

ORIGINAL ARTICLE

Comparative Study between Milligan Morgan Versus Ligasure HaemorrhoidectomyAFTAB AHMAD BAIG¹, MUHAMMAD SHAHID MEHMOOD², RIZWAN KHALID³, SAMAR GHUFRAN⁴, SALMAN MAJEED CHAUDHRY⁵, HUMMAZ MEHBUB⁶¹Assistant Professor, Akhtar Saeed Medical and Dental College Lahore²Assistant Professor Akhtar Saeed Medical and Dental College Lahore³Assistant Professor, Akhtar Saeed Medical and Dental College Lahore⁴Assistant Professor, Akhtar Saeed Medical and Dental College Lahore⁵Assistant Professor, Rahbar Medical and Dental College Lahore⁶Senior Registrar, Akhtar Saeed Medical and Dental College LahoreCorrespondence to: Aftab Ahmad Baig, Email: draabaig@gmail.com, Cell: 03214556215**ABSTRACT****Purpose of Study:** To compare the short term outcome of Ligasure haemorrhoidectomy with Milligan Morgan technique for third and fourth degree haemorrhoids.**Design of Study:** The present study was a single-blind randomized controlled trial.**Duration and Location of Study:** This trial was conducted at Akhtar Saeed Trust Teaching Hospital, Lahore. Duration of study is 6 months June 2021 to December 2021.**Patients and Methods:** A total of 80 subjects suffering from 3rd or 4th degree haemorrhoids were enrolled in the study and divided into two groups using lottery method. An informed written consent was taken from all the patients. Patients in group A (LS group) underwent Ligasure haemorrhoidectomy while patients in group B (MM group) underwent Milligan Morgan haemorrhoidectomy. Mean and standard deviation was calculated for numerical variables like age, operation time and postoperative pain on VAS score. Frequency and percentage was calculated categorical variables like gender, disease severity, bleeding, occurrence of urinary retention, anal stenosis and necrosis. SPSS version 22.0 was used for data analysis.**Results of the Study:** The patients had a mean age of 41.54±6.380 years within age range of 35-62 years. Number of male participants was high as 49 (61.3%) while compared with females who were 31 (38.7%) in total study sample of 80 subjects with a male to female ratio of 1.58:1. Number of patients with 3rd degree haemorrhoids was 53 (66.3%) whereas 27 (33.8%) patients had 4th degree haemorrhoids. LS was found to have significantly less operation time as 15.03±1.928 vs. 20.40±2.228 minutes; p-value=0.000. Postoperative pain was significantly less in LS group than MM group (4.20±0.883 vs. 5.23±0.891; p-value=0.000). Frequency of postoperative bleeding was also significantly less in LS group than MM group (5.0% vs. 25.0%; p-value=0.013). Occurrence of urinary retention was high in the LS group but the difference was not significant (p=0.247). Frequency of anal stenosis and necrosis was also less in LS group than MM group but the difference was not statistically significant with p-value=0.077 and 0.500, respectively.**Conclusion:** Ligasure haemorrhoidectomy was found superior to Milligan Morgan hemorrhoidectomy in managing patients with third and fourth degree haemorrhoids because it has considerably less operation time, postoperative pain and bleeding. Thus, Ligasure haemorrhoidectomy should be favored in the treatment of such cases in future surgical practice on the basis of benefits of Ligasure haemorrhoidectomy.**Keywords:** Hemorrhoids, Ligasure Haemorrhoidectomy, Milligan Morgan Hemorrhoidectomy**INTRODUCTION**

Hemorrhoids are defined as the symptomatic enlargement and distal displacement of the normal anal cushions. Regardless of gender, this prevalent condition affects adults worldwide and is linked to anal cushion prolapse.¹ According to numerous researches, its prevalence ranges from 39 to 50%. However, it is impossible to report the occurrence of this condition accurately since some patients may choose not to seek medical attention.^{1,2} Due to a misunderstanding of its aetiology, doctors and patients will occasionally refer to other benign anorectal disorders such as abscesses, fistulas, and fissures as "haemorrhoids." There are two types of haemorrhoids: internal and external.³ Although individuals with external haemorrhoids experience significant discomfort when seated, fortunately, they are simple to treat. Internal haemorrhoids can cause symptoms such as prolapse, wetness, swelling, mucus discharge, pain, bleeding, itching, burning, and/or difficulties maintaining proper urination. Internal haemorrhoids typically cause no somatic pain.⁴⁻⁶ However, patients' complaints of pain may actually be the result of burning, itching, or uncomfortable feelings. Perineal excoriation and fissures are two additional sources of pain that should be taken into account. Internal haemorrhoids that are strangulated or thrombosed can cause excruciating discomfort. Stool discomfort and bleeding that is typically bright red and occurs at the conclusion of a bowel movement are symptoms of engorged haemorrhoids.⁷⁻⁸

The age range between 45 and 65 has been recorded as the peak occurrence. Hemorrhoids are more common in Caucasians than in African Americans, and they are more common in people with better socioeconomic status. Constipation, exertion, and

pregnancy all contribute to raising intra-abdominal pressure, as can elements that weaken the supporting tissue. Even if the morbidity rate is modest, it has a negative impact on quality of life and places a financial burden on health care management departments.⁹⁻¹¹

Hemorrhoids treatment methods vary depending on the severity and extent of the symptoms and can range from straightforward food and lifestyle changes to extensive surgery. At least 64 ounces of water per day and a diet high in fiber (38 grams for males and 25 gram for females) have been advised. Additionally, physical exercise and maintaining a regular bowel routine can help to lessen symptoms. Cryotherapy, infrared coagulation, rubber band ligation, sclerotherapy, and radiofrequency ablation are some of the non-operative treatment methods available.^{12,13} Hemorrhoids of the first and second degrees are typically managed without surgery. However, stapled haemorrhoidopexy, Ferguson hemorrhoidectomy, and Milligan Morgan hemorrhoidectomy are the standard treatments for third and fourth degree haemorrhoids.^{11,14}

Recently, the Ligasure vascular sealing technology, which was originally created for abdominal surgery, has demonstrated effectiveness in lowering post-hemorrhoidectomy pain far below that of traditional hemorrhoidectomy. By completely coagulating vessels up to 7 mm in diameter, the Ligasure technology reduces tissue charring and heat spread. In fact, the method limits thermal diffusion to 2 mm or less of the surrounding tissue, reducing anal spasm and pain.¹⁵ Though different studies have reported significantly less operating time with Ligasure haemorrhoidectomy than Milligan Morgan technique, yet there is controversy with

regard to postoperative pain, post-operative bleeding, anal stenosis, urine retention and necrosis. Moreover, available evidence was limited to few international studies and there was no locally published material which warranted the present study with a hope that the results of this trial may deliver a better management option for such patients in future surgical practice decreasing complications related with haemorrhoidal disease and its surgical treatment.

PATIENTS AND METHODS

This randomized controlled trial was conducted over 6 months period at Akhtar Saeed Trust Teaching Hospital, Lahore from June 2021 to December 2021. Study sample of 80 cases was calculated using 95% level of significance and 80% power of test with expected operation time to be 15.0 ± 4.3 vs. 20.0 ± 6.4 minutes with Ligasure versus Milligan Morgan techniques, respectively.¹⁶ Patients of both the genders with age between 35-65 years, with 3rd or 4th degree symptomatic haemorrhoids and have not previously received conservative management were included in the study. Exclusion criteria was patients with bleeding disorders, other rectal pathology (rectal prolapse, tumors) and recurrent haemorrhoids after haemorrhoidectomy. By using lottery method, two equal treatment groups were made (n=40 each) where patients in group A underwent Ligasure haemorrhoidectomy while patients in group B were treated with Milligan Morgan technique. A normal saline enema and two suppositories of bisacodyl were received by patient's a night before surgery. Prior to operation they were given liquid diet and kept nil per oral for 8 hours. In Milligan Morgan procedure, the skin incision was made on the mucocutaneous border and haemorrhoids were excised to the anorectal junction with diathermy. The dissection was carried cranially to the pedicle, which was ligated with strong catgut and the distal part was excised. The wound was left open and a hemostatic gauze pad was left in the anal canal. The procedure was performed under general or epidural anesthesia. In patients of group B, the anal retractor was introduced to visualize surgical field. Allis artery forceps were placed on external component at the three main sites. Traction on these prolapse the internal components, relevant two artery forceps were grasped in the palm of left hand and the index finger extended anally to define the triangle of exposure. The mayo scissors were used to incised the skin. The external component was dissected off the underlying superficial external anal sphincter and separated the internal component from underlying internal anal sphincter, continually narrowing down the pedicle, and transfix and ligate the pedicle. The operation then proceed for the another two haemorrhoids. All the patients were given standard postoperative treatment protocol. All the demographics and study variables were recorded.

Mean \pm SD was used to present age, operation time and postoperative pain (VAS score). Frequency and percentage was used for gender, disease severity, bleeding, occurrence of urinary retention, anal stenosis and necrosis. Intendent sample T-test was used to compare mean values between the groups and frequency was compared using chi-square test and $p \leq 0.05$ has been considered statistically significant.

RESULTS

The patients suffering from 3rd or 4th degree haemorrhoids had a mean age of 41.54 ± 6.380 years within age range of 35-62 years. Number of male participants was high as 49 (61.3%) while compared with females who were 31 (38.7%) in total study sample of 80 subjects with a male to female ratio of 1.58:1. Number of patients with 3rd degree haemorrhoids was 53 (66.3%) whereas 27 (33.8%) patients had 4th degree haemorrhoids as given in Table 1.

There did not exist any inherit difference between the study groups with regard to age ($p=0.905$), gender ($p=0.818$) and disease severity ($p=0.813$) as shown in Table 2.

LS was found to have significantly less operation time as 15.03 ± 1.928 vs. 20.40 ± 2.228 minutes; p -value=0.000. Postoperative pain was significantly less in LS group than MM group (4.20 ± 0.883 vs. 5.23 ± 0.891 ; p -value=0.000). Frequency of postoperative bleeding was also significantly less in LS group than MM group (5.0% vs. 25.0%; p -value=0.013). Occurrence of urinary retention was high in the LS group but the difference was not significant ($p=0.247$). Frequency of anal stenosis and necrosis was also less in LS group than MM group but the difference was not statistically significant with p -value=0.077 and 0.500, respectively as given in Table 3.

Table 1: Baseline features of study cohort

Demographics	Studied Sample n=80
Age (years)	41.54 \pm 6.380
Gender	
• Male	49 (61.3%)
• Female	31 (38.7%)
Disease Severity	
• 3 rd Degree Haemorrhoids	53 (66.3%)
• 4 th Degree Haemorrhoids	27 (33.8%)

Table 2: Baseline features of study groups

Demographics	LS Group n=40	MM Group n=40	P
Age (years)	41.60 \pm 4.754	41.48 \pm 4.580	0.905
Gender			
• Male	25 (51.0%)	24 (49.0%)	0.818
• Female	15 (48.4%)	16 (51.6%)	
Disease Severity			
• 3 rd Degree Haemorrhoids	26 (49.1%)	27 (50.9%)	0.813
• 4 th Degree Haemorrhoids	14 (51.9%)	13 (48.1%)	

The experiment and the control group did not possess any significant inherit difference as shown by chi-square and independent sample t tests.

Table 3: Comparison of various outcome measures

Characteristics	LS Group n=40	MM Group n=40	P
Operation Time	15.03 \pm 1.928	20.40 \pm 2.228	0.000*
Post-Operative Pain (VAS score)	4.20 \pm 0.883	5.23 \pm 0.891	0.000*
Bleeding	2(5.0%)	10(25.0%)	0.013**
Occurrence of Urinary Retention	2 (5.0%)	0 (0.0%)	0.247**
Anal Stenosis	2(5.0%)	7(17.5%)	0.077**
Necrosis	0(0.0%)	1(2.5%)	0.500**

* t-test, ** Fisher's Exact test $p \leq 0.05$ is considered as significant

DISCUSSION

In this study, mean age of the patients was 41.54 ± 6.380 years. A similar mean age of patients suffering from haemorrhoids was also reported by Alhamdany et al. in Iraq as 40.62 ± 12.58 years, Sakr in Egypt as 41.56 ± 5.2 years and a little higher mean age of 43.2 ± 14.85 years was reported by Abdelaziz and Halim in Egypt.^{17,15,18} We found male predominance in the study population with a male to female ratio of 1.58:1. Similar male predominance in such patients has been previously reported by some other authors as 1.53:1 by Haksal et al. in Turkey and 1.60:1 by Alhamdany et al. in Iraq.^{16,17} However, this predominance was reported very high as 3.44:1 by Abdelaziz and Halim in Egypt.¹⁸ We observed frequency of 3rd degree haemorrhoids was high than 4th degree as 66.3%. A very higher frequency of 3rd degree haemorrhoids was reported by Alhamdany et al. as 93.46%. But quite less difference between 3rd and 4th degree haemorrhoids was reported by Abdelaziz and Halim as 51.3% and 48.7%, respectively.^{17,18}

Mean operation time was significantly less in Ligature haemorrhoidectomy group as 15.03 ± 1.925 vs. 20.40 ± 2.228 ; p -value=0.000 in comparison with the Milligan Morgan group. Similar, significantly less mean operation time was reported by some other studies as well. Aljabery and Jaber reported mean operation time between these two techniques as 12.2 ± 3.0 vs.

23.3±2.0; p-value=0.0001, Haksal et al. as 15.0±4.3 vs. 20.0±6.4; p-value<0.05 and Abdelaziz and Halim as 13.4±2.12 vs. 26.8±5.7; p-value<0.0001.^{19,16,18} At week 1, we found mean pain score significantly less in group A than group B as 4.20±.883 vs. 5.23±0.891, respectively. A similar significant difference was reported by Alhamdany et al. as 4.1±1.97 vs. 5.28±1.92; p-value=0.001 respectively and 3.8±0.3 vs. 5.9±0.7; p-value=0.0001 by Sakr et al.^{17,10}

We noticed mean bleeding was significantly less in LS group than MM group. It was 5.0% vs. 25.0% between the two groups respectively. A similar significantly less mean bleeding in LS group in comparison with MM group was reported by Haksal et al. where it was 4.7% vs. 24.0%; p-value <0.05.¹⁶ In this study, frequency of necrosis was insignificantly less LS group than MM group where it was 0.0% vs. 2.5%; p-value=0.500. Similar findings were given by Haksal et al. as 0.0% vs. 0.5%; p-value=0.999.¹⁶ This study found insignificant difference in urinary retention and the results matches with previously reported studies where similar insignificant difference was reported by Sakr et al, Alhamdany et al. and Abdelaziz and Halim.^{15,17,18} Frequency of anal stenosis between the groups in this study also did not differ significantly and the findings are similar to that of Haksal et al. and Sakr et al.^{16,15}

In the light of findings of this study, Ligasure Haemorrhoidectomy can be promoted for management patients with third and fourth degree haemorrhoids in future. A very key limitation to this trial was that the other outcome measures of surgery e.g. length of hospital stay, procedure cost, blood loss and revision surgery were not addressed despite of the fact that these parameters should be addressed prior to approve Ligasure haemorrhoidectomy in routine surgical practice. A study addressing these limitations is hence recommended in future clinical research.

CONCLUSION

Ligasure haemorrhoidectomy was found superior to Milligan Morgan haemorrhoidectomy in managing patients with third and fourth degree haemorrhoids because it has considerably less operation time, postoperative pain and bleeding. Thus, Ligasure haemorrhoidectomy should be favored in the treatment of such cases in future surgical practice.

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