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Original Research Article

A prospective comparative study of surgical treatment of haemorrhoids: harmonic vs open haemorrhoidectomy vs minimally invasive procedure for haemorrhoids and its clinical outcome

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ABSTRACT

Background: Haemorrhoids are a prevalent anorectal disorder affecting roughly 25–30% of the population, with incidence rising with age. This study was designed to compare open haemorrhoidectomy methods with both MIPH and harmonic scalpel-assisted procedures. It aims to assess and contrast clinical outcomes, recovery duration, and complication rates among these surgical approaches.
Methods: A comparative prospective study was conducted with 50 patients in each group. Patients were randomly allocated in each group and followed for a period of two month. Mean duration of surgery, hospital stay, complications, results outcome and follow up complications were compared.
Results: Mean time was maximum in open haemorrhoidectomy 36.78±5.676 mins, followed by harmonic 27.46±0.71 min. MIPH procedure took the least time of 17.6±4.2426 mins. In open haemorrhoidectomy duration of stay was 3.02±0.807 days. In harmonic and MIPH the mean duration of stay was 1.8±0.7071 and 1.94±0.506 respectively. Complications were more in Open followed by Harmonic and MIPH procedure respectively.
Conclusions: Despite its higher cost, MIPH demonstrated superior outcomes when compared to open and harmonic haemorrhoidectomy techniques.

Keywords: Haemorrhoid's, Harmonic haemorrhoidectomy, Open haemorrhoidectomy, MIPH, Postoperative complications

INTRODUCTION

Hemorrhoids are a prevalent anorectal disorder affecting roughly 25–30% of the population, with incidence rising with age. Treatment strategies depend on the severity and classification. Early-stage hemorrhoids (Grades I and II) are usually managed with non-surgical methods, including rubber band ligation, sclerotherapy, infrared coagulation, and cryotherapy. For more advanced stages (Grades III and IV), surgical intervention is often necessary. Classic surgical methods include the Milligan-Morgan open hemorrhoidectomy, introduced in 1937, and Ferguson's closed hemorrhoidectomy from 1959. Despite their effectiveness, these techniques are linked to significant postoperative issues, such as pain, bleeding, urinary retention, and potential anal stenosis as mentioned in previous several studies.[1-15] A notable advancement occurred in 1993 when Longo introduced the stapled hemorrhoidopexy also known as the Minimally Invasive Hemorrhoid Procedure (MIPH). This method excises a circumferential ring of rectal mucosa above the dentate line, repositioning the prolapsed hemorrhoidal tissue and sparing the sensitive lower anal mucosa, thereby reducing postoperative pain. Another

significant development came in 1998 with the introduction of the harmonic scalpel, which uses ultrasonic energy to simultaneously cut and coagulate tissue. This technique minimizes tissue trauma and postoperative discomfort. The present prospective study is designed to compare conventional hemorrhoidectomy methods with both MIPH and harmonic scalpel-assisted procedures. It aims to assess and contrast clinical outcomes, recovery duration, and complication rates among these surgical approaches. As previously done in several studies by other authors mentioned in references.

METHODS

A comparative prospective study was conducted in Department of surgery, Mahatma Gandhi Medical College and Hospital between March 2023 to August 2024 Patients undergoing surgical intervention for haemorrhoids were included in the study after getting institutional ethical committee approval, Total of 150 patients, 50 in each group calculated with appropriate statistical power Patients were randomly assigned to one of the three groups using the chit method. A total of 150 chits, each representing a study group, were prepared. Allocation was based on the chit drawn by a colleague. Patients >18 years of age and with grade II, III, IV haemorrhoids were included in the study. Patients with fissures or fistulas-in-ano, anal incontinence, rectal prolapse, malignancy, or anal stenosis and Grade I haemorrhoids were excluded from the study. Eligible patients presenting at the General Surgery OPD with Grade II-IV haemorrhoids underwent comprehensive clinical evaluation including history, physical examination, and proctoscopy. Following informed consent, routine investigations (CBC, RFT, LFT, ECG, Chest X-ray, coagulation profile) were conducted. Patients with comorbidities were assessed for fitness by specialists. Anticoagulants like aspirin were stopped 7 days prior to surgery. These patients were followed up for a duration of 2 months and the complication and outcomes were noted.

Statistical analysis

All collected data were recorded using Microsoft Excel and analysed using SPSS software. A p-value <0.05 was considered statistically significant.

RESULTS

The current study included 28% (42) females and 72% males. Maximum study participants were in 40-47 age category followed by 48-55 age group. 25 (16.67%) participants were present in 32-39 and 64-72 age group and least in 22-31 age group (6.67%). Constipation was the most symptom presented by 110 out of 150 patients. 49.3% presented with prolapse followed by pain (30.7%). 25.3% patients presented with bleeding. Mean time was maximum in open haemorrhoidectomy 36.78±5.676 mins. Followed by harmonic 27.46±0.71min. MIPH procedure took the least time of 17.6±4.2426 mins. On statistical analysis this difference was found to be statistically significant (p value<0.0001).

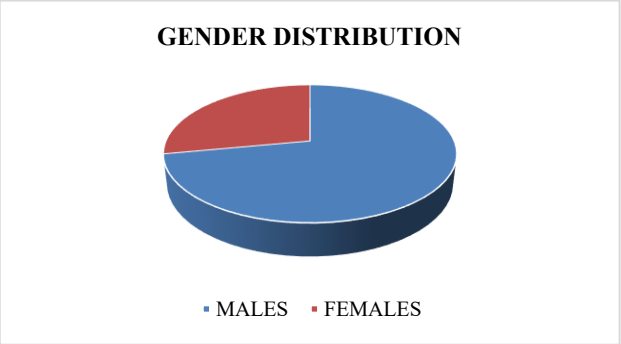

Figure 1: Gender distribution of study participants.

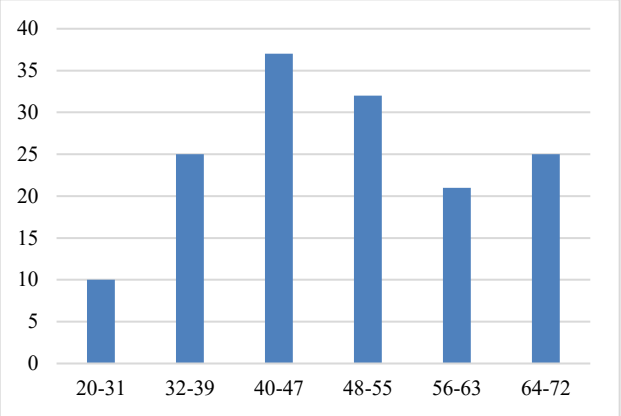

Figure 2: Age distribution of study patients.

Table 1: Symptoms in post operative period.

Symptoms	Harmonic	MIPH	Open	P value
Pain	1 (3.44%)	0 (0%)	28 (96.56%)	<0.00
Bleeding	5 (16.66%)	1 (3.33%)	24 (80%)	<0.00
Discharge	2 (22.22%)	1 (1.11%)	8 (88.88%)	0.02
Retention of urine	6 (22.22%)	8 (29.62%)	13(48.14%)	0.28

In open haemorrhoidectomy duration of stay was 3.02±0.807 days. In harmonic and MIPH the mean duration of stay was 1.8±0.7071 and 1.94±0.506 respectively. On statistical analysis this difference was found to statistically significant. (p value<0.0001).

Table 1 shows the symptoms in the post operative period. Pain, bleeding, discharge and retention of urine was maximum in open haemorrhoidectomy as compared to harmonic and MIPH.

Table 2: Follow up after 1 month.

Symptoms	Harmonic	MIPH	Open	P value
Pain	0 (0%)	1 (09.09%)	10 (90.90%)	0.0007
Bleeding	0 (0%)	1 (12.5%)	7 (87.5%)	0.016
Constipation	2 (14.28%)	1 (7.14%)	11 (78.57%)	0.003
Anal irritation	0 (0%)	0 (0%)	8 (100%)	0.001

Table 3: Follow up after 2 months.

Symptoms	Harmonic	MIPH	Open	P value
Pain	0 (0%)	0 (0%)	8 (100%)	0.001
Bleeding	0 (0%)	0 (0%)	7 (100%)	0.004
Constipation	1 (7.14%)	0 (0%)	13 (92.85%)	0.0002
Anal irritation	0 (0%)	0 (0%)	11 (100%)	<0.001

Table 4: Result outcome.

Symptoms	Harmonic	MIPH	Open	Total
Cure	49 (98%)	49 (98%)	43 (86%)	141 (94%)
Recurrent	1 (2%)	1 (2%)	7 (14%)	9 (6%)
Total	50 (100%)	50 (100%)	50 (100%)	150

Chi square 8.15, df-2, p value: 0.014

Table 5: Duration of stay in operative procedure.

Operative procedure	Mean (mins)	SD
MIPH	17.6	4.2426
Open	36.78	5.676
Harmonic	27.46	0.7071

Table 2 show symptoms at the end of one month. Pain was seen in 11 patients out of which 10 (90.90%) underwent open haemorrhoidectomy. Bleeding was also seen in 8 patients out of which 7 (87.5%) underwent open haemorrhoidectomy. Constipation was complained by 14 patients out of which 11 (78.57%) underwent open haemorrhoidectomy while 2 underwent harmonic haemorrhoidectomy and 1 underwent MIPH. Anal irritation was seen only in 8 patients who underwent open haemorrhoidectomy. There was a significant difference in the symptoms among the three procedures (p value<0.05)

Table 3 shows symptoms after 2 months follow up. Pain and bleeding were seen only in open haemorrhoidectomy. Constipation was also seen in 9 patients out of which 92.85% underwent open surgery while 1 patient underwent harmonic haemorrhoidectomy. All the symptoms were significantly higher in open haemorrhoidectomy (p value <0.05).

Recurrence was seen in 1 out of 50 cases of Harmonic and MIPH while in open recurrence was seen in 7 out of 50 patients as shown in table 4 This difference was statistically significant. (p value=0.014).

DISCUSSION

Open haemorrhoidectomy had the longest mean duration at 36.78±5.68 minutes, followed by harmonic (27.46 ± 0.71 minutes) and MIPH, which was the shortest at 17.6±4.24 minutes. These results are comparable to those of who reported mean durations of 33.3.[1-15] minutes for open and 16.8 minutes for MIPH. Average MIPH durations of around 18 minutes.[1-3,8,11,13] A mean operative time of 19.2±2.14 minutes using the harmonic scalpel technique.[3,12] The average hospital stay was longest in the open surgery group (3.02±0.81 days), while it was shorter for harmonic (1.8±0.71 days) and MIPH (1.94±0.51 days). Other also observed similar trends, reporting 3.15 days for open and 1.9 days for MIPH. Noted an average stay of 2.5 days following open surgery.[1-15] Also found higher pain and bleeding rates in the open group (14 and 9 patients, respectively) compared to only 2 patients each in the MIPH group Discharge and urinary retention were similarly more common after open procedures reported post-op haemorrhage in 2.3% and urinary retention in 4.6% of patients.[1-13] reported a 20% urinary retention rate (6/30 patients) and 3.3% incidence of post-op bleeding with harmonic, which resolved conservatively.

Recurrence was recorded in 1 patient (2%) each from the harmonic and MIPH groups, compared to 7 patients (14%) from the open surgery group observed a 15% recurrence in open procedures and none in the stapled group. Similar recurrence rates were reported by in open techniques.[3-9] In comparison, our harmonic group had slightly higher recurrence (2%) than some studies, but still relatively low.

Limitations

As lack of patient long follow up, we were not able to take data for more than 2 months postoperatively, author was not able to access long term complications like anal/rectal stenosis, fecal incontinence or recurrence. Other complications like postoperative pain, return to normal activity statements were also seems not reliable. Cost factor was another limitation. Many other factors may also influence the results like dietary habits, bowel habits, comorbidity and postoperative care etc.

CONCLUSION

As compared with open and harmonic haemorrhoidectomy techniques in author opinion MIPH appears better in lieu of shorter operative time fewer postoperative complications, short hospital stay/ low morbidity and recurrence rate making it more reasonable in spite of higher cost in author opinion. We would like to acknowledge all unit heads of department of surgery of our medical college who helped us a lot in providing cases for study.

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