

ORIGINAL ARTICLE

A COMPARISON BETWEEN OPEN AND CLOSED HEMORRHOIDECTOMY

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Background: Haemorrhoidectomy is associated with complications including pain, bleeding and wound infection which can result prolonged hospital stay. Haemorrhoidectomy is considered to provide a better outcome in terms of postoperative pain and wound healing. Aims were to compare postoperative pain, bleeding, operating time and wound healing in patients undergoing open and closed haemorrhoidectomy. **Methods:** This comparative study was conducted in the surgical department at Fauji Foundation Hospital, Rawalpindi from December 13, 2006 to December 31, 2011. Consecutive patients, both male and female, presenting with 3rd and 4th degree haemorrhoids in the surgical Out-patient Department were included in this study. Half of the patients were assigned to the open haemorrhoidectomy group while the other half was put in the closed haemorrhoidectomy group. Each patient was evaluated by detailed history and examination. Both digital rectal examination (DRE) and proctoscopy were done to confirm the diagnosis. **Results:** A total of 260 patients were assessed, 130 in each group. In the open group, 52 patients experienced mild pain and 78 moderate while in the closed group, 30 patients experienced mild pain, 87 moderate and 13 patients severe pain. All 130 patients in the closed group showed complete wound healing after 2 weeks as compared to only 66 patients in the open group with a $p < 0.001$. Early and late postoperative bleeding was similar in both groups. **Conclusions:** The closed technique provides a better outcome in terms of less postoperative bleeding and complete wound healing, but it is associated with more pain.

Keywords: Open haemorrhoidectomy, closed haemorrhoidectomy, postoperative, pain

INTRODUCTION

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.¹ At least 50% patients over the age of 50 years have some degree of discomforts from them.^{2,3} Haemorrhoidectomy remains the treatment of choice for symptomatic grade-III and IV hemorrhoids.⁴ Millegan 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 prolonged hospital stay.⁶ Ferguson and Heaton haemorrhoidectomy is considered to provide a better outcome in terms of postoperative pain and wound healing.⁷ Recently, a variety of instruments including circular stapler^{8,9}, 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.^{10,11}

The objectives of the study were to compare postoperative pain, bleeding, operating time and wound healing in patients undergoing open and closed haemorrhoidectomy.

MATERIAL AND METHODS

The study was conducted in the Surgical Department of Fauji Foundation Hospital, Rawalpindi from Dec 13,

2006 to Dec 31, 2011. Patients presenting in the surgical OPD, after confirmation of diagnosis of 3rd and 4th degree haemorrhoids were included in the study. The diagnosis was confirmed by a complete history and examination, both digital rectal examination and proctoscopy. Half of the patients were assigned to the open haemorrhoidectomy group while the other half was put in the closed haemorrhoidectomy group.

Patients with concomitant ano-rectal disorder like anal fissure, fistula, perianal abscess, ulcerative colitis, Crohn's disease and rectal cancer were excluded, however patients with chronic disorder like diabetes mellitus, hypertension and ischemic heart disease were included in the study. Baseline investigations like complete blood counts (CBC), routine examination of urine, random blood sugar, urea, creatinine, chest X-rays and ECG were done. A Polyethylene-Glycol enema was given at midnight.

Statistical analysis was performed using SPSS-10 and $p < 0.05$ was considered significant.

RESULTS

A total of 260 patients were assessed, 130 in each group. The age range of our study population was from 17 years to 87 years. The median age was 48.5 years. The mean age in the open group was 47.43 while in the closed group was 50 years.

Out of the 260 patients, there were 191 women (73.46%) and 69 men (26.54%). There were 91 women and 39 men in the open group and 100 women and 30 men in the closed group. The mean operating time was

significantly shorter 38.76 minutes than in the closed group 48.25. The pain scores were significantly low in the open group with 52 patients experiencing mild pain and 78 moderate as compare to the closed group with 30 patients experiencing mild pain, 87 moderate while 13 patients experienced severe pain ($p<0.1$) (Figure-1).

All 130 patients in the closed group showed complete wound healing after 2 weeks as compared to only 66 patients in the open group ($p<0.001$). Early postoperative bleeding was noted in 44 patients in open haemorrhoidectomy as compared to 18 patients in the closed group ($p<0.067$). Late postoperative bleeding was seen in 13 patients in open haemorrhoidectomy as compared to 9 patients in the closed group ($p<0.64$).

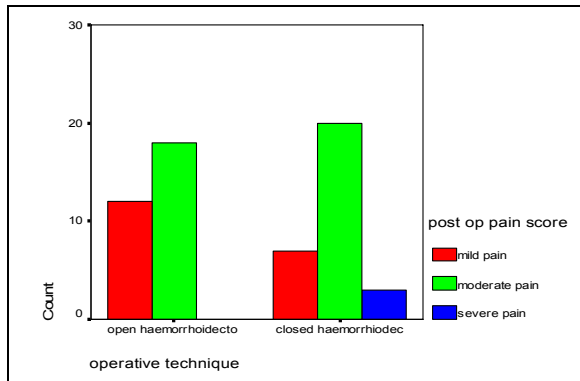


Figure-1: Postoperative pain score

DISCUSSION

The lining of the anal canal is among the most richly innervated tissue in the digestive tract. Thus, pain after haemorrhoidectomy is certainly an expected postoperative outcome. A great deal of emphasis has been applied to the management of pain after haemorrhoidectomy, not only because of the pain but also because of its role in urinary symptoms.¹³ The over enthusiastic use of intravenous fluids during the procedure may contribute to the high incidence of urinary retention¹⁴, as will spinal anaesthesia. Several studies have attempted to identify the various approaches to post-haemorrhoidectomy pain reduction. Although stapled haemorrhoidopexy is applicable for treating reducible haemorrhoidal prolapse¹⁵ and is associated with less post-operative pain but is also associated with a number of reported complications^{16,17}. The choice of surgical technique has also been a subject of considerable debate. The exposed area of the anal canal following open haemorrhoidectomy has been implicated as the cause of the pain. For this reason, closed haemorrhoidectomy has been advocated, although the cost¹⁸ per patient and morbidity did not show any statistically significant differences between the open and closed methods of haemorrhoidectomy. The Ferguson closed haemorrhoidectomy has reportedly been associated with less postoperative discomfort, faster healing, intact postoperative continence, and no need for

subsequent anal dilation. Furthermore, the postoperative infection rate has been reported at 2% in a large series of 2,038 patients. Similarly, McConnell and Khubchandani reported a small incidence of postoperative pain, infection, and faster healing.¹⁹ Although initial results were favourable, the merits of this technique have not been supported by recent published series. In a randomised trial, Arbman *et al*²⁰ reported that although wound healing was considerably faster in patients operated on by the Ferguson technique there was no reduction in postoperative pain. In another randomised trial, Carapeti showed that there was no significant difference in the mean pain scores between the open and closed haemorrhoidectomy techniques.²¹ In yet another prospective, randomised trial, Gencosmanoglu *et al* reported that the open technique is more advantageous in that patients experience less discomfort during the early post-operative period, although the healing time was shorter with the closed technique.⁶ A study conducted by The American Society of Colon and Rectal Surgeons did not support the assumption that the closed technique was associated with significantly less pain. This controversial discrepancy between initial favourable results and those of recent randomized trials prompted our prospective, randomized trial in an attempt to further elucidate the merits and drawbacks of both techniques.

We found that the pain scores were significantly lower in the open group with 12 patients experiencing mild pain and 18 moderate as compare to closed group with 7 patients experiencing mild pain 20 moderate and 3 patients experienced severe pain.

Gencosmanoglu *et al* concluded that despite the longer healing time, pain is less when the operation is performed open.⁶ This is inconsistent with our findings where open haemorrhoidectomy was associated with less post operative pain. To preserve the lower anal squamous mucosa, it is mandatory to use narrow elliptical incisions on the haemorrhoids, undermining both flaps. Excising the vascular cushion and undermining both flaps to a varying degree results in thin wound margins. Heavy suture material applied to thin wound margins may cause ischemia, pain, or wound may have caused increased pain in previously reported series. We used a thin 5-0 chromic suture that was strong enough to approximate the wound margins. Only three patients (7.5%) in our study had wound dehiscence and without significant infection.

Wound healing is another important aspect of the outcome after haemorrhoidectomy. Wound dehiscence rates following closed haemorrhoidectomy reportedly range from 24-56%. Ho *et al* conducted a randomized, controlled trial comparing wound healing and postoperative pain after open and closed hemorrhoidectomy.²² They reported faster (4.9 weeks versus 6.9 weeks in the open and closed groups, respectively) and more reliable wound healing (8 patients

had wound dehiscence in the closed group) with the open haemorrhoidectomy technique. Wound dehiscence may have been caused by the thermal damage to the wound margin from the diathermy used during the dissection, which may increase the possibility of wound infection and dehiscence especially in closed wounds.²² In general, more extensive thermal damage may translate into increased pain. We attempted to minimise thermal damage in the sensitive ano-dermal area. In our study, all the patients in the closed group showed complete wound healing after 2 weeks as compared to 15 patients in open group.

When closing the wound margins, it is important to restore the prolapsed lower anal canal mucosa to its normal position, thereby eliminating the need for excessive trimming to prevent tag formation. Our surgical technique included apposition of the mucocutaneous junction of each flap, which incorporated a bundle of internal anal sphincter approximately 2 cm above the lower border of the internal anal sphincter, thereby fixing the junction at its normal level. This technical aspect may have contributed to the lower incidence of tag formation in patients in closed group.

Massive post operative early bleeding that occurs in the recovery room is always the result of technical error and can usually be attributed to in proper or inadequate ligation of the haemorrhoidal pedicle. Such a complication requires emergency surgical intervention. This is quite unusual when Ferguson haemorrhoidectomy is performed, because care is taken in closing the wounds. In our study, early postoperative bleeding was noted in 44 patients in open haemorrhoidectomy as compared to 18 patients in closed group.

Late postoperative bleeding is usually the result of sepsis in the pedicle or erosion of the suture. This occurs in approximately 2% of haemorrhoidectomies. In our study, late post-operative bleeding was seen in 13 patients in open haemorrhoidectomy as compared to 7 patients in the closed group. These patients were treated conservatively with bedside anal packing and observation.

Basso and Pescatori observed an incidence of delayed bleeding of approximately 2% with a mean interval from the operation to haemorrhage of 4 days.²³ They employed a Foley's catheter technique for tamponade of the bleeding point.

CONCLUSIONS

The closed technique provides a better outcome in terms of less post operative bleeding and complete wound healing, but it is associated with more pain and requires longer operative time as compared to open haemorrhoidectomy.

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