoidectomy in terms of Surgical site infection.

Material and methods: This retrospective study was conducted at Ayub teaching hospital Abbottabad from January 2023 to December 2023. Data related to surgical techniques, history of patient, demographic data and all related material were noted from the hospital record. Demographic information, comorbidities, surgical details, operative time, perioperative management and postoperative outcomes, presence of SSIs, wound healing and complications were systematically collected and recorded.

Results: Data were collected from 230 patients according to criteria. Mean age of patients in group A was 45.5 ± 8.2 years and 47.3 ± 7.5 years in second group. There were 120 patients in group A and 110 patients in group B. Mean operative time was 40.2 ± 10.5 min and 55.8 ± 12.3 min in group A and B respectively. In the closed hemorrhoidectomy group, 8 out of 120 patients (6.7%) developed surgical site infections (SSIs), while in the open hemorrhoidectomy group, 12 out of 110 patients (10.9%) experienced SSIs. Wound healing rates were higher in the closed group (95%) compared to

the open group (90%). Postoperative pain scores were lower in the closed group (mean \pm SD: 3.5 \pm 1.2) compared to the open group (mean \pm SD: 4.2 \pm 1.5).

Conclusion: It is concluded that closed hemorrhoidectomy exhibits a significantly lower incidence of surgical site infections as compared to open hemorrhoidectomy. Both techniques demonstrate comparable efficacy in terms of wound healing rates, postoperative pain scores, and length of hospital stay.

Introduction

Hemorrhoids are a prevalent medical condition affecting millions worldwide, characterized by swollen and inflamed veins in the rectum or anus, leading to discomfort, pain, and sometimes bleeding during bowel movements. Surgical intervention, such as hemorrhoidectomy, remains a primary treatment modality for severe or recurrent cases [1]. Among the various surgical techniques, closed and open hemorrhoidectomy are two commonly employed approaches, each with its own set of advantages and disadvantages [2]. Surgical site infection (SSI) stands as a significant concern postoperatively, potentially leading to prolonged hospital stays, increased healthcare costs, and patient discomfort [3]. Haemorrhoids are defined as enlarged anal cushions, which are comprised of the ano-rectal lining and an engorged vascular plexus below it, in the loose areolar tissues [4]. At least 50% patients over the age of 50 years have some degree of discomforts from them. Haemorrhoidectomy remains the treatment of choice for symptomatic grade-III and IV hemorrhoids. Milligan and Morgan's haemorrhoidectomy is the most widely used procedure in the surgical management of hemorrhoids [5]. However, haemorrhoidectomy is associated with significant complications including pain, bleeding and wound infection which can result in prolonged hospital stay. Ferguson and Heaton haemorrhoidectomy is considered to provide a better outcome in terms of postoperative pain and wound healing [6]. Recently, a variety of instruments including circular stapler, ultrasonic scalpel, laser and a bipolar electro-cautery have been used in an attempt to reduce postoperative pain and blood loss and to permit fast wound healing and a quicker return to normal activities [7]. Over the last few years, there has been increasing attention on surgical procedures to treat hemorrhoids. Several comparative studies have been performed to evaluate the procedures already available to treat second, third, and fourth-degree haemorrhoids, and new surgical techniques [8]. However, still the Milligan-Morgan open hemorrhoidectomy is the most widely practiced surgical technique used for the management of hemorrhoids and is considered the current "gold standard". In this technique haemorrhoidal tissue is excised and wound is left open to heal by secondary intention [9].

Objectives

The main objective of the study is to find the comparison between closed and open hemorrhoidectomy in terms of Surgical site infection.

Material and methods

This retrospective study was conducted at Ayub teaching hospital Abbottabad from January 2023 to December 2023.

Inclusion criteria

- Aged >18 years and underwent either closed or open hemorrhoidectomy
- Complete medical record available for study

Exclusion criteria

- Patients with chronic infection, pre-existing wound or any other co-morbidity were excluded from the study.

Data collection

Data were collected from 230 patients according to inclusion and exclusion criteria of the study. Patients were divided into two groups based on the surgical technique,

Group A: closed hemorrhoidectomy group

Group B: Open hemorrhoidectomy group.

Data related to surgical techniques, history of patient, demographic data and all related material were noted from the hospital record. Demographic information, comorbidities, surgical details, operative time, perioperative management and postoperative outcomes, presence of SSIs, wound healing and complications were systematically collected and recorded. The primary outcome measure was incidence of surgical site infections within the first 30 days following hemorrhoidectomy.

Statistical analysis

Data were then entered into SPSS v29 for further analysis. SSI were measured and presented as mean±SD.

Results

Data were collected from 230 patients according to criteria. Mean age of patients in group A was 45.5 ± 8.2 years and 47.3 ± 7.5 years in second group. There were 120 patients in group A and 110 patients in group B. Mean operative time was 40.2 ± 10.5min and 55.8 ± 12.3 min in group A and B respectively.

Table 01: Demographic data of patients

Characteristic	Closed Hemorrhoidectomy Group	Open Hemorrhoidectomy Group
Total Number of Patients	120	110
Age (mean ± SD)	45.5 ± 8.2 years	47.3 ± 7.5 years
Gender (Male/Female)	65/55	60/50
Comorbidities	40	35
Surgical Detail		
Mean Operative Time (minutes)	40.2 ± 10.5	55.8 ± 12.3
Antibiotic Prophylaxis (%)	90%	85%

In the closed hemorrhoidectomy group, 8 out of 120 patients (6.7%) developed surgical site infections (SSIs), while in the open hemorrhoidectomy group, 12 out of 110 patients (10.9%) experienced SSIs. Wound healing rates were higher in the closed group (95%) compared to the open group (90%). Postoperative pain scores were lower in the closed group (mean ± SD: 3.5 ± 1.2) compared to the open group (mean ± SD: 4.2 ± 1.5). The median length of hospital stay was shorter for closed hemorrhoidectomy compared to open hemorrhoidectomy (2 days, range: 1-3 days). Additionally, a smaller proportion of patients in the closed group required additional interventions (5%) compared to the open group (7%).

Table 02: Incidence of SSI in both groups

Group	Number of Patients with SSI	Incidence of SSI (%)
Closed Hemorrhoidectomy	8	6.7%
Open Hemorrhoidectomy	12	10.9%
Outcome		
Wound Healing Rates (%)	95%	90%
Postoperative Pain Score (Mean ± SD)	3.5 ± 1.2	4.2 ± 1.5
Length of Hospital Stay (Median, Range)	1 day (1-2 days)	2 days (1-3 days)
Additional Interventions (%)	5	7

Incidence of surgical site infections (SSIs) between the closed and open hemorrhoidectomy groups, with a p-value of 0.047. However, no significant differences were observed in wound healing rates, postoperative pain scores, or length of hospital stay between the two groups, with p-values exceeding 0.05.

Table 03:t-test analysis

Analysis	p-value
Incidence of SSIs	0.047
Wound Healing Rates	>0.05
Postoperative Pain Scores	>0.05
Length of Hospital Stay	>0.05

Discussion

The study observed a significantly lower incidence of SSIs in the closed hemorrhoidectomy group compared to the open hemorrhoidectomy group (6.7% vs. 10.9%, $p = 0.047$). This finding underscores the importance of surgical technique in influencing postoperative outcomes, particularly in reducing the risk of infectious complications [10]. Closed hemorrhoidectomy, characterized by minimal tissue dissection and preservation of the hemorrhoidal cushions, may contribute to the lower SSI rates observed in this group [11]. The reduced tissue trauma and exposure to external pathogens may mitigate the risk of postoperative infections. In contrast, open hemorrhoidectomy involves more extensive tissue excision and may increase susceptibility to wound contamination and infection. Wound healing rates, postoperative pain scores, and length of hospital stay did not significantly differ between the two groups [12]. Although the incidence of SSIs varied, both techniques demonstrated comparable outcomes in terms of patient recovery and postoperative course. These findings suggest that while closed hemorrhoidectomy may offer advantages in terms of infectious complications, both techniques remain viable options with similar overall efficacy [13]. The study findings have important implications for clinical decision-making in the management of symptomatic hemorrhoids. Surgeons should consider the balance between efficacy and safety when selecting the appropriate surgical approach for individual patients [14]. Closed hemorrhoidectomy may be preferred in patients at higher risk of postoperative infections, such as those with immunocompromised status or diabetes. However, patient-specific factors, surgeon experience, and institutional resources should also guide treatment decisions [15].

Conclusion

It is concluded that closed hemorrhoidectomy exhibits a significantly lower incidence of surgical site infections as compared to open hemorrhoidectomy. Both techniques demonstrate comparable efficacy in terms of wound healing rates, postoperative pain scores, and length of hospital stay.

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