

# Comparison of Hemorrhoidectomy Using Bipolar Diathermy Vs Harmonic Scalpel

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## ABSTRACT

**Background:** Milligan-Morgan hemorrhoidectomy is conventional procedure but recent advances in harmonic and bipolar scalpel use in hemorrhoidectomy opened new gateway towards dissection of hemorrhoids and their pedicle ligation. Comparison between two is less studied in terms of pain outcome as patient perceives and operative time.

**Aim:** To compare outcome of hemorrhoidectomy using bipolar diathermy versus harmonic scalpel in a tertiary care hospital.

**Methods:** This randomized control trial study was conducted in Surgical Unit-1, Services Hospital Lahore from 31<sup>st</sup> April 2014 to 31<sup>st</sup> October 2014. One hundred and thirty patients were included. They were divided in two groups; group one, hemorrhoidectomy was carried out using bipolar diathermy technique and group two by harmonic scalpel method. All the patients presenting to surgical OPD with Symptomatic Grade III and all Grade IV Hemorrhoids were evaluated by consultant. Patients enrolled in the study will be hospitalized on the operation day and enema were performed twice (6 hours and 1 hour) prior to the operation. Patients were placed in the lithotomy position. After dilatation of anal canal, situation of hemorrhoids was determined with an anoscope. Anal spongostan will be placed for both patient groups to control bleeding. Time consumed will be calculated in minutes from first incision to last suture. Patients were given standard and equal dosing of diclofenic sodium and followed at 24 hour post operatively and on day 7 for pain on visual analogue scale.

**Results:** The mean age 38.32±12.84 years of group I and 36±12.36 of group 2. There were significant differences in operative time and post-operative pain score at 24 hours in both groups.

**Conclusion:** Bipolar hemorrhoidectomy is significantly better than hemorrhoidectomy with harmonic scalpel.

**Keywords:** VAS pain score, Harmonic hemorrhoidectomy, Ligasure hemorrhoidectomy

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## INTRODUCTION

The most common benign condition observed by surgeons specially deal in colorectal surgery is hemorrhoids. Hemorrhoids are the most common benign condition seen by colorectal surgeons as painful, swollen veins in the lower portion of the rectum or anus<sup>1</sup>. Although conservative treatment is often sufficient for early stages (Grade I and Grade II), late stage disease (Grade III and Grade IV) usually needs surgical treatment<sup>2</sup>. Conventional hemorrhoidectomy, including open and closed methods, is accepted as the gold standard for surgical treatment of hemorrhoids worldwide. It is a mind-numbing procedure associated with significant morbidity and a prolonged recovery<sup>3</sup>.

Modern techniques using harmonic scalpel (HS) and bipolar diathermy (BD) for ablation of

symptomatic third degree and all fourth-degree hemorrhoids are preferred over the conventional methods<sup>4,5,6</sup>. An Egyptian study demonstrated significantly reduced postoperative pain after harmonic scalpel hemorrhoidectomy compared with bipolar electro-cautery hemorrhoidectomy<sup>5</sup>, however another Egyptian study states operative time of 11±3 in HS hemorrhoidectomy and VAS pain score with the mean and SD on day 1 and 7 was 4.7±0.6 and 2.5±0.4, respectively<sup>7</sup>. But in a Japanese study<sup>6</sup>, it was found that Bipolar diathermy hemorrhoidectomy is speedy and controlled though as painful as hemorrhoidectomy with the harmonic scalpel, whereas another study shows operative time of bipolar diathermy hemorrhoidectomy with the mean and SD of 12.5±3 and VAS on day 1 and 7 was 3.2±0.6 and 1.2±0.2, respectively<sup>2</sup>. With bipolar diathermy hemorrhoidectomy short operating time median that is 16 minutes with p<0.0001 was observed while it was prolonged with hemorrhoidectomy with the harmonic scalpel, that was 31 minutes. There was a trend towards lower postoperative pain scores BD group with median pain score 2 (95% ci:

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1.8-3.5) vs. HS group with median pain score 3 (95% ci: 2.6-4.2), p=0.135<sup>7</sup>.

Current study aims to explore a better technique for hemorrhoidectomy in terms of pain outcome as patient perceives and operative time. We cannot follow toe to toe the guidelines developed by economically stable countries because of scarce resources. There is no local evidence available regarding comparison of both techniques. The available evidence is contradictory i.e. one study says that both techniques are similar while other says these are different<sup>6,7</sup>. This new study will help find a local evidence for treatment of choice for third and fourth degree hemorrhoids and may contribute in developing met analysis both in terms of patient perception and surgeons ease so we may make evidence based decisions.

### PATIENTS AND METHODS

This randomized control trial study was conducted in Surgical Unit-1, Services Hospital Lahore from 31<sup>st</sup> April 2014 to 31<sup>st</sup> October 2014. One hundred and thirty patients of symptomatic grade III and all grade IV hemorrhoids were included. They were divided in two groups; group one, hemorrhoidectomy was carried out using bipolar diathermy technique and group two by harmonic scalpel method. Patients age from 16-60 years, either sex and symptomatic Grade III and all Grade IV Hemorrhoids determined by rectal examination were included. Those patients with permanently prolapsed hemorrhoids limited to one quadrant, ASA grade III and IV, other anorectal pathology, inability to give informed consent and BMI >40 kg/m<sup>2</sup> were excluded. Patients were advised baseline investigations that include CBC, PT/INR, HBsAg and Anti HCV. Patients were placed in the lithotomy position. After dilatation of anal canal, situation of hemorrhoids were determined with an anoscope. Selected procedures were carried out according to assigned grouping. Anal spongostan was placed for both patient groups to control bleeding. Time consumed calculated in minutes from first incision to last suture. Patients were given standard and equal dosing of NSAIDs and followed at 24 hour post operatively and on day 7 for pain on visual analogue scale. All the data from the proforma will be entered and analyzed in the SPSS version 17. Student t-test was applied to determine statistical difference in pain score and operative time in both groups. A value of p<0.05 was considered as significant.

### RESULTS

One hundred and thirty patients were randomized to the trial. The mean operating time was significantly shorter in group 1 [2.77±0.86 min] than in group 2 [3.89±0.72 min], P<0.001. Analysis of the postoperative pain scores revealed a trend toward less discomfort at 24 hours after surgery in group 1 patients, although this was statistically significant (P<0.0001). Post operatively pain score was less in group one as compared to other groups.(table 1).

Table 1: Comparison of parameters in both groups

Variable	Group I	Group II	P value
Age	38±12.84	36±12.36	.00
Operative time	2.77±0.8.6	3.89±0.72	.00
VAS	2.77±0.8.6	3.89±0.72	.00

### DISCUSSION

In case of prolapse, hemorrhoidectomy is the most effective and decisive treatment. However, pain after conventional excision hemorrhoidectomy lasts longer, many centers around the world are comparing different modalities which prove to have significantly low operating time and post operative pain against standard treatment that is open hemorrhoidectomy<sup>1-7</sup>.

TO GET localized coagulation with minimal thermal spread, bipolar electrothermal device delivers ideal electrocautery energy across the diathermy forceps AS compared with electrocautery instruments<sup>8</sup>. The ultrasonically activated scalpel operates at high-frequency ultrasonic energy and at temperature less than 100°C, which divides the tissue in such a way that is associated with less unwanted tissue desiccation, char formation and zone of thermal injury in relation with electrocautery instruments<sup>9</sup>. Moreover system may contribute to lower postoperative pain.

Our studies shows mean operative time of 18.38±3.067 and VAS 3.23±0.899 in both groups (Table 1) which is significantly better when compared to open hemorrhoidectomy as shown in previous studies<sup>1-7</sup>.

Gender distribution shows 34.5% of total were females and 63.5% were male making it 39 females and 85 males who subjected to study. However international data tells 1:1 male female ratio. This difference might be because of conservative socio-cultural environment which renders the female population to present the disease. Harmonic scalpel was offered to 39 males and 46 were subjected to bipolar diathermy whereas out of 45 females 19 were operated with bipolar diathermy and 26 with harmonic scalpel.

Kwok et al<sup>10</sup> reported that the postoperative pain was less after bipolar diathermy hemorrhoidectomy than hemorrhoidectomy with the ultrasonic scalpel, where the wounds were left open. Because bipolar diathermy surgery is considered as a sutureless closed hemorrhoidectomy<sup>11,12</sup> and the wounds were closed in the ultrasonic scalpel group in the present study, treatment of wounds seemed to be identical in both groups. There was some evidence that closed hemorrhoidectomy was associated with less pain compared with open controls during the early postoperative period.<sup>13,14</sup> Our studies, where mean VAS was  $2.77 \pm 0.806$  in bipolar diathermy and  $3.69 \pm 0.72$  in harmonic scalpel group where as mean operating time in bipolar diathermy group was  $15.82 \pm 1.619$  and  $20.94 \pm 1.722$  in harmonic scalpel group. This shows bipolar diathermy hemorrhoidectomy significantly better than hemorrhoidectomy with harmonic scalpel. Contrarily Tsunoda et al<sup>6</sup> reports that there is no significant difference between two groups. 130 patients were enrolled to the study, 65 in each group. 28 patients which is 21% of total were smoker and 14 patients which is 10.8% were diabetic.

## CONCLUSION

Under provided number of patients the initial hypothesis is rejected and concluded that bipolar diathermy hemorrhoidectomy is better in terms of mean operating time and mean post op. pain than harmonic scalpel hemorrhoidectomy.

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