

Haemorrhoidectomy: a Comparative Study of Open & Closed Methods

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Abstract:

Background: Haemorrhoidectomy is an operation for third and fourth degree hemorrhoids

Aim: To compare the closed (Ferguson) and open (Milligan-Morgan) methods.

Methods: A prospective study, eighty patients admitted with hemorrhoids were randomly allocated to either open or closed methods.

Results: Mean operative time was shorter in the open method. Analgesic requirement were less in the closed method. Healing time was shorter in the closed method.

Conclusions: The closed technique is associated with less pain during early post operative period and faster healing.

Key words: Haemorrhoids, open, closed, pain, healing time.

Introduction:

Hemorrhoids are cushions of submucosal tissue containing venules, arterioles and smooth muscles fibers that are located in the anal canal, hemorrhoids or piles are symptomatic anal cushion.¹

Hemorrhoidal disease is still a common problem 5% of the general population and 50% of individuals over 50 years of age have complaints related to hemorrhoids.²

Different modalities for dealing with non-complicated hemorrhoids as medical therapy, rubber band ligation, sclerotherapy cryotherapy and others are available.³

Hemorrhoidectomy is preferred for third and fourth degree which can be performed by a closed (Ferguson) or open (St. Mark's hospital) technique². The most common complications of hemorrhoidectomy are post-operative pain, bleeding, urinary retention and infection⁴.

The currently most popular, open procedure eliminating the vascular cushions was by Milligan et al, in 1937⁵, However in the United States closed hemorrhoidectomy as described by Ferguson and Heaton is the most popular⁶.

The open and closed technique are compared in this study with respect to operating time, analgesic requirement, hospital stay, morbidity rate, and healing time.

Patients and Methods:

A prospective study was carried out in the surgical unit at Al-Yarmouk Teaching Hospital for the period from 1st. November 2006 to 1st. November 2007. All patients with third and fourth degree hemorrhoids were randomly assigned by either the open or closed technique. Patients who have concomitant anal fissure or anal fistula were excluded. Data regarding the following variables were collected, personal data, type of anesthesia, type of operation, post operative complications, duration of hospitalization and pattern of wound healing. Operations were carried according to St. Mark's Hospital technique (open) where three quadrants hemorrhoidectomy was performed. And closed (Ferguson) technique, where the mucosa was approximated with absorbable suture material 3/0 polyglycolic acid (safil)

suture. Pain was evaluated according to a scoring system based on analgesic requirement, 0 = no need for analgesia.1 = need for analgesic once aday.2 = twice aday.3 = three times aday.4 = need for opioids .Patients were sorted into two groups Low group (score 0-2) and high group (score 3-4) analgesic requirement. The drugs used for analgesia were non steroidal anti inflammatory drugs (diclofenac) and opioids (tramadol) .Follow up was carried out at the first second and third week. Wound healing was assessed by inspection of the area. The total numbers of patients studied were eighty, forty patients in each group. Chi-squared test and Fisher's exact test were used for statistical analysis, A P value of less than 0.05 is considered significant.

Results:

A total of eighty patients were assessed 40 in each group. In the open group there were 22 males (55%) and 18 females(45%) with a median age of 39 years,(range 27-65years) In the closed group, there were 21males (52.5%)and 19 females (47.5%) with a median age of 41 years (range25-74 years).There was no significant difference in the median age, and gender distribution. Most presenting symptom was bleeding90% of patients (Table 1). Types of anesthesia were mainly general, which has less effect on post operative pain than spinal anesthesia (Table2).

There were no difference in the median number of hemorrhoids excised or degree of hemorrhoids between two groups. The mean operating time was significantly shorter in the open group (16.5 minutes; range 12-30 minutes) than in the closed group (25.2 minutes range 12-40 minutes) P <0.01 (Table3).The duration of hospitalization was not significantly different (P >0.05).

Healing time was significantly shorter in the closed group (2.8 ± 0.6 weeks) while (3.5 ± 0.5 weeks) in the open group.

Table 1: Patients' preoperative characteristics and type of anesthesia

<i>Parameter</i>	<i>Group A (open)</i>	<i>Group B (closed)</i>
<i>Age (years)</i>	39(27-65)	41(25-74)
<i>Male/Female ratio</i>	22/18	21/19
<i>Bleeding%</i>	90	87
<i>Soiling%</i>	70	74
<i>Pruritis %</i>	54	52
<i>Pain %</i>	10	5
<i>General Anesthesia</i>	35	37
<i>Regional (epidural, spinal)</i>	5	3

Table 2: Difference in operating time, duration of hospitalization, and healing time in both groups.

Parameter	Group A (Open)	Group B (closed)	P Value
<i>Operation time (minutes)</i>	16.5(12-30)	25.2(12-40)	<0.001
<i>Hospital stay (days)</i>	2.5±0.9*	2.8± 0.7*	>0.05
<i>Healing time (weeks)</i>	3.5±0.5*	2.8± 0.6*	<0.001

*Values are mean ± SD

Table 3. Analgesic requirement during post operative course

Day of Surgery	Group A (open)		Group B (closed)		P Value
	Low	High	Low	High	
0	18	22	30	10	0.006
1	25	15	33	7	0.045

Values are number of patients. Low analgesic requirement, score 0-2; high analgesic requirement, score 3-4.

Analgesic requirement was significantly higher in the open group (Table4).

No mortality was encountered .In group B, two patients (5%) had urinary retention which was relieved by catheterization, and one had anal stenosis (2.5%) which required two sessions of anal dilatation under general anesthesia in the second and third post operative months, while in group A only one patient 2.5% had urinary retention. Neither bleeding nor infections were observed.

Table 4.Randomized trial comparing open and closed techniques

Parameter	Gencosman Oglu et al¹⁵	Carapeti et al¹⁴	Ho et al¹³	Arbman et al¹²	This study
No. of patients with open/closed operations	40/40	17/18	34/33	39/38	40/40
Sphinctrotomy	No	No	No	yes	No
Anesthesia	General	Local	General/ caudal	Regional/ general	Regional/ general
Diathermy	Yes	Yes	Yes	Yes	No
Dissection Suture material	3-0 Vicryl™	Plain catgut 3-0	5-0 Vicryl™	5-0 Dexon	3-0 Safil
Less pain	Open	NS*	NS	NS	Closed

<i>Faster wound healing</i>	Closed	NS	Open	Closed	<i>Closed</i>
<i>Higher morbidity</i>	Closed	NS	NS	NS	<i>NS</i>
<i>Wound dehiscence</i>	None	10/18(56%)	8/33(24%)	None	<i>None</i>

*NS: not significant

Discussion:

The lining of the anal canal is among the most richly innervated tissue in the digestive tract. Thus pain after hemorrhoidectomy is certainly an expected postoperative sequel.² A great deal of emphasis has been applied to the management of pain after hemorrhoidectomy not only because of pain but also because of its role in urinary symptoms,⁷ Several studies have attempted to identify the various approach to post hemorrhoidectomy pain reduction. The choice of surgical technique has also been a subject of considerable debate the exposed area of anal canal following open hemorrhoidectomy has been implicated as a cause of pain. For this reason closed hemorrhoidectomy has been advocated.^{6,8} After Milligan-Morgan, wound healing is secondary and therefore large wound area causes pain in the first post operative period. Anal sensation is reduced because of loss of highly sensitive anoderm. Further retraction of scars can lead to stenosis of anal canal.⁹ this was not observed in our patients treated by this technique. The Ferguson closed technique has been reportedly associated with less post operative discomfort, faster healing, intact post operative continence, and no need for subsequent anal dilatation.¹⁰

Furthermore, the post operative infection rate had been reportedly at 0.2% in a large series of 2,038 patients. Similarly Mc Connell and Kubachandani reported a small incidence of post operative pain, infection, and faster healing.¹¹ Although initial results were favorable, the merits of this technique have been supported by recent published series (Table 4.)^{12,13} In a randomized trial Arbman et al.¹² reported that although wound healing was considerably faster in patients operated on by Ferguson technique there was no reduction in post operative pain.

In another randomized trial Carapeti et al.¹⁴ showed that there was no significant difference in the mean pain score between open and closed hemorrhoidectomy technique. In yet another prospective randomized trial Gencosmanoglu et al.¹⁵ reported that open technique is more advantageous in that patient experience less discomfort during the early post operative period although the healing time was shorter with closed technique. A study conducted by the American society of colon and rectal surgeons did not support the assumption that closed technique was associated with significantly less pain¹⁶. This controversial discrepancy between initial favorable results and those of recent randomized trial prompted our prospective randomized trial in an attempt to further elucidate the merits and drawbacks of both techniques. The patients who underwent Ferguson hemorrhoidectomy had less post operative pain and so helped recruit patients for this randomized study. In our study there was significant difference in the analgesic requirement during the post operative course in the day of operation and in the first post operative day as shown in table 3; so in closed hemorrhoidectomy patients have less post operative pain than in open hemorrhoidectomy as demonstrated by the analgesic requirement. In our study the closed technique takes longer operation time than the open technique, which was statistically significant, but there was no significant difference in the duration of

hospitalization. As for healing time it was faster in the closed technique than in the open technique as shown in table 2. This was similar to the results of Arbman et al¹² and Gencosmanoglu et al¹⁵.

Haemostasis must be meticulous. Diathermy can be used to ensure complete hemostasis, thus preventing hematoma which might get infected and might lead to disruption of the wound¹⁷. Excision of piles by diathermy will lead to damage of the edges of the wound and this will impair proper healing if the closed technique is used. Diathermy excision of hemorrhoid has not been shown to reduce post operative pain compared with scissor excision^{18,19}. In our study we did not encounter wound dehiscence; this was similar to results of Arbman et al¹² and Gencosmanoglu et al¹⁵.

Anal dilatation and lateral internal sphincterotomy in combination with open hemorrhoidectomy seem to offer no advantage regarding post operative pain and carries the risk of incontinence^{20,21}. In our study diathermy were not used and lateral internal sphincterotomy were not performed.

The result of this study showed that the closed technique is more advantageous with respect to less pain during the early post operative period and faster wound healing.

Conclusions:

Both operations closed and open are safe, easy to perform and lead to satisfactory results. However the closed procedure was found to cause less post operative discomfort leading to reduced hospital stay and early return to work as healing time is faster.

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