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Original research article

COMPARISON BETWEEN LIGASURE HEMORRHOIDECTOMY AND MILLIGAN MORGAN HEMORRHOIDECTOMY IN TERMS OF OPERATIVE TIME, POST-OPERATIVE PAIN AND BLEEDING

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Abstract: *The gold standard treatment for symptomatic stage III and IV hemorrhoidal disease is hemorrhoidectomy, which is a surgical procedure. To improve outcomes and minimise complications, ligasure hemorrhoidectomy is one of the new techniques being used.* ***Objective:*** *The objective of this study was to compare Ligasure Hemorrhoidectomy and Milligan Morganm Haemorrhoidectomy in terms of operative time, postoperative pain and bleeding.* ***Methods:*** *The study was conducted at the Department of General Surgery in DG Khan Medical College DG Khan from 1st September 2023 to 31st August 2024 after obtaining permission from the ethical board of the institute. 64 participants of both genders and different age groups were enrolled in this study. Individuals whose ages were 18 to 80 years who had 3rd-stage haemorrhoids and were able to tolerate spinal anaesthesia were included. Participants were randomly divided into two equal groups. Group A is undergoing Ligasure hemorrhoidectomy and Group B is undergoing Milligan Morgan hemorrhoidectomy. A specifically created proforma with bio-data and relevant particulars was used to gather data on blood loss, operating time and pain. SPSS V-24 was used for the data analysis. The independent sample t-test was used to compare blood loss operative time and pain severity. A P-value of less than 0.05 was considered significant.* ***Results:*** *A total of 64 individuals participated in this study out of which males were 43(67.18%) and females were 21(32.8%). The age ranged from 18-80 years and the mean age in group A participants was 51.40 ± 14.90 years while in group B it was 49.47 ± 13.63 years. In group A (Ligasure) the mean post-operative pain score was 5.39 ± 2.51 while in group B (Milligan Morgan) was 8.53 ± 3.78 (the P value equal to 0.0001). In group A (Ligasure), the mean blood loss during surgery was 2.47 ± 1.22 ml, but in group B the operation), it was 18.83 ± 4.44 ml (where p 0.0001). Group A mean operation time was 32.8 ± 6.78 minutes, whereas group B was 39.69 ± 5.89 minutes.* ***Conclusion:*** *Ligasure haemorrhoidectomy is time-sparing and associated with less post-operative pain and post-operative bleeding as compared to conventional Milligan Morgan hemorrhoidectomy.*

Keywords: Ligasure Haemorrhoidectomy; Milligan Morganm Haemorrhoidectomy; Operative time; Post-operative pain; Bleeding.

Introduction

Haemorrhoids are swollen or congested anal cushions. They are usually seen at three, seven, and eleven o'clock seen in the lithotomy position, which corresponds to the right anterior, left lateral, and right posterior anal cushions. It may be classified into four different stages based on clinical symptoms, which include haemorrhoid prolapse, and reducibility. (1) Worldwide it affects 50–85% of individuals and their prevalence is equal for both sexes. (2) For grade 1 and grade 2 haemorrhoids, conservative treatment is prescribed. Surgery is performed for grade 3 and grade 4, or in case conservative treatment is failed for lower grades. (3) The gold standard medical treatment for symptomatic Grade 3 and Grade 4 disease is hemorrhoidectomy, which is a surgical procedure. (3) Conventional Milligan-Morgan hemorrhoidectomy method is often used. This approach is successful, although it has many issues. To improve outcomes and minimise complications Ligasure hemorrhoidectomy is one of the new techniques being developed (4) Ligasure is a vessel sealing and cutting system and has emerged as the preferred tool for hemorrhoidectomy. Significant reductions have been made in blood loss, procedure time, and postoperative pain. (5) The Ligasure function is to coagulate blood arteries up to 7 millimetres in diameter with just 2 mm of heat transfer to nearby tissue. (4) One study carried out in Egypt found that the Milligan Morgan group experienced a blood loss of 16-36 millilitres per operative procedure, while the Ligasure group had 0-5 millilitres. The Milligan Morgan group reported post-operative pain of 7+1.72 (4–10) and the Ligasure group received 5.4+1.73 (2–9). (6) Therefore the current study was carried out to compare Ligasure Haemorrhoidectomy and Milligan Morgan Haemorrhoidectomy regarding bleeding, post-operative pain, and operating time.

Methodology

The current study was conducted at the Department of General Surgery in DG Khan Medical College DG Khan from 1st September 2023 to 31st August 2024 after obtaining permission from the ethical board of the institute. 64 participants of both genders and different age groups were enrolled in this investigation. Individuals whose ages were 18 to 80 years who had 3rd-degree haemorrhoids and were able to tolerate spinal anaesthesia were included.

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Patients who had perineal surgery for haemorrhoids, chronic liver disease and rectal cancers were excluded. Patients were given information about the studies and how their data would be used for research, and their agreement was obtained. Patients who were enrolled study were randomly divided into two equal groups. Group A is undergoing Ligasure hemorrhoidectomy and Group B is undergoing Milligan Morgan hemorrhoidectomy. A specifically created proforma with bio-data and relevant investigation was used by the trainee researcher to gather data on blood loss, operating time, and pain.

SPSS V-24 was used for the data analysis. The mean and standard deviation were used to assess quantitative data like age, blood loss, and pain severity, while frequency and percentages were used to assess qualitative characteristics like gender. The independent sample t-test was used to compare blood loss operative time and pain severity. A P-value of less than 0.05 was considered significant.

Results

A total of 64 individuals participated in this study out of which males were 43(67.18%) and females were 21(32.8%) as presented in (figre1). The age ranged from 18-80 years and the mean age in group A Participants was 51.40 ± 14.90 years while in group B it was 49.47 ± 13.63 years (Table1). In group A (Ligasure) the mean post-operative pain was 5.39 ± 2.51 while in group B (Milligan Morgan) was 8.53 ± 3.78 (the P value equal to 0.0001). In group A (Ligasure), the mean blood loss during surgery was 2.47 ± 1.22 ml, but in group B the operation), it was 18.83 ± 4.44 ml (where p 0.0001). Group A mean operation time was 32.8±6.78 minutes, whereas Group B had 39.69±5.89 minutes as presented in Table 3. The mean post-operative pain stratification by age and sex is shown in Tables 4 and 5, correspondingly, and it demonstrates a substantial variation in mean post-operative pain across all age groups and genders. The age and sex-based classification of per-operative bleeding is shown in Tables 5 and 6, respectively.

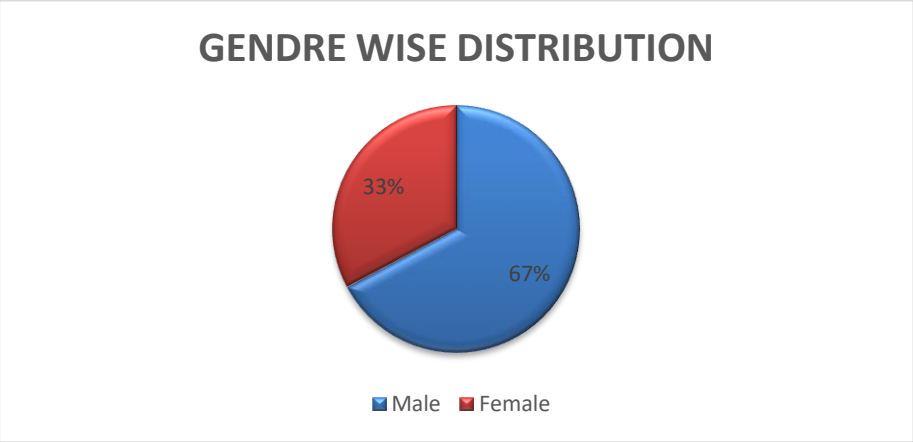

Figure 1: Gender distribution of the study population

Table1. Age-wise distribution of the study population

Age	Group-A	Group-B	Total
18-50	18 (56.25%)	19 (59.37 %)	37 (57.81%)
51-80	14 (43.75%)	13 (40.62%)	27 (42.18%)
Mean ± SD	51.40 ± 14.90	49.47 ± 13.63	50.43 ± 14.19

Table 2. Both groups' descriptive statistics

Features	A group	B Group	Value of P
Bleeding(ml)	2.47 ± 1.22 ml	18.83 ± 4.44 ml	0.0001
VAS Score for pain	5.39 ± 2.51	8.53 ±3.78	0.0001
Duration(min)	32.80±6.78	39.69±5.89	0.0001

Table 3 . Mean post-operative pain stratification in different age groups

Age in years	Group A	Group B	Value of p
	Mean	Mean	
18 to 50	6.11	8.21	0.001
51 to 80	6.70	8.50	0.0245

Table 4 . Mean post-operative pain classification in gender

Age in years	Group A	Group B	Value of p
	Mean	Mean	

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Male	5.57	8.60	0.001
Female	4.68	8.20	0.001

Table 5. Mean blood loss in different age groups

Age in years	Group A	Group B	Value of p
	Mean	Mean	
18 to 50	1.53	17.61	0.001
51 to 80	1.38	18.17	0.001

Table 6. Mean Blood loss in gender

Age in years	Group A	Group B	Value of p
	Mean	Mean	
Male	3.80	17.30	0.001
Female	1.80	21.10	0.001

Discussion

A sophisticated and currently preferred surgical technique for performing hemorrhoidectomy is Ligasure. This apparatus uses refined bipolar current for coagulation and cutting. There is less scarring, a speedier recovery, less tissue damage, and a shorter hospital stay, making it a safer procedure. (7) Pain and bleeding are two major problems with conventional hemorrhoidectomy. Ligasure greatly resolves these two issues. It is important to mention that ligasure is also associated with reduced blood loss. This occurs because it stops bleeding by coagulating the tissue before cutting and its coagulation does not result in significant necrosis. On the other hand, the traditional approach uses a scissors cut that causes bleeding. (8)

In this study, we examined the operating time, post-surgical pain, and bleeding between the Ligasure and Milligan Morgan hemorrhoidectomy procedures. A total of 64 individuals who participated in this study were randomly divided into two equal groups. Group A is undergoing Ligasure hemorrhoidectomy and Group B is undergoing Milligan Morgan hemorrhoidectomy. In group A (Ligasure) the mean post-operative pain was 5.39 ± 2.51 while in group B (Milligan Morgan) was 8.53 ± 3.78 (the P value equal to 0.0001). In group A (Ligasure), the mean blood loss during surgery was 2.47 ± 1.22 ml, but in group B the operation), it was 18.83 ± 4.44 ml (where p 0.0001). Significantly lower postoperative pain was found in the current study. Lower pain would indicate a lower risk of postoperative complications, such as post-operative urinary retention. Similar results have been reported in other studies. (9) Our study findings are similar to a research carried out in Egypt in was Blood loss was 1.2 + 1.6 in the Ligasure group and 22.2 +6.58 ml in the Milligan Morgan group. The pain was 5.4+1.73 in the ligasure group and 7+1.72 in the Milligan Morgan group. (6) Another research assessed the post-operative pain and intraoperative blood loss of 58 individuals (24 men and 34 women) with third-degree (67.3%) and fourth-degree (32.7%) haemorrhoids. The Ligasure group experienced an average blood loss of 51.92 ± 15.68 ml, whereas the traditional group experienced 70.34 ± 25.59 ml. Additionally, the Ligasure group experienced noticeably less pain. (10) In our study Group A mean operation time was 32.8±6.78 minutes, whereas Group B had 39.69±5.89 minutes. There were twelve studies with 1142 individuals in a meta-analysis. The usage of post-operative analgesics was considerably lower among individuals in the Ligasure group. However, on the fourteenth postoperative day, this advantage was nearly identical to that of the conventional group. Wound healing was enhanced and post-operative problems including urine retention were decreased. On the last follow-up, there was no general decrease in problems, yet. (11) The Ligasure group observed a blood loss of 6.53± 2.9 ml, whereas the conventional group was 28.79 ± 0.01 ml. When compared to conventional methods, Chung and Wu discovered that Ligasure led to less pain in the first and second postoperative days. (4) Comparing Ligasure to the conventional approach, several studies revealed no difference in the severity of pain. (12) Because there is less suturing and less thermal tissue necrosis, the pain is less intense. (11) According to the current research, hemorrhoidectomy with ligasure is a successful and efficient procedure with a lower recurrence rate. This surgical approach resulted in fewer side effects and blood loss.

Conclusion

Ligasure haemorrhoidectomy is time-sparing and associated with less post-operative pain and postoperative bleeding as compared to conventional Milligan and Morgan haemorrhoidectomy.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department Concerned. (IRBEC-TCHDGKH-024233/23)
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

GHULAM HASSAN (Assistant Professor)
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Revisiting Critically
GHULAM YASEEN (Chief Consultant Surgeon)
Final Approval of version
MUHAMMAD ALI (Senior Registrar Surgery)
Drafting
NAZAR FAREED (Senior Registrar Surgery) & ASIM BHATTI (Senior Registrar Surgery)
Concept & Design of Study

References

1. Margetis N. Pathophysiology of internal hemorrhoids. Annals of gastroenterology. 2019;32(3):264.
2. Ali SA, Shoeb MFR. Study of risk factors and clinical features of haemorrhoids. International Surgery Journal. 2017;4(6):1936-9.
3. Waqas P, Khan SA. Outcome of Rubber Band Ligation for Grade-III Internal Haemorrhoids. in Vitrectomy for Vitreous Hemorrhage in Diabetic Eye Disease. 2016;14(2):95.
4. Ghimire P, Gurung N, Upadhaya P, Shrestha S, Gurung A, Poudel S. Sutureless hemorrhoidectomy vs open hemorrhoidectomy: a prospective study in a regional hospital of Western Nepal. Nepal Journal of Medical Sciences. 2014;3(2):121-3.
5. Cerato MM, Cerato NL, Passos P, Treigue A, Damin DC. Surgical treatment of haemorrhoids: a critical appraisal of the current options. ABCD Arquivos Brasileiros de Cirurgia Digestiva (São Paulo). 2014;27(01):66-70.
6. Aslam S, Mujahid MD, Ali S, Asif M, Lodhi MFB, Choudhry ZA. Comparison of LigaSure Versus Conventional (Milligan-Morgan) Hemorrhoidectomy for The Treatment of 3rd Degree Hemorrhoids. Annals of Punjab Medical College. 2019;13(2):117-20.
7. Chung CC, Ha JPY, Tai YP, Tsang WWC, Li MKW. Haemorrhoidectomy using harmonic scalpel: An initial report. Annals of the College of Surgeons of Hong Kong. 2000;4(4):159-62.
8. Wang J-Y. Reply: Randomized controlled trial of ligasure with submucosal dissection versus Ferguson hemorrhoidectomy for prolapsed hemorrhoids. World Journal of Surgery. 2007;31:246-.
9. Bakhtiar N, Moosa FA, Jaleel F, Qureshi NA, Jawaid M. Comparison of hemorrhoidectomy by LigaSure with conventional Milligan Morgan's hemorrhoidectomy. Pakistan journal of medical sciences. 2016;32(3):657.
10. Kaidar-Person O, Person B, Wexner SD. Hemorrhoidal disease: a comprehensive review. Journal of the American College of Surgeons. 2007;204(1):102-17.
11. Brill AI, Fleshman Jr JW, Ramshaw BJ, Wexner SD, Kaidar-Person O. Minimally invasive procedures: What family physicians need to know. The Journal of family practice. 2005:S1-23.
12. Peker K, İnal A, Güllü H, Gül D, Şahin M, Ozcan AD, et al. Comparison of vessel sealing systems with conventional. Iranian Red Crescent Medical Journal. 2013;15(6):488.

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