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Comparison of LigaSure Versus Conventional (Milligan-Morgan) Hemorrhoidectomy for The Treatment of 3rd Degree Hemorrhoids

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ABSTRACT

Objective: To compare Ligasure hemorrhoidectomy with conventional Milligan Morgan hemorrhoidectomy for treatment of third-degree hemorrhoids in terms of mean per-operative blood loss and post-operative pain. **Study Design:** Randomized Controlled Trial. **Settings:** Department of General Surgery, Allied Hospital Faisalabad. **Duration:** 8th August 2016 to 7th February 2017. **Methodology:** A total of 60 patients were placed randomly into two equal groups. Group A in which Ligasure hemorrhoidectomy was done while group B included the cases in which conventional Milligan Morgan hemorrhoidectomy was done. Data was collected for blood loss and pain. **Results:** Patient's mean age was 50.40 ± 14.90 and 48.47 ± 13.63 years in group A and Group B respectively. Forty one out of 60 patients were male (68.33%) while 19 were female (31.67%). Group A had a mean post-operative pain of 5.39 ± 2.51 and group B had 8.53 ± 3.78 (p = 0.0001). Mean per-operative blood loss in group A was 2.47 ± 1.22 ml as compared to.83 ± 4.44 ml of group B (p = 0.0001). **Conclusion:** Blood loss during surgery and post-operative pain is less after Ligasure hemorrhoidectomy as compared to Milligan Morgan hemorrhoidectomy.

Keywords: Hemorrhoids, Ligasure hemorrhoidectomy, post-operative pain.

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INTRODUCTION

Hemorrhoidal disease is common anorectal disorder & hemorrhoidectomy is one of the most common surgical procedures performed in anorectal surgery.[1] It affects about 4% of the world population.[2,3] The exact incidence hemorrhoids is estimated to be much higher but only a few individuals seek surgical consultation.[4] According to some studies prevalence of hemorrhoids is estimated to be around 4.4% and 10 million people in the United States are diagnosed with this condition. Majority of the patients are around 45-65 years old; a higher incidence is reported in Caucasians. It is less frequently seen in younger individuals.[5,6] Various office-based surgical interventions for treatment of internal hemorrhoids such as rubber-band ligation, sclerotherapy, infrared coagulation etc. are used. These procedures can usually be performed during patient's first visit.

Symptomatic Grade 3 and 4 hemorrhoids need surgical intervention and hemorrhoidectomy is the gold standard treatment.[7] Traditional Milligan Morgan hemorrhoidectomy techniques is widely practiced.[10] Despite being effective this technique has high rate of complications.

New methods and instruments are being introduced to improve outcome and reduce complications. The Ligasure (Vessel Sealing System) is one such instrument.[10] It is gradually becoming an instrument of choice for hemorrhoidectomy. Blood loss, procedure duration, post-operative pain and recurrence have been significantly reduced.[2,3,10,14,15] Ligasure works by coagulating blood vessels up to 7 mm in diameter with only 2 mm of thermal spread to adjacent tissue.[10] According to one study conducted in Egypt per operative blood loss in ligasure group was1.2+1.6(0-5ml) and 22.2 +6.58(15-35ml) in Milligan Morgan group. Post-operative pain in ligasure group was 5.4+1.73(2-9) and 7+1.72(4-10) in Milligan Morgan group.[3]

By conducting this study, we assessed and evaluated the frequency of per operative blood loss and post-operative pain following hemorrhoidectomy using different methods. This study will help to improve the choice of treatment modality for hemorrhoidectomy and help to manage the most common anorectal problem efficiently with less complications.

OBJECTIVES

To compare Ligasure hemorrhoidectomy with conventional Milligan Morgan approach for treatment of 3rd degree hemorrhoids in terms of mean per-operative blood loss and post-operative pain.

OPERATIONAL DEFINITIONS

3rd Degree Hemorrhoids: Third degree hemorrhoids bulges from the anus during bowel movements and must be pushed back with a finger

Hemorrhoidectomy: Surgical removal of hemorrhoids, usually accomplished by excision of hemorrhoidal tissues by dissection.

Milligan-Morgan Hemorrhoidectomy: This is the most commonly used open hemorrhoidectomy technique. It involves excision of three major hemorrhoidal vessels and three pear shaped incisions are left open separated by bridges of skin and mucosa.

Per-Operative Blood Loss: It is amount of blood lost during surgery. It is estimated by the number and degree of soaking of the gauze and by comparing the weight of the gauze before and after the operation. 1gm = 1ml approximately

Post-Operative Pain: Pain perceived after surgery and it is estimated by visual analogue scale.

METHODOLOGY

Study Design: Randomized Controlled Trial.

Settings: General surgery Department, Faisalabad Medical University / Allied Hospital Faisalabad (AHF) Pakistan.

Duration: 8th August 2016 to 7th February 2017.

Sample Size: Sample size was calculated according to WHO's recommendations;

Anticipated population mean = 5.43

Test value of population mean = 73

Polled standard deviation = 1.725.

Sample size= 60

Inclusion Criteria:

1. Patient fit to undergo spinal anesthesia.
2. Are between age of 18 and 80 years.
3. Patients with 3rd degree hemorrhoids.

Exclusion Criteria:

1. All known diabetic, hypertensive and obese patients.
2. Pregnant patients.
3. Patients who have undergone surgery in perineal area.
4. Patients having asymptomatic hemorrhoids.
5. Patients with 1st,2nd and 4th degree hemorrhoids.
6. Patients with recurrent hemorrhoids
7. Hemorrhoids secondary to other pathology rectal carcinoma or chronic liver disease.
8. Patients who have comorbid conditions that may interfere with blood loss and pain assessment e.g. Blood dyscrasias, coagulation abnormalities, impaired cognition, limited mobility.

Data Collection Procedure: After the approval of the research proposal from the "Ethical Review Committee" as per inclusion and exclusion criteria all consecutive patients were taken who are admitted in surgery Department of Faisalabad Medical University/Allied Hospital or present to Outdoor Patient Department of the Hospital. Patients were informed regarding the investigations and the use of data for research purpose and consent was taken. A total of 60 patients were included in the study and randomly divided into two equal groups. Group A underwent Ligasure hemorrhoidectomy and group B underwent Milligan Morgan hemorrhoidectomy. Data was collected for blood loss and pain by trainee researcher through specially designed proforma containing bio-data and relevant investigation, which is attached hereby.

Analysis of Data: Data analysis was done using SPSS v-16. Qualitative variables like gender were evaluated for frequency and percentages while quantitative variables like age, blood loss and intensity of pain were evaluated using mean and standard deviation. Comparison of blood loss and intensity of pain was done using independent sample t-test. P-value < 0.05 was taken as significant.

RESULTS

Patients aged 18 to 80 years were included in the study with mean age of 49.43 ± 14.19 years. The mean age of patients was 50.40 ± 14.90 years and 48.47 ± 13.63 years in group A and B respectively. Out of 60 patients 41 (68.33%) were males and 19 (31.67%) were females.

Mean post-operative pain in group A (Ligasure hemorrhoidectomy) was 5.39 ± 2.51and in group B (Milligan Morgan hemorrhoidectomy) was 8.53 ± 3.78 (p = 0.0001). Mean per-operative blood loss in group A (Ligasure hemorrhoidectomy) was 2.47 ± 1.22ml and in group B (Milligan Morgan hemorrhoidectomy) was 18.83 ± 4.44ml (p = 0.0001). Stratification of mean post-operative pain with respect to age and sex is depicted in Table 4 and 5 respectively which showed significant difference in mean post-operative pain in all different age groups and gender. Stratification of per-operative blood loss with respect to age and sex is depicted in Table 6 and 7 respectively.

Table 1: Age distribution

Age	Group-A	Group-B	Total
18-50	17 (56.7%)	18 (60.0 %)	35 (58.33%)
51-80	13 (43.33%)	12 (40.0%)	25 (41.67%)
Mean ± SD	**50.40 ± 14.90**	**48.47 ± 13.63**	**49.43 ± 14.19**

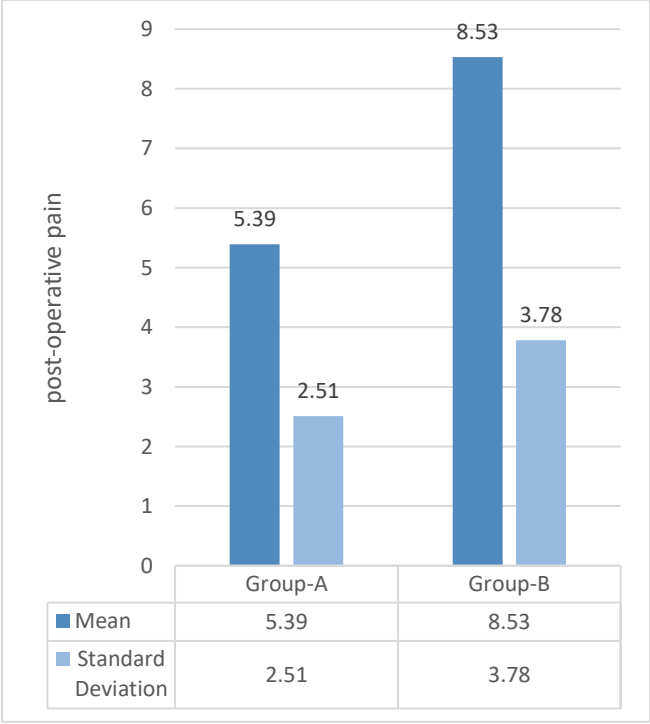

Figure 1: Mean post-operative pain in both groups

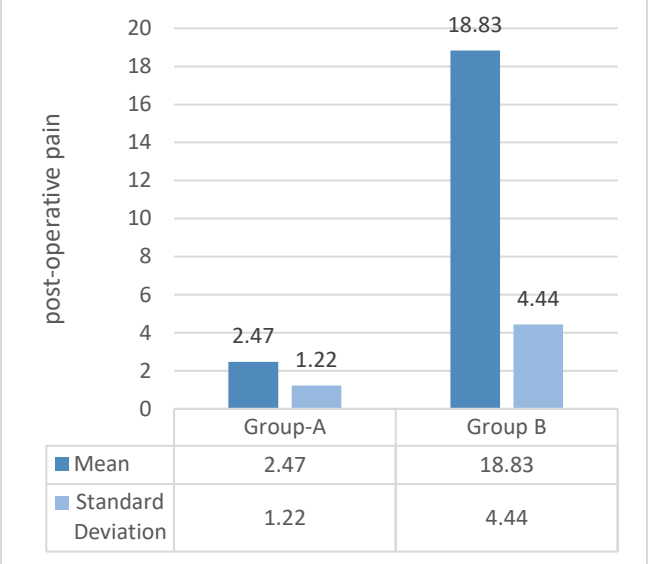

Figure 2: Mean per-operative blood loss in both groups

Table 2: Stratification of post-operative pain with respect to age groups

Age of patients (years)	Group-A post-operative pain		Group-B post-operative pain		P-value
	Mean	SD	Mean	SD	
18-50	5.12	1.50	9.22	1.99	**0.0001**
51-80	5.77	1.54	7.58	2.11	**0.0245**

Table 3: Stratification of post-operative pain with respect to gender

Sex	Group-A post-operative pain		Group-B post-operative pain		P-value
	Mean	SD	Mean	SD	
Male	5.67	1.49	8.70	2.34	**0.0001**
Female	4.78	1.48	8.30	1.83	**0.0001**

Table 4: Stratification of per-operative blood loss with respect to age groups

Age of patients (years)	Group-A post-operative pain		Group-B post-operative pain		P-value
	Mean	SD	Mean	SD	
18-50	2.53	1.33	18.61	4.30	**0.0001**
51-80	2.38	1.12	19.17	4.82	**0.0001**

Table 5: Stratification of per-operative blood loss with respect to Gender

Sex	Group A post-operative pain		Group B post-operative pain		P-value
	Mean	SD	Mean	SD	
Male	2.76	1.30	18.20	4.51	**0.0001**
Female	1.78	0.67	20.10	4.23	**0.0001**

DISCUSSION

The conventional treatment of hemorrhoids is gradually being replaced by Ligasure. According to one study conducted in Egypt, per operative blood loss in ligasure group was 1.2+1.6(0-5ml) and 22.2 +6.58(15-35ml) in Milligan Morgan group. Post-op pain in ligasure group was 5.4+1.73(2-9) and 7+1.72(4-10) in Milligan Morgan group.[3] In another study 55 patients (23 males, 32 females) with third (67.3%) and fourth degree (32.7%) hemorrhoids were evaluated for post-operative pain and intra operative blood loss. 29 patients were placed in group A while 26 in group B. Hemorrhoidectomy was performed using Ligasure technique in group and conventional method in group B. Mean blood loss was 51.92 ± 15.68 ml in Ligasure group while 70.34 ± 25.59 ml in conventional group. Pain was also significantly lower in Ligasure group.[6]

A prospective study was conducted on 273 patients. Ligasure group showed a considerable reduction in postoperative pain, less operating time, and a speedy recovery. However, there was almost no difference in the incidence of bleeding and late complications up to 28 days after operation.[7] According to a review of 11 randomized trials including 850 individuals, improvements in Post-op pain, hospital stay and recovery were noticed, however no statistical difference was found regarding reduction of pain and bleeding.

A meta-analysis[8] included twelve studies with 1142 patients. Patients who belonged to Ligasure group required significantly reduced post-operative analgesic use. However, this benefit was almost indistinguishable from conventional group at 14th post-operative day. Procedure duration was longer with conventional group (9.15 minutes ± 15.09). Post-operative complications such as urinary retention was reduced and wound healing was improved. However, there was no overall reduction in complications on final follow-up. Patient's in both groups required an equal duration of hospital stay but early recovery and return to work was noticed in Ligasure group.[9]

Blood loss in Ligasure™ group was 6.53± 2.9 ml as compared with 28.79 ± 0.01 ml in the conventional group. Chung and Wu found Ligasure™ to be associated with less pain in first and second post-operative day as compared to conventional methods.[10] Some studies found no change in intensity of pain after Ligasure™ vs conventional method.[11] The decrease in pain intensity is due to less thermal tissue necrosis and absence of suturing.[10]

Recently we have demonstrated that use of Ligasure™ reduces procedure time blood loss and post-operative complications[10] Compared to Ferguson hemorrhoidectomy technique, minimal thermal damage and absence of sutures associated with Ligasure™ method is associated with lesser post-operative analgesic requirements. In our study mean post-operative pain in Group A (ligasure Hemorrhoidectomy) was 5.39 ± 2.51 and 8.53 ± 3.78 in group B (Milligan Morgan Hemorrhoidectomy) (p = 0.0001) while mean per-operative blood loss in Group A was 2.47 ± 1.22 ml and18.83 ± 4.44 ml in group B respectively (p = 0.0001). Consequently, the Ligasure™ system reduced hospital stay and encouraged early recovery and return to normal activities.

CONCLUSION

This study concluded that per-operative blood loss and post-operative pain is less after Ligasure hemorrhoidectomy as compared to Milligan Morgan hemorrhoidectomy for the treatment of 3rd degrees hemorrhoids. So, we recommend that Ligasure hemorrhoidectomy should be used as a primary method for treating 3rd degree hemorrhoids for reducing procedure duration, blood loss, pain and recurrence.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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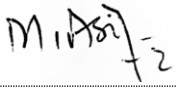
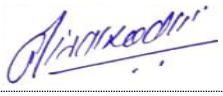
Dr. Muhammad Asif Post Graduate Resident, Surgical Unit-III Allied Hospital, Faisalabad	Statistical Analysis	
Prof. Dr. Muhammad Faisal Bilal Lodhi Registrar / Professor of Surgery Faisalabad Medical University, Faisalabad	Results Interpretation	
Prof. Dr. Zafar Ali Choudhry Vice Chancellor, Professor of Surgery Faisalabad Medical University, Faisalabad	Supervise the study, Proof Reading