



## Original Article

# A Randomised Comparative Study between Open and Closed Haemorrhoidectomy

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## ABSTRACT

**Background:** Haemorrhoids are defined as dilated plexus of superior haemorrhoidal veins in relation to the anal canal. Haemorrhoidectomy can be performed by various techniques as open (Milligan Morgan), sub mucous resection (Park), closed (Ferguson) or by stapled techniques. Various outcomes have been reported with controversy still existing as to which of the techniques has an edge over the other. Aim of this study was to compare operating time, postoperative pain, hospital stay and wound healing in patients undergoing open and closed haemorrhoidectomy.

**Method:** 60 patients with third or fourth degree haemorrhoids were randomly assigned into two groups. They were randomized into two groups depending upon whether the patient registration number was odd or even. Patients in group A (Milligan-Morgan) were operated by an open method and patients in group B were operated by closed method (Ferguson technique).

**Results:** The mean age of patients in group A was  $44.25 \pm 1.80$  whereas mean age in group B was  $42.60 \pm 1.16$  years. In group A 60 % (18) of patients were males whereas 40% (12) were females. In group B 56.66 % (17) were males whereas females comprised of 43.33% (13). Demographic and other characteristic of patients in the two groups were comparable. All patients were operated under spinal anaesthesia in both the groups. The mean duration of surgery in group A was  $20.66 \pm 1.60$  minutes whereas in group B it was  $26.20 \pm 5.90$  minutes  $p$  value 0.001 (highly significant). In group A, mean VAS score on first post operative day was  $4.20 \pm 1.60$  while it was  $3.58 \pm 1.10$  in group B  $p$  value 0.085, (statistically not significant). VAS score on first act of defecation in group A was  $3.80 \pm 1.48$  while it was  $3.00 \pm 0.98$   $p$  value 0.001 (highly significant). Mean hospital stay in group A was  $2.10 \pm 0.40$  days while in group B, mean hospital stay was  $1.94 \pm 1.16$  days  $p$  value 0.78 (statistically not significant). Healing time in group A patients was  $4.40 \pm 0.70$  weeks while it was  $2.90 \pm 1.60$  weeks in group B  $p$  value 0.001 (highly significant). Only minor complications were encountered in the present study. There was no recurrence in both groups.

**Conclusions:** The closed technique provides a better outcome in terms of less postoperative pain, shorter duration of surgery, and early wound healing.

**Keywords:** Haemorrhoids, open, closed, pain, healing time.

## Introduction

Haemorrhoids are cushions of specialized submucosal vascular tissue located in the anal canal, and are one of the most common anorectal disorders<sup>(1)</sup>. The exact prevalence of symptomatic haemorrhoids is difficult to establish owing to under-reporting by patients. It has been estimated that 50% of the population has haemorrhoids by the age of 50 years<sup>(2)</sup>, and these are supposed to be the commonest cause of rectal bleeding<sup>(3)</sup>. It is more common in the prosperous societies, perhaps related to exercise, diet and bowel habits<sup>(4)</sup>. Both males and females are affected by haemorrhoids. They are more common in old age but young patients can also be affected. Haemorrhoidal symptoms may include bright red bleeding from the rectum, mucous discharge, perianal irritation, pruritus, perianal pain, prolapse of the haemorrhoidal cushions or protruding mass, soiling and difficulties with hygiene<sup>(1,5,6,7)</sup>. Clinically internal haemorrhoids can be classified into four degrees<sup>(8)</sup>.

Treatment options for haemorrhoidal disease range from conservative management such as advice on diet, lifestyle changes and application of topical ointments, to interventions that can be performed on an outpatient setting such as rubber band ligation<sup>(9)</sup>, infrared coagulation, injection sclerotherapy<sup>(10)</sup>, as well as surgical treatments. Based on the degree of prolapse and the classification grade III and IV haemorrhoids are amenable to surgical treatment. Haemorrhoidectomy can be performed by various techniques including open (Milligan Morgan)<sup>(11)</sup>, sub mucous resection (Park), closed (Ferguson)<sup>(12)</sup> or by stapled techniques.

## Materials and Methods

This prospective study was conducted in the Postgraduate Department of Surgery, Government Medical College, over a period of one year with effect from 1<sup>st</sup> November 2014 to 31<sup>st</sup> October 2015. 60 patients with third or fourth degree haemorrhoids were randomly assigned into two groups. They were randomized into two groups

depending upon whether the patient registration number was odd or even. Patients in group A were operated by an open method and patients in group B were operated by closed method. Open haemorrhoidectomy was performed according to the Milligan-Morgan (MMH) and closed technique according to the Ferguson technique (FH).

## Exclusion Criteria

Patients with complicated, secondary, external haemorrhoids or associated with anorectal disorders were excluded from the study.

Patients were evaluated by taking history, thorough general and local examination; digital rectal and proctoscopic examination. Patients were operated under spinal anaesthesia. Bowel preparation was done by administering enema initially at night and subsequently next morning prior to surgery. All information was recorded on pre-designed proforma. Patients were explained about the two procedures and then informed consent was taken about inclusion in the trial. After induction of anesthesia, the procedures were performed keeping the patient in lithotomy position. In 30 patients, Milligan Morgan's technique (open) was used. The skin incision was made on the mucocutaneous border and haemorrhoids were excised to the anorectal junction with diathermy. The base of pedicle was transfixed with 2/0 polyglactin. The resulting wounds were left open and anal canal was plugged. In the other 30 cases Fergusons (closed) procedure was performed, vascular pedicle was high ligated with 2/0 polyglactin. After achieving the haemostasis the wound in the mucosa and skin was closed with 3/0 polyglactin. Pain was assessed by Visual Analogue Scale score. Patients were explained that pain may be represented by a straight line 10 cm long. The extremes of which corresponds to '0' indicating 'no pain' at one end and '10' indicating 'worst pain' on the other end. Patients were asked to rate the pain depending on the severity. The pain score was taken on 1<sup>st</sup> postoperative day and than on first bowel movement. Outpatient follow-up continued

weekly until the wounds had completely healed. Healing was defined as complete re-epithelization of wound and absence of symptoms. Wound healing was examined by insertion of a small anoscope well lubricated with lignocaine gel. Wound dehiscence was defined as any gaping of the wound whether in the anal canal or perianal skin.

The objectives of this study was to compare operating time, postoperative pain, complications, hospital stay and wound healing in patients undergoing open and closed haemorrhoidectomy.

### Observation

60 patients with third or fourth degree haemorrhoids were randomly assigned to two groups. They were randomized into two groups depending upon whether the patient registration number was odd or even. Patients in group A were operated by an open method and patients in group B were operated by closed method .

Following parameters were recorded:

The age of the patients varied from 26 to 85 years. The mean age of patients in group A was  $44.25 \pm 1.80$  whereas mean age in group B was  $42.60 \pm 1.16$  years. In group A 60 % (18) of patients were males whereas 40% (12) were females. In group B 56.66 % (17) were males whereas females comprised of 43.33% (13) Demographic and other characteristic of patients in the two groups were comparable All patients were operated under

spinal anaesthesia in both groups. The mean duration of surgery in group A was  $20.66 \pm 1.60$  minutes whereas in group B it was  $26.20 \pm 5.90$  minutes. Pain was assessed by Visual Analogue Scale score. Patients were explained that pain may be represented by a straight line 10 cm long. The extremes of which corresponds to '0' indicating 'no pain' at one end and '10' indicating 'worst pain' on the other end. Patients were asked to rate the pain depending upon the severity. The VAS score on first post operative day in group A was  $4.20 \pm 1.60$  whereas VAS score in group B on first post operative day was  $3.58 \pm 1.10$  p value 0.085(not significant). VAS score on first act of defecation in group A was  $3.80 \pm 1.48$  while it was  $3.00 \pm 0.98$  p value 0.001(highly significant). Mean hospital stay in group A was  $2.10 \pm 0.40$  days while in group B, mean hospital stay was  $1.94 \pm 1.16$  days p value 0.78(statistically not significant). Healing time in group A patients was  $4.40 \pm 0.70$  weeks while it was  $2.90 \pm 1.60$  weeks in group B p value 0.001(highly significant). Only minor complications were encountered in the present study. There were four (13.33%) complications in group A. One patients had haemorrhage, three had urinary incontinence. In group B there were five (16.66%) complications. One patients had wound infection, two had wound dehiscence and two had urinary incontinence. There was no recurrence in both groups

**Table: 1**

Parameter	Group A (open)	Group B (Closed group)	P value
Age( in years)	$44.25 \pm 1.80$	$42.60 \pm 1.16$	NS
Sex			NS
Male	18	17	
Female	12	13	
Symtoms			
Bleeding %	92	90	
Soiling %	60	72	
Pruritis %	46	54	
Pain %	6	4	

Table: 2

Parameter	Group A (open)	Group B (Closed group)	P value
Anaesthesia			
GA	0	0	
Spinal anaesthesia	30	30	
Operating time (in minutes)	20.66±1.60	26.20±5.90	0.001
Hospital stay (in days)	2.10±0.40	1.94±1.16	0.78
Pain			
VAS 1 <sup>st</sup> 24hr	4.20±1.60	3.58±1.10	0.085
VAS 1 <sup>st</sup> act of defecation	3.80±1.48	3.00±0.98	0.001
Complications	4(13.33%)	5(16.66%)	
haemorrhage	1	0	
Infection	0	1	
Urinary incontinence	3	2	
Wound dehiscence	0	2	
Anal stenosis	0	0	
Recurrence	0	0	
Healing time (in weeks)	4.40±0.70	2.90±1.60	0.001

## Discussion

Hemorrhoids are universal and have been documented since ancient times. But their true Incidence and etiology remains indecisive. Most patients with hemorrhoids remain asymptomatic. They only seek advice once they develop symptoms. Many treatment modalities are available for haemorrhoids. Different modalities for dealing with non-complicated hemorrhoids as medical therapy, rubber band ligation, sclerotherapy cryotherapy and others are available<sup>(13)</sup>. Open excisional hemorrhoidectomy is the gold standard for third and fourth degree hemorrhoids. Haemorrhoidectomy can be performed by various techniques including open (Milligan Morgan), sub mucous resection (Park), closed (Ferguson) or by stapled techniques. In Europe, the Milligan-Morgan method is more commonly in use, while in the United States the closed haemorrhoidectomy method, as illustrated by Ferguson and Heaton, is a common and traditional method. Haemorrhoids can occur at any age but the peak incidence is found in 5th decade of life<sup>(14)</sup>. In our study majority of the patients were between 42-60 years of age. The mean age was 44.2±51.80 years in Group A whereas mean age in group B was 42.60±1.16years. There was male predominance in both the groups with males comprising of 60% in group A and 56.66% in group B. Similarly

Arroyo et al<sup>(15)</sup> concluded that the mean age of the patients presenting with symptomatic haemorrhoids was 43.5 years and there is male predominance. All the patients in our study were operated under spinal anaesthesia. The mean surgery time in group A was 20.66±1.60 minutes while it was 26.25±5.90 minutes in group B. In a study conducted by Shaikh AR et al<sup>(16)</sup> showed that mean operating time was significantly more in closed group 31.30±4.80 than open group 25.20±5.60 minutes which is similar to our study. In another study conducted by Hamid et al<sup>(17)</sup> showed mean operating time for closed haemorrhoidectomy 25.2 minutes while mean operating time for open haemorrhoidectomy in the same study was 16.5 minutes which was significantly shorter.

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<sup>(18)</sup>. A great deal of emphasis has been applied to the management of pain after hemorrhoidectomy.

The VAS score on first post operative day in group A was 4.20±1.60 whereas VAS score in group B on first post operative day was 3.58±1.10 p value 0.085(not significant). VAS score on first act of defecation in group A was 3.80±1.48 while it was 3.00±0.98 p value 0.001(highly significant). Similarly Arroyo et al<sup>(15)</sup> showed that VAS score

on defecation was more in open haemorrhoidectomy which was highly significant. Hospital stay in our study in group A was  $2.10 \pm 0.40$  days whereas hospital stay in group B was  $1.94 \pm 1.16$  p value 0.78 (not significant). Hosh et al<sup>(19)</sup> showed that hospital stay was more in open haemorrhoidectomy while Gencosmanoglu et al<sup>(20)</sup> showed opposite results.

Healing time in our study in group A was  $4.40 \pm 0.70$  while in group B it was  $2.90 \pm 1.60$  p value 0.001 (statistically highly significant). Similarly healing time was shorter and quick in closed haemorrhoidectomy as compared to open haemorrhoidectomy in studies conducted by Arroyo et al<sup>(15)</sup> and Arbman et al<sup>(21)</sup>.

### Conclusion

Both techniques are equally effective, safe and easy to perform. However closed technique has advantage of less operating time, less post operative pain and early wound healing.

**Sources of Support:** None

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