



Original Article



Comparison of Outcomes between Open and Closed Haemorrhoidectomy

Khalid Mahmood^{1*}, Muhammad Iqbal², Ahmed Hassan Khan³, Allah Nawaz³, Raza Farrukh⁴ and Khawaja Arshad⁵¹Department of Surgery, Niazi Medical and Dental College, Sargodha, Pakistan²Department of Surgery, Bolan Medical Complex Hospital, Quetta, Pakistan³Department of Surgery, Sargodha Medical College, District Headquarter Hospital, Sargodha, Pakistan⁴Department of Anaesthesia, Sargodha Medical College, District Headquarter Hospital, Sargodha, Pakistan⁵Department of Paediatrics, Sargodha Medical College, District Headquarter Hospital, Sargodha, Pakistan

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Department of Surgery, Niazi Medical and Dental College, Sargodha, Pakistan
drkhalidmahmoodsgd@gmail.comReceived Date: 10th May, 2024Acceptance Date: 22nd October, 2024Published Date: 31st October, 2024

ABSTRACT

Hemorrhoidectomy can prolong hospital stays due to pain, bleeding, and wound infections. Hemorrhoidectomy improves postoperative pain and wound healing. This research examined postoperative pain, hemorrhage, operating time, and wound healing after open and closed hemorrhoidectomy. **Objective:** To determine the post-operative outcomes of open and closed hemorrhoidectomy in terms of wound healing, pain perception and complications. **Methods:** This comparative study was conducted at Department of Surgery, DHQ Teaching Hospital, Sargodha from 1st September 2022 to 28th February 2023. Sixty patients were selected and divided into two groups; open and closed haemorrhoidectomy. Grade-III and grade-IV patients were underwent haemorrhoidectomy on the basis of severity and internal haemorrhoids. SPSS version 26.0 was used to analyse all the data. **Results:** There were 40 (66.7%) males and 20 (33.3%) females. Approximately 43.3% of the patients from closed group showed mild pain whereas 36.6% of the cases from open group complain mild pain after open haemorrhoidectomy. An open haemorrhoidectomy incision healed in 22 days, but a closed one took 15 days ($p=0.56$). The early onset of post-operative closed haemorrhoidectomy patients had 3.3%, 6.6%, and 3.3% cases of hemorrhoid, infection, and urinary retention, while the early onset of open patients had 6.6%, 10%, and 6.6%. There was just one patient in the open haemorrhoidectomy group with late-onset anal stenosis, and no other patient in either group developed fissure or faecal incontinence. **Conclusions:** Almost similar pain perception was observed in both surgical procedures before and after the surgery.

INTRODUCTION

Millions of people across the world suffer with hemorrhoids, a condition in which enlarged and inflamed veins in the rectum or anus cause pain, discomfort, and even bleeding when you go to the bathroom. The main method of therapy for severe or recurring instances is surgical intervention, which includes hemorrhoidectomy [1]. Symptoms of hemorrhoids include bulging veins that are located near the anus, which is the last segment of the alimentary canal. Varicose veins are characterized by their enlargement and swelling, and they are sometimes composed of anorectal and loose areolar tissues. Varicose veins are also known as varicose. Anal intercourse, obesity, a diet low in fiber, chronic constipation, pregnancy, chronic

diarrhea, Inflammatory Bowel Disease (IBD), and chronic diarrhea are some of the variables that have been linked to the development and production of hemorrhoids. According to the findings of several studies, roughly fifty percent of the patients experience some form of discomfort as a result of them [1-4]. When it comes to the treatment of grade 3 and grade 4 hemorrhoids, hemorrhoidectomy is regarded to be the recommended and most effective treatment option. In most cases, manual reduction is necessary for hemorrhoids of grade III, which protrude outside the anal canal. On the other hand, hemorrhoids of grade IV are irreducible and regularly prolapse. Haemorrhoids that are acutely thrombosed and



those that involve rectal mucosal prolapse are both considered to be grade IV patients. The investigation and implementation of alternative surgical treatments for the treatment of hemorrhoids, on the other hand, has become increasingly important in recent years. As well as to investigate novel surgical approaches, several comparison studies have been carried out in order to evaluate the treatments that are currently in place for the treatment of second, third, and fourth-degree hemorrhoids. Milligan-Morgan open-hemorrhoidectomy, on the other hand, continues to be the surgical operation that is most frequently performed for hemorrhoid care and is considered to be the "gold standard" at the present time. The hemorrhoid tissue is removed during this procedure, and the incision is purposefully left open so that it can heal with the use of secondary intention. The severe discomfort and agony that patients feel during the first week after undergoing a hemorrhoidectomy is the biggest disadvantage that is linked with this surgical repair [5]. In the Ferguson closed hemorrhoidectomy, the excision of hemorrhoids is followed by the main suturing of the mucosal and skin borders using absorbable suture material such as catgut. In terms of healing time and fewer postoperative complications, this method is believed to offer advantages, including a reduced risk of bleeding and post-operative wound infections. Surgical removal of hemorrhoids is necessary for around 40% of patients. The standard procedure for hemorrhoids is Open Hemorrhoidectomy (OH). Although the results are clear, the operation is uncomfortable and requires a lengthy absence from work (two to six weeks) due to illness. But the patient also has to deal with headaches caused by bleeding (whether it's immediate, reactive, or secondary), urine retention, or delayed headaches like stenosis or incontinence [6]. The open approach of excision, which often involves the use of diathermy and scissors, is a widely used method that has a reputation for producing positive results both during and after the operation [7-10]. Circular stapler guns are a relatively new and costly method of treating hemorrhoids. They are used to disrupt the hemorrhoidal veins, stretch the prolapsed mucosa, and raise it [11]. Hemorrhoidectomies in accordance with Milligan, Morgan, and Ferguson techniques are historically the most commonly performed surgical procedures for hemorrhoids [5, 6]. The surgical procedures that are used to treat hemorrhoids have received an increasing amount of attention over the past few years. The procedures that are currently available to treat second, third, and fourth-degree haemorrhoids, as well as new surgical techniques, have been evaluated during a number of comparative studies. Milligan-Morgan open hemorrhoidectomy, on the other hand, is the surgical technique that is most commonly used for the management of hemorrhoids and is considered the "gold standard" at the moment. The

hemorrhoidal tissue is removed using this technique, and the wound is left open so that it can heal with secondary intention [7]. Bipolar electro-cautery, circular staplers, and ultrasonic scalpels are some examples of the newly designed tools that are being utilized for this therapy as a result of the advancements that have been made in clinical practice. These resulted to a reduction in the amount of blood lost, a speedier healing of wounds, and a reduction in post-operative discomfort. There have been a number of clinical trials which have been carried out in order to examine a more effective surgical approach for hemorrhoidal disease [8-10].

The purpose of this study was to find out how open and closed haemorrhoidectomy compare to one another. With the aforementioned considerations in mind, the current study was intended to evaluate the two well-known procedures of haemorrhoidectomy in terms of wound healing and post-operative discomfort.

METHODS

This quasi experimental study was performed at Department of Surgery, DHQ Teaching Hospital, Sargodha from 1st September 2022 to 28th February 2023 after getting approval from the institute on 15/08/22 with reference no 1184SMC/FMTHS. A total of sixty patients were selected and stratified into two group open and closed haemorrhoidectomy. Patients with haemorrhoids having 3rd and 4th degrees presenting in outpatient departments of surgical who gave informed consent were included. Exclusion criteria were those who had a history of hemorrhoidectomy, tuberculosis, coronary heart disease, cancer, or first-degree hemorrhoids. In addition, patients who had already undergone surgery for hemorrhoids and pregnant women who suffered from piles were not allowed to participate in this exploration. The calculation of the sample size was based on the prevalence of 18%, the margin of error was 10%, and the confidence interval was 95% [12]. Grade-III and grade-IV patients were underwent haemorrhoidectomy on the basis of severity and internal hemorrhoids. In open group, A Kelly clamp was placed over one hemorrhoidal pedicle. The external skin was incised in a v-shaped manner, followed by dissection of the hemorrhoidal plexus in a good plane without any muscle injury using scissor and diathermy towards the clamped pedicle. A Vicryl 2/0 suture was used to ligate the pedicle that was cut at the end and left open to heal. The procedure was repeated for the remaining hemorrhoid pedicles. Diclofenac suppository was used, and then Bacti-grass with gauze impregnated in local anesthetic cream was put into the anus as packing. In closed procedure, after anal dilatation and insertion of the anal ring and fixing it made a purse-string suture 2cm above the dentate line using prolene 2/0 to include only mucosa and submucosa. Haemorrhoidal Circular Stapler (HCS) was then inserted

and the suture was tightened. Closure of the circular stapler was done and kept closed for 30s then firing it and gentle withdrawal of the stapler, including the doughnut. Finally, diclofenac suppositories were kept, and gentle anal packing was done. The pack was removed after 12h. Daily antibiotics and oral analgesics were instructed; three-time sitz baths with disinfectant and then local healing cream was advised to be used. Post-operative time of wound healing, early (Haemorrhage, Infection, Urinary retention) within 12-24 hours after surgery and late (Anal stenosis, Fissure or faecal incontinence) complications after 24 hours of surgery were compared between both groups by using Fisher exact test. The pain in postoperative period was assessed by visual Analog Scale (VAS) with a rating ranging from 0-10 [13]. Patients were then followed up for 3 weeks after the surgery to monitor their progress and assess the outcomes of the procedure. Data were analyzed by using SPSS version 26.0 by using different tests. Chi-square test was used for comparative analysis of the study variables. P-value less than 0.05 was taken as significant.

RESULTS

Patients in open haemorrhoidectomy were within the age of 20-70 years with a mean age of 43.5 ± 12.55 years, while patients in closed haemorrhoidectomy were within the age of 20-69 years with a mean age of 42.5 ± 10.11 years. There were forty males and twenty females were undergone to haemorrhoidectomy. Equal distribution was made through random distribution through which twenty 20 males and 10 females were go through the both study procedures respectively (Table 1).

Table 1: Gender and Age Distribution (n=60)

Variables	Open Haemorrhoidectomy N (%) / Mean ± SD	Closed Haemorrhoidectomy N (%) / Mean ± SD
Gender		
Male	20 (66.7%)	20 (66.7%)
Female	10 (33.3%)	10 (33.3%)
Age		
Mean Age (Years)	43.5 ± 12.55	42.5 ± 10.11

Pain scoring showed that there was no significant difference in both of the groups. Almost equal results were obtained regarding pain perception during both open and closed haemorrhoidectomy before surgery. Post-operative pain perception after 12 hours of surgery reveals also similar results. No considerable difference was observed in either study groups. Approximately 43.3% of the patients from closed group showed mild pain whereas 36.6% of the cases from open group complain mild pain after open haemorrhoidectomy. Similarly, 10% from closed group and 6.67% patients from open group showed moderate pain after haemorrhoidectomy. Insignificant results were obtained (Table 2).

Table 2: Perception of Pain Before and After 12-hours of Surgery (n=60)

Pain Perception	Open Haemorrhoidectomy N (%)	Closed Haemorrhoidectomy N (%)
Before Surgery		
None	2 (6.6%)	1 (3.3%)
Mild	4 (13.3%)	3 (10%)
Moderate	17 (56.6%)	17 (56.6%)
Severe	7 (23.3%)	9 (30%)
After Surgery		
None	16 (53.3%)	13 (43.3%)
Mild	11 (36.6%)	13 (43.3%)
Moderate	2 (6.67%)	3 (10%)
Severe	1 (3.35)	1 (3.3%)

The comparison of early and late onset of complications within the open and closed groups was also observed. The wound healing was accomplished in 22 days in open haemorrhoidectomy while in 15 days in closed cases of haemorrhoidectomy (p value 0.56). There were 6.6%, 10% and 6.6% cases of haemorrhoid, infection and urinary retention in the early onset open haemorrhoidectomy patients whereas 3.3%, 6.6% and 3.3% of haemorrhoid, infection and urinary retention cases were observed in the early onset of post-operative closed haemorrhoidectomy cases respectively. There was only a single patient in the open haemorrhoidectomy group which had anal stenosis as a late onset of post-operative complication while no other patient was reported within both groups for anal stenosis as well as fissure or faecal incontinence (Table 3).

Table 3: Comparison of Wound Healing, Early and Late Onset of Complications within Groups by using Fisher Exact Test

Variables	Open Haemorrhoidectomy Mean ± SD/ N (%)	Closed Haemorrhoidectomy Mean ± SD/ N (%)	P-Value
Wound Healing (Days)	22 ± 5.5	15 ± 3.25	<0.004
Early Onset of Post-Operative Complications			
Haemorrhage	2 (6.6%)	1 (3.3%)	0.00
Infection	3 (10%)	2 (6.6%)	0.00
Urinary Retention	2 (6.6%)	1 (3.3%)	0.00
Late Onset of Post-Operative Complications			
Anal Stenosis	1 (3.3%)	-	0.00
Fissure or Faecal Incontinence	-	-	-

DISCUSSION

Hemorrhoidectomy was one of the most common anorectal surgical operations done in hospitals. Hemorrhoidectomy was the treatment of choice for hemorrhoids of grade 3 and 4. Of all the areas of the esophagus, the anal canal lining has the highest density of nerve endings. The most common side effect of surgery was pain, which has so far been treated in a number of ways. The surgical treatment of hemorrhoids was still a hotly

debated topic, and neither side has emerged victorious [13-16]. A trial on stapled hemorrhoidopexy provided data that was more in line with results [17]. Depending on the surgical procedure and the patient demographic, the incidence of urine retention may change, but it was still a potential issue in the postoperative period. It found that closed procedure provided better results in terms of wound healing as compared to open procedure with $p < 0.004$, but complication rate among both groups were insignificant. The results of systematic reviews by Nada EF *et al.*, and study by Ruan QZ *et al.*, clearly show that patients who received stapled hemorrhoidectomy returned to their regular daily activities earlier than those who had traditional hemorrhoidectomy [18, 19]. It seems like both groups perceived pain about the same. After a Ferguson closed hemorrhoidectomy, patients experienced a quicker recovery, experienced less postoperative discomfort, and did not require any associated anal dilatation. There was no discernible difference in discomfort between the two surgical methods, according to a small number of trials. After three weeks after surgery, 78% of patients in the current trial had a full healing rate, and wound recovery was quicker in the closed Ferguson group. In closed groups also had shorter hospital stays, which led to cost savings and more dependable patient outcomes, according to other research [20]. Numerous research has shown that there were a variety of methods that may be utilized to alleviate post-operative pain. Despite the fact that the choice of surgical method was also considered crucial. Because an open hemorrhoidectomy involves cutting into the anal canal, it was possible that the procedure will be painful. The most common method for removing hemorrhoids was, hence, closed hemorrhoidectomy [20]. Results from a randomized controlled experiment comparing Milligan-Morgan haemorrhoidectomy and Ferguson haemorrhoidectomy were published. The results showed that Ferguson hemorrhoidectomy, which aids in obtaining the surgically ameliorated response, was the way to go Bhatti MI *et al.*, performed yet another randomized control experiment to evaluate postoperative pain and wound healing [12]. In the instance of the open hemorrhoidectomy, the healing process took 6 weeks, but in the other 8 patients, reliable recovery was recorded in 4 weeks [21, 22]. In this study insignificant results were obtained between both open and closed groups. Similarly, previously findings presented comparable results in which pain perception among both groups were same post-operatively [18-20]. Another critical component of the result following hemorrhoidectomy was the healing of the incision. Depending on the study, wound dehiscence rates after closed hemorrhoidectomy might be anywhere from

25 to 56 percent. A randomized controlled experiment was performed by Naderan M *et al.*, to compare the wound healing and postoperative discomfort following open and closed hemorrhoidectomy [2]. The open hemorrhoidectomy method was shown to be more dependable for wound healing (8 patients in the closed group experienced wound dehiscence) and quicker (4.9 week's versus 6.9 weeks in the open group). Diathermy, which was employed during the dissection, may have damaged the wound border thermally, increasing the risk of wound infection and dehiscence, particularly in closed wounds, which might explain the wound dehiscence [23]. Pain levels may rise in relation to the extent of thermal injury. In order to protect the delicate ano-dermal layer, it worked to keep temperatures as low as possible. The wound healing time after open hemorrhoidectomy was 22 days, whereas closed instances took 15 days (p value 0.56).

CONCLUSIONS

Open and closed haemorrhoidectomy showed similar findings. No considerable pain difference was observed in both surgical procedures.

Authors Contribution

Conceptualization: KM

Methodology: KM, MI

Formal analysis: AH, AN

Writing, review and editing: RF, KA

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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