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Original Research Article

A Prospective Comparative Study of Vessel Sealer Haemorrhoidectomy versus Conventional Milligan - Morgan Haemorrhoidectomy

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Conflict of interest: Nil

Abstract

Aims and Objective: The purpose of the current study was to compare the short-term outcomes between the VSH group and the MMH group in patients with grade 3 and grade 4 hemorrhoids.

Methods: In this study, 100 patients were involved, and they were split into two groups with 50 patients each: the Milligan Morgan Haemorrhoidectomy group (MMHG) and the Vessel sealer Haemorrhoidectomy group (VSHG). Data on demographics, surgical specifics, and postoperative parameters were assessed.

Result: Regarding mean age, gender, grade, and the number of hemorrhoids, there was no statistically significant difference between the two groups**.**The Mean operative time (min) (15.6 ±2.64 versus 24.16±4.30, p value 0.001) and mean intraoperative blood loss per pile mass (ml) (10.5±3.22 versus 20.98±4.02, p value 0.001) were less in VSHG. The mean postoperative pain score on Day 1 (4.6±0.79 versus 6.2± 0.80, p value 0.001), on Day 2 (2.5±0.54 versus 4.02±0.71, p value 0.001), on Day 3(1.92±0.49 versus 3.05±0.32, p value 0.001), the mean postoperative hospital stays (Days) (2.50±0.99 versus 3.48±0.97, p value 0.001), mean time to return to normal activity (Days) (9.54±2.34 versus 13.0±3.14, p value 0.0001), mean time to achieve complete wound healing (Days) (8.20±2.42 versus 10.82±2.48, p value 0.001) and postoperative urinary retention (4 versus 18, p value 0.001) were less in VSHG, although there was no postoperative hemorrhage in both groups. The mean patient's satisfaction score (3.90±0.61 versus 2.82±0.77, p value 0.006) was higher in VSHG.

Conclusion: Our research showed that hemorrhoidectomy with vascular sealing is safe and has a lot of immediate advantages.

Keywords: Vessel Sealer Haemorrhoidectomy, Milligan Morgan Haemorrhoidectomy.

Introduction

Anorectal hemorrhoids are characterized by the symptomatic expansion and distal displacement of the typical anal cushions, and are hence a fairly prevalent anorectal disease. Millions of people all across the world are affected by this serious health and economic issue.[1] For hemorrhoids of grades 3 and 4, the gold standard operation is hemorrhoidectomy, which outperforms any conservative treatment option. [2] Recently developed alternatives to the traditional Haemorrhoidectomy include the use of ultrasonic scalpels, circular staplers, and bipolar electrothermal devices. The traditional method of treating hemorrhoids has been modernized with the introduction of the bipolar vessel sealing device. [3] This study aimed to examine the differences between VSH and MMH in terms of short-term outcomes for individuals with haemorrhoids of grades 3 and 4.

Material and Methods

After receiving approval from the institute's Ethics committee, we conducted a prospective comparison study here over the course of a year. Two groups, each containing 100 patients, were chosen at random. Milligan Morgan haemorrhoidectomy (MMHG) via close envelope method, group B; Group A, Vessel Sealer haemorrhoidectomy (VSHG). Information such as demographics, clinical findings, laboratory investigation, surgical specifics, postoperative progression, follow-up events, etc. were collected using a tried-and-true proforma.

Inclusion Criteria: Males and females older than 18 years old with 3rd or 4th degree haemorrhoids who agreed to participate in the study.

Exclusion Criteria: Excluded groups included those under the age of 18, those with hemorrhoids of grades 1 and 2, those with hematological disorders or taking anticoagulants, those who had undergone anorectal surgery previously, those with co-morbidities like diabetes, HIV infection, immunosuppression, and rectal growth, and those who were not willing to participate in the study.

Written informed permission was obtained after patients were counseled on the benefits and risks of both operations. Each procedure was completed while the patient was lying in the lithotomy position and under spinal anaesthetic. Both procedures began with an examination under anesthesia and ended with the haemorrhoids being removed via artery forceps. Haemorrhoid retraction was performed in Group A (VSHG). To coagulate, seal, and divide the hemorrhoids, a vascular sealer probe with a scissor-like jaw was inserted 1-2 mm distant from the skin-mucosa interface. The pedicle was coagulated twice and split distally once it was reached. Group B (MMHG) had the procedure carried out in the usual fashion. [4]

The floor nurse documented the operative time and blood loss by weighing blood-soaked gauzes before and after the procedure. Postoperative pain was evaluated using a visual analogue scale (VAS), with 10 being the worst possible pain and 1 the least. In the postoperative period, [5] both groups received similar recommendations for antibiotics, pain relievers, and diet. Patients were advised to consume 3 tsf of Lactulose syrup twice daily and a high-fiber diet was recommended.

The recommendation was to take three 15-20 minute warm Sitz baths every day. Postoperative problems like bleeding, urine retention, etc. were recorded over the observational period. A patient satisfaction (PS) measure was used to keep track of how satisfied patients were on a scale from 1 (very dissatisfied) to 5 (extremely satisfied).

Patients were followed up with once a week until their wounds had healed and they could resume their normal routines.

Statistical Analysis

The data was entered in a computerized database. Statistical analysis was performed with SPSS software (ANOVA 3.0). Result was expressed as Mean ± SD or frequency (%). Unpaired independent T–test, independent chi square test and other statistical test were applied to various parameters in the two groups. P value <0.5 was taken as statistically significant.

Result

The two groups were equally matched in terms of age, gender, grade and number of pile mass.

Table 1: Demographic and Preoperative Data between the Two Groups.

Parameters	VSHG	MMHG	P value
Mean age ± SD (years)	41.18 ± 14.94	42.28 ± 14.05	0.54
Gender			
Male	39 (78%)	37 (74%)	0.64
Female	11 (22%)	13 (26%)	
Grade of Haemorrhoids			
IIIrd Grade	47 (94%)	37 (74%)	0.006
IVth Grade	3 (6%)	13 (26%)	
No of Haemorrhoids			
1	2 (4%)	4 (8%)	0.186
2	19 (38%)	11 (22%)	
3	29 (58%)	35 (70%)	

The Operative and Postoperative results are summarized in the Table 2 given below.

Table 2: Operative and Postoperative Results

Parameters	VSHG	MMHG	P value
Mean blood loss ± SD	10.5 ± 3.22	20.98 ± 4.02	0.001
Mean operative time ± SD	15.6 ± 2.64	24.16 ± 4.30	0.001
Mean post operative pain (VAS Score) ± SD			
Day 1	4.6 ± 0.79	6.2 ± 0.80	0.001
Day 2	2.5 ± 0.54	4.02 ± 0.71	0.001
Day 3	1.92 ± 0.49	3.05 ± 0.32	0.001
Postoperative urinary retention			
Yes	4 (8%)	18 (36%)	0.001
No	46 (92%)	32 (64%)	
Mean Postoperative hospital stay (days) ± SD	2.50 ± 0.99	3.48 ± 0.97	0.001
Mean Time to return to normal activity (days) ± SD	9.54 ± 2.34	13.0 ± 3.14	0.001
Mean Time to complete wound healing (days) ± SD	8.20 ± 2.42	10.82 ± 2.48	0.001

Table 3: Patient Satisfaction Score

Patient's Satisfaction Score	VSHG	MMHG	P value
Mean ± SD	3.90 ± 0.61	2.82 ± 0.77	0.006
1 (extremely dissatisfied)	0 (00%)	1 (2%)	0.001
2 (Dissatisfied)	2 (4%)	17 (34%)	
3 (Neither dissatisfied nor satisfied)	6 (12%)	22 (44%)	
4 (satisfied)	37 (74%)	10 (20%)	
5 (extremely satisfied)	5 (10%)	0 (00%)	

Discussion

There was no significant difference between the groups in terms of mean age, gender, grade of haemorrhoids, or number of pile mass; this suggests that differences in these preoperative characteristics cannot account for the observed outcomes. Our study's mean age (Table no.1) was comparable to that of Kemal Peker *et al*. [6] The percentage of male participants ranged from 33 percent to 60 percent in the Ligasure group and from 38 percent to 62 percent in the conventional group, according to a meta-analysis of 11 trials. Table no. 1 shows that the percentage of women was lower in our study. This could be attributable to a lower prevalence of hemorrhoids among women or simply to the fact that women are more reluctant to seek medical attention for this condition.

The percentage of patients with hemorrhoids of grade 3 (shown in Table no. 1) was greater in our study than in those of Manoj Kumar *et al*. [7] and Nighat Bakhtiar *et al*. [8]

Consistent with previous research (Table No. 4), VSHG patients experienced significantly less intraoperative blood loss compared to MMHG patients. The VSH's closed system of coagulation and cutting may be to blame for this, although the amount of blood loss reported shows a wide range in the VSHG, from 1.2 ± 1.6 ml [9] to 51.92 ± 15.68 ml [8] as reported in the literatures. (Table no. 4).

Table 4: Shows the Intraoperative Blood Loss (ml) as compared to literature.

Studies	VSHG (ml) ± SD	MMHG (ml) ± SD	P value
Our study	10.5 ± 3.22	20.98 ± 4.02	0.001
Manoj Kumar *et al* [7]	8.79 ± 4.81	57.67 ± 15.9	S
Rahul Kaushik *et al* [5]	23.33 ± 6.74	44.67 ± 9.28	0.001
Dr. Vinayaka *et al* [4]	17.50 ± 6.66	27.17 ± 2.52	0.001
Nighat Bakhtiar *et al* [8]	51.92 ± 15.68	70.34 ± 25.59	S
Wagih M. Ghnnam *et al* [10]	6.53 ± 2.9	28.79 ± 7.32	0.001
Olfat Issa EL *et al* [9]	1.2 ± 1.6	22.2 ± 6.58	0.001

Our data show that the VSHG has a significantly (p0.001) shorter mean operating time than the MMHG. The results are consistent with those of other investigations. [4,5,8,9] (5th Table)

Table 5: The operative time (min) as Compared to Literature

Studies	VSHG (min) ± SD	MMHG (min) ± SD	P value
Our study	15.6 ± 2.64	24.16 ± 4.30	0.001
Olfat Issa EL *et al* [9]	6.6 ± 2.1	21.7 ± 4.3	0.001
Rahul Kaushik *et al* [5]	26.17 ± 5.25	47.33 ± 5.87	0.001
Dr. Vinayaka *et al* [4]	25.17 ± 9.50	41.33 ± 4.97	<0.001
Nighat Bakhtiar *et al* [8]	36.6 ± 9.8	52.5 ± 11.9	-

The higher operative time in the conventional (MMHG) may be due to the need for dissection and to achieve hemostasis. (Table No. 5)

Consistent with other studies [7], our mean postoperative pain score (Table No. 2) on Day 1 was lower in the VSH compared to the MMH. (Table No. 6) Despite the fact that Day 1 pain scores did not differ significantly between studies in one research. [4]

Our mean post-operative pain score was lower in the vessel sealer group on days 2 and 3, which is consistent with previous research. [4,5,7] Possibly because of the open wound in the MMH group, the average postoperative

pain score was lower in the VSH group (Table No. 6).

Table 6

Studies	Day 1		P Value	Day 2		P Value	Day 3		P Value
	VSHG	MMHG		VSHG	MMHG		VSHG	MMHG	
Our Study	4.6 ± 0.79	6.2 ± 0.80	0.001	2.5 ± 0.54	4.02 ± 0.71	0.001	1.92 ± 0.49	3.05 ± 0.32	0.001
Dr. Vinayaka *et al* [4]	46.00 ± 8.14	47.33 ± 5.83	0.469 (NS)	26.00 ± 9.68	32.33 ± 4.30	0.002 (S)	-	-	
Rahul Kaushik *et al* [5]	6.33 ± 0.76	6.87 ± 0.73	0.004 (S)	-	-		2.23 ± 0.63	2.97 ± 0.89	0.001 (S)
Manoj Kumar *et al* [7]	2.80 ± 0.76	5.73 ±1.28	S	2.57 ± 0.73	5.20 ± 1.52	S	1.63 ± 0.81	2.97 ± 1.33	S

S = statistically Significant (P value < 0.05) NS = Not statistically significant

It is possible that the lower incidence of urine retention in the VSHG after surgery compared to the MMHG (Table No. 2) is attributable to the VSHG's lower incidence of postoperative discomfort. Our study's findings are consistent with those of similar studies. [4,5,7,10]

No patients in either group experienced any further issues, such as incontinence, anal stenosis, secondary bleeding, etc.

Table 7: Postoperative Complications as Compared to Literature

Studies	Urinary retention (no. of patients)	
	VSHG	MMHG
Our study	4	18
Dr. Vinayaka *et al* [4]	5	18
Rahul Kaushik *et al* [5]	4	5
Manoj Kumar *et al* [7]	2	4
Wagih Mommtaz Ghnnam *et al* [10]	0	1

Table 8: Postoperative Hospital Stay (in days) as Compared to Literature

Studies	VSHG (Days) ± SD	MMHG (Days) ± SD	P value
Our study	2.50 ± 0.99	3.48 ± 0.97	0.001
Manoj Kumar *et al* [7]	2.13 ± 0.78	2.30 ± 0.75	S
Rahul Kaushik *et al* [5]	3.13 ± 0.35	4.13 ± 0.51	0.001
Dr. Vinayaka *et al* [4]	6.20 ± 1.37	10.40 ± 1.52	<0.001

S – Significant

Our findings are consistent with the literature, which shows that the VSHG has a shorter mean postoperative hospital stay than the MMHG (Table No. 8). Reasons for this may include the VSHG's higher rate of wound healing, lower rate of postoperative complications, and lower pain score.

Table 9: Time to Return to Normal Activity (days) as Compared to Literature

Studies	VSHG (days) ± SD	MMHG (days) ± SD	P value
Our study	9.54 ± 2.34	13.0 ± 3.14	0.001
Wagih M. Ghnnam *et al* [10]	6.93 ± 1.7	15.46 ± 3.2	0.001
Manoj Kumar *et al* [7]	14.27 ± 1.96	17.80 ± 3.01	0.0001
Rahul Kaushik *et al* [5]	9.80 ± 1.42	12.93 ± 2.72	0.001
Dr. Vinayaka *et al* [4]	11.90 ± 2.04	10.20 ± 1.42	-

Compared to the MMHG, the VSHG had a quicker time to normal activity, as demonstrated in prior research. [5,7,10] (See Table 9) One study contradicted this finding, although the explanation described below could explain why: faster wound healing in the VSH.

Table 10: Time to Complete Wound Healing (in days) as compared to Literature

Studies	VSHG (days) ± SD	MMHG (days) ± SD	P value
Our study	8.20 ± 2.42	10.82 ± 2.48	0.001
Wagih M. Ghnnam *et al* [10]	15.24 ± 3.3	31.16 ± 6.7	0.001
Olfat Issa EL *et al* [9]	4.4 ± 0.68 (weeks)	6.4 ± 0.99 (weeks)	0.0001

The time taken to achieve complete wound healing is significant less in the VSHG as compared to MMHG, which is also seen in other studies. [9,10] (Table No. 10).

The mean patient satisfaction score was 3.90 ± 0.61 in VSHG and it was 2.82 ± 0.77 in MMHG. The difference was statistically significant (P value – 0.038). (Table No. 3).

Most of patients in VSHG the patient satisfaction score 43 (86%) was 3 (neither satisfied nor dissatisfied) and 4 (satisfied) in our study.

In VSHG showed significantly more patients satisfaction as compared to MMHG. (Table No. 3).

As compared with another study by Olfat Issa EL Sebaei er al[9], shows that the mean patient's satisfaction score (ranging from 0 to 10) was 8.7 ±1.67 in Ligasure group as compared to mean of 7.12 ± 1.31 in conventional group after 3 months of postoperative period. Consistent with our findings, the Ligasure group had higher patient satisfaction than the conventional group.

Faster wound healing, fewer problems after surgery, faster recovery time, and earlier release may all contribute to the higher satisfaction levels reported by VSHG patients.

Conclusion

Our research shows that vessel sealing Haemorrhoidectomy reduces the amount of blood lost during surgery, the length of time spent in surgery, the intensity of postoperative pain, the number of complications that arise, the time it takes for the patient to return to normal activities, the length of time it takes for the wound to heal, and the patient's level of satisfaction. According to our findings, the VSH is a secure procedure with immediate advantages.

Limitations of Study

Our study is limited by a lack of long-term follow-up and the fact that we only examined Vessel sealing in comparison to the Milligan Morgan method.

Recommendation

If there are no contraindications, the vessel sealer hemorrhoidectomy should be administered to all patients with third- and fourth-degree hemorrhoids.

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