

LIGASURE HEMORRHOIDECTOMY VS CONVENTIONAL MILLIGAN MORGAN HEMORRHOIDECTOMY: A COMPARISON FOR BETTER OUTCOME IN 3RD AND 4TH DEGREE HEMORRHOIDS

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ABSTRACT

Objective: To compare the outcome of two techniques for 3rd and 4th degree hemorrhoids, i.e., Milligan Morgan hemorrhoidectomy (MMH) and Ligasure hemorrhoidectomy (LH), in terms of bleeding, postoperative pain, and hospital stay.

Subjects and methods: This comparative study was conducted at the Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro. All the patients undergoing hemorrhoidectomies for the treatment of 3rd and 4th degree hemorrhoids, the patient's willingness and ability to comply with post-operative instructions and follow-up care, aged more than 12 years and both genders, and those who understanding of the risks and benefits of the surgery were included. After obtaining informed consent, the patients were divided into two groups. In first group, patient underwent ligasure hemorrhoidectomy, while second group operated with Milligan Morgan technique. All the demographic information, including operative details, postoperative pain, hospital stay, and follow-up, was recorded via the study proforma. SPSS version 26 was used for the data analysis.

Results: A total of 62 patients with 3rd and 4th degree hemorrhoids were compared as per treatment; their overall mean age was 41.01±14.45 years. Males were 67.7% and females were 32.3%. Third-degree hemorrhoids was most common in both groups. In the LH group, average operative time was 16.74±2.19 minutes, which was significantly lower as compared to the MMH group as 35.42±4.47 minutes (p=0.001). Anal stenosis was developed in one case in the LH group and in two cases in the MMH group (p=0.001). Although average VAS was significantly lower in the LH group compared to the MMH group on day 1 and day 7 after surgery (p = 0.001). Furthermore, the average hospital stay was also significantly lower in the LH group as compared to the MMH group (p=0.001).

Conclusion: LigaSure hemorrhoidectomy was observed to be safe and effective in terms of being less invasive, having a shorter recovery time, and causing less pain and having a lower bleeding risk compared to conventional Milligan Morgan hemorrhoidectomy.

Key words: hemorrhoidectomy, MMH, LH, pain, operative time, bleeding, hospital stay.

INTRODUCTION

Hemorrhoids are the frequent health problems that are defined by enlargement of the superior or inferior hemorrhoidal plexus as well as downward dislocation of the anal cushions.¹ Because of the typical anatomical feature of the anal canal, hemorrhoids illness is recorded in roughly 5% of the overall population, particularly beyond the age of 40 years; treatment is recommended in cases when symptoms are observed.^{2,3} It is possible to divide the severity of hemorrhoids into four categories according to the degree of prolapse and appearance.² It is commonly believed that factors such as constipation, a diet poor in fiber, a high body mass index, being pregnant, and leading an unhealthy lifestyle all raise the risk of hemorrhoidal illness.⁴ The symptoms associated with hemorrhoidal prolapse might be made worse by constipation, which is characterized by stools that are hard and dry.⁴ Surgery is typically recommended for degree 3 and 4 hemorrhoids to remove the hemorrhoids permanently. There have been several techniques performed, such as open or closed sharp excision, ultrasonic scalpel dissection, laser therapy, and stapled hemorrhoidectomy.⁵

Hemorrhoidectomy is still the standard treatment for symptomatic hemorrhoids of the 3rd degree and 4th degree. More than 50 years have passed since the introduction of conventional methods such as the open (Milligan Morgan) approach and the closed (Ferguson's) approach.⁶ These procedures are linked to major consequences related to pain, including urine retention and constipation. Additionally, thorough hemostasis must be performed in order to prevent postoperative hemorrhage, which typically causes the operation to take longer. In the past two decades, the LigaSure

hemorrhoidectomy has evolved as a popular alternative to the more traditional closed or open hemorrhoidectomy.¹ The significantly lower intraoperative hemorrhage in Ligasure hemorrhoidectomy may be explained by the effective hemostatic control achieved by the use of Ligasure.⁷ More importantly, Ligasure also leads to a reduction in postoperative pain as the coagulation caused by the higher frequency active and the current feedback control over the power output consequences in limited thermal spreading and minimal tissue charring.⁸ On the other hand, it was recently observed that the Milligan–Morgan (MM) was related to a lower incidence of recurrences as well as higher ratings of patient satisfaction and also a more permanent treatment.⁹ However, this study has been done to determine the outcome of two techniques for 4th degree hemorrhoids, i.e., Milligan Morgan versus Ligasure Hemorrhoidectomy, in terms of bleeding, postoperative pain, and hospital stay.

MATERIAL AND METHODS

This comparative study was conducted at the Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro. The duration of the study was one year, from April 2019 to March 2020. Ethical approval was obtained from the ethical review committee of LUMHS Jamshoro (No. LUMHS/REC/779). All the patients undergoing hemorrhoidectomies for the treatment of 3rd and 4th degree hemorrhoids, the patient's willingness and ability to comply with post-operative instructions and follow-up care, aged more than 12 years old and both genders, and those who understanding of the risks and benefits of the surgery were included. All the patients with active rectal or anal infections, blood-clotting disorders or other contraindications to surgery, patient's preference for non-surgical treatment options and patients with co-morbidities and unfit for anesthesia were excluded. A complete medical history, clinical examination, and required laboratory investigations were done. After taking informed consent, the patients were divided into two groups by randomization (odd / even). The odd numbers were given to patients operated on for ligasure hemorrhoidectomy, and the even numbers were given to patients operated on with the Milligan-Morgan technique. On the second postoperative day, patients were discharged in stable condition. All the demographic information, including operative details, postoperative pain, hospital stay, and follow-up, was recorded via the study proforma. SPSS version 26 was used for the data analysis.

RESULTS

A total of 62 patients of 3rd and 4th degree hemorrhoids were comparatively studied, in accordance to the surgical techniques; their overall mean age was 41.01 ± 14.45 years, minimum 17 years and maximum 75 years. Overall, males were 67.7% and females were 32.3%. Third-degree hemorrhoids were 74.4% and 4th degree hemorrhoids were 25.6% in the LH group, while third-degree hemorrhoids were 68.6% and 4th degree hemorrhoids were 27.4% in the MMH group (0.626). Table.1

In the LH group, average operative time was 16.74 ± 2.19 minutes, which was significantly lower as compared to the MMH group as 35.42 ± 4.47 minutes ($p=0.001$). Although average VAS was also significantly lower in LH group as compared to MMH group after surgery, day 1 and on day 7 ($p=0.001$). Furthermore, the average hospital stay was also significantly lower in the LH group as compared to the MMH group ($p=0.001$). Table.2

Anal stenosis was developed in one case of LH group and in two cases of MMH group ($p=0.001$), while need of rectal pack was in all cases of MMH group and on the other hand rectal pack placement was done in only one case of LH group ($p=0.001$). Table.3

Table.1 Comparison of hemorrhoids degree in both groups n=62

Variables		Study groups		Total	p-value
		LH	MMH		
Degree of hemorrhoids	3 rd degree	32	13	45	0.626
		74.4%	68.4%	72.6%	
	4 th degree	11	6	17	
		25.6%	31.6%	27.4%	
Total		43	19	62	
		100.0%	100.0%	100.0%	

LH= Ligasure Hemorrhoidectomy, MMH= Milligan Morgan Hemorrhoidectomy

Table.2 Outcomes of patients underwent Ligasure Hemorrhoidectomy versus Milligan Morgan Hemorrhoidectomy n=60

Outcomes	Type of surgical techniques	N	Mean	Std. D	P-value
Operative time (minutes)	LH	43	16.74	2.90	0.001
	MMH	19	35.42	4.47	
Loss of blood (ml)	LH	43	10.27	3.56	0.001
	MMH	19	20.63	5.16	
Pain (VAS) score (day 0)	LH	43	4.39	1.41	0.001
	MMH	19	6.00	1.20	
Pain (VAS) score (day 1)	LH	43	1.55	1.05	0.001
	MMH	19	3.00	1.10	
Pain (VAS) score (day 7)	LH	43	1.09	0.83	0.035
	MMH	19	1.57	0.76	
Hospital stays (days)	LH	43	1.20	0.46	0.001
	MMH	19	2.36	1.21	

Table.3 Comparison of stenosis occurrence and placement of rectal packing n=62

Variables		Study groups		Total	p-value
		LH	MMH		
Stenosis	Yes	1	2	3	0.00
		2.3%	10.5%	4.8%	
	No	42	17	59	
		97.7%	89.5%	95.2%	
Total		43	19	62	
		100.0%	100.0%	100.0%	
Need of placement of rectal packing	Yes	1	19	20	0.16
		2.3%	100.0%	32.3%	
	No	42	0	42	
		97.7%	0.0%	67.7%	
Total		43	19	62	
		100.0%	100.0%	100.0%	

LH= Ligasure Hemorrhoidectomy, MMH= Milligan Morgan Hemorrhoidectomy

DISCUSSION

Hemorrhoids are a common condition in which the veins in the rectum or anus become swollen or inflamed. They are classified into four degrees, based on their severity. Hemorrhoids of degree 3 and 4 are considered to be the most severe forms of hemorrhoids. This study has been done to compare the outcomes of two techniques for 3rd and 4th degree hemorrhoids, i.e., Milligan Morgan and Ligasure Hemorrhoidectomy, in terms of bleeding, postoperative pain, and hospital stay. In this study overall mean age was 41.01±14.45 years and overall males were in majority 67.7% and females were 32.3%. These findings were almost similar to the study by Aljabery RMS et al² as the mean age of their study subjects was 38.9 years and males were in the majority 66.66% compared to females 33.44%. Another study by Baig AA et al¹⁰ reported that the patients' average age was 41.54±6.380 years and males were the most common, at 61.3%, while females were 38.7%. However, the exact reason for the male predominance of hemorrhoids is not well understood, but it is suggested that lifestyle factors such as diet, obesity, and lack of physical activity may play a role. Additionally, occupational hazards such as long periods of sitting or heavy lifting may also contribute to the development of hemorrhoids in men.

In this study, third-degree hemorrhoids were 74.4% and 4th degree hemorrhoids were 25.6% in the LH group, while third degree hemorrhoids 68.6% and 4th degree hemorrhoids were 27.4% in the MMH group (0.626). Consistently Naz S et al¹¹ reported that in their study, in group A 87.5% of individuals having 3rd degree hemorrhoids, whereas in 89.4% of individuals had 3rd degree hemorrhoids in group B. However, in other studies by Alhamdany A et al¹² and Baig AA et al¹⁰. While inconsistently Surahio AR et al¹³ reported that the forty individuals (45.45%) were found to have hemorrhoids of the third degree, whereas the other 54.55% had 4th degree Hemorrhoids.

In this study, in the LH group, the average operative time was 16.74±2.19 minutes, which was significantly lower as compared to the MMH group as 35.42±4.47 minutes (p=0.001). Although average VAS was also significantly lower in LH group as compared to MMH group after surgery, day 1 and on day 7 (p=0.001). Furthermore, in this study, the average hospital stay was also significantly lower in the LH group as compared to the MMH group (p=0.001). In the comparison of these findings, Nagaty ME et al¹⁴ observed that the LigaSure hemorrhoidectomy was a more safe and successful treatment option in terms of less operational time, a lower rate of intraoperative bleed, lower postoperative pain, and faster wound repair with a shorter post - discharge period in contrast to the conventional Milligan-Morgan approach. On the other hand, Baig AA et al¹⁰ reported that the ligature hemorrhoidectomy has been deemed preferable than Milligan Morgan hemorrhoidectomy for the treatment of 3rd and 4th degree hemorrhoids, as it has a shorter operating time, lower postoperative pain, and a very low risk of bleeding. Although Aslam S et al¹⁵ also found that, in comparison to the Milligan Morgan hemorrhoidectomy, the Ligasure hemorrhoidectomy was associated with significantly reduced post-operative pain and less blood loss during the surgical procedure. However, Raslan MM et al¹⁶ in 2019, Abdelaziz HT et al¹⁷, in 2020, and Rehman A et al¹⁸ during 2021 also found almost similar findings.

In this study anal stenosis was developed in one case of LH group and in two cases of MMH group (p=0.001), while need of rectal pack was in all cases of MMH group and on the other hand rectal pack placement was done in only one case of LH group (p=0.001). Although Rehman A et al¹⁸ and Nagaty ME et al¹⁴ not found stenosis in the patients. In the study by Noori IF et al¹⁹ reported that in the conventional group, anal stenosis occurred in 10.4% of patients, while in the LigaSure group, it developed in 6.25% of cases. It is an unusual but potentially life-threatening complication.²⁰ Stenosis is a condition where the rectum or anus becomes narrowed, which can cause difficulty with bowel movements. Studies have shown that patients who undergo LigaSure hemorrhoidectomy have a lower incidence of stenosis compared to those who undergo conventional Milligan Morgan hemorrhoidectomy. This is because LigaSure hemorrhoidectomy uses a device that uses electrical energy to seal blood vessels, which helps to minimize bleeding and reduce the risk of complications. Another difference between the two procedures is rectal packing. Rectal packing is a procedure in which a gauze is inserted into the anus to control bleeding and to promote healing. Conventional Milligan-Morgan hemorrhoidectomy typically requires rectal packing, while LigaSure hemorrhoidectomy typically does not. This is because the use of the LigaSure device helps minimize bleeding, reducing the need for rectal packing.

CONCLUSION

LigaSure Hemorrhoidectomy was observed to be the safe and effective in terms of less invasive, has a shorter recovery time, and may cause less pain and less bleeding risk compared to Conventional Milligan Morgan Hemorrhoidectomy. LigaSure Hemorrhoidectomy uses a device that uses electrical energy to seal blood vessels, while Conventional Milligan Morgan Hemorrhoidectomy is a traditional surgical procedure that involves cutting and removing the hemorrhoid tissue.

REFERENCES

1. Ko-Chao L, Hong-HC, Kuan-Chih, et al. Meta-analysis of randomized controlled trials comparing outcomes for stapled hemorrhoidopexy versus LigaSure hemorrhoidectomy for symptomatic hemorrhoids in adults. *International Journal of Surgery*. 2013; 11; 914-918
2. Aljabery RMS, Samad Jabe AA. Comparison of Hemorrhoidectomy by Ligasure with Conventional Milligan Morgan's Hemorrhoidectomy. *Medico-legal Update* 2020;20;1;1324-28
3. Sun Z, Migaly J. Review of Hemorrhoid Disease: Presentation and Management. *Clin Colon Rectal Surg*. 2016;29(1):22-9
4. De Marco S, Tiso D. Lifestyle and risk factors in hemorrhoidal disease. *Frontiers in Surgery*. 2021 Aug 18;8:729166.

5. 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 May;32(3):657.
6. Rahul K, Seema K, Shilpi B, et al. Comparison of Ligasure Hemorrhoidectomy with Conventional Ferguson's Hemorrhoidectomy. *Indian J Surg*. 2010; 72(4); 294–297
7. Olfat IES, Alaa AEI, Mohamed SA, et al. Randomized comparative study of Ligasure versus conventional (Milligan-Morgan) hemorrhoidectomy. *Menoufia Medical Journal*. 2015; 28; 27–33.
8. Nienhuijs SW, DeHingh IHJT. Pain after conventional versus Ligasure haemorrhoidectomy. A meta-analysis. *International Journal of Surgery*. 2010; 8; 269-273
9. Symeonidis D, Spyridakis M, Zacharoulis D, Tzovaras G, Samara AA, Valaroutsos A, Diamantis A, Tepetes K. Milligan–Morgan hemorrhoidectomy vs. hemorrhoid artery ligation and recto-anal repair: a comparative study. *BMC surgery*. 2022 Dec 6;22(1):416.
10. Baig AA, Mehmood MS, Khalid R, Ghufra S, Chaudhry SM, Mehbub H. Comparative Study between Milligan Morgan Versus Ligasure Haemorrhoidectomy. *Pakistan Journal of Medical & Health Sciences*. 2022 Dec 27;16(11):235-.
11. Naz S, Khan U, Jan H, Khan NS, Shahzad T, Farooq M. Comparison of Haemorrhoidectomy Using Ligasure with Open (Milligan Morgan Haemorrhoidectomy). *Pakistan Journal of Medical & Health Sciences*. 2022 Apr 29;16(04):84-.
12. Alhamdany A, Rawa'a AS, Lateef NF. Ligasure™ hemorrhoidectomy versus conventional hemorrhoidectomy: comparison in outcome. *Open Access Macedonian Journal of Medical Sciences*. 2022 Jan 3;10(B):68-73.
13. Surahio AR, Khan AG, Danish AA, Memon AS, Khan AA, Shah SA. Milligan Morgan Haemorrhoidectomy vs LigaSure Haemorrhoidectomy: Comparative Postoperative Outcomes. *Annals of PIMS-Shaheed Zulfiqar Ali Bhutto Medical University*. 2021 Mar 31;17(1):47-51.
14. Nagaty ME. A Comparison between the Outcome of LigaSure Hemorrhoidectomy Versus Conventional Milligan Morgan's Technique. *Al-Azhar International Medical Journal*. 2022 Jan 1;3(1):52-6.
15. Aslam S, Mujahid MD, Ali S, Asif M, Lodhi MF, Choudhry ZA. Comparison of LigaSure Versus Conventional (Milligan-Morgan) Hemorrhoidectomy for The Treatment of 3rd Degree Hemorrhoids. *Annals of Punjab Medical College (APMC)*. 2019 May 8;13(2):117-20.
16. Raslan MM. Comparison of Outcome of LigaSure Hemorrhoidectomy with Conventional Milligan-Morgan Hemorrhoidectomy. *Kasr El Aini Journal of Surgery*. 2019 Jan;20(1):77.
17. Abdelaziz HT, Abd El Halim S. Ligasure versus Milligan-Morgan hemorrhoidectomy: a randomized clinical trial. *The Scientific Journal of Al-Azhar Medical Faculty, Girls*. 2020 Oct 1;4(4):612.
18. Rehman A, Javed F, Saleem S, Ahmad T, Rashid Z, Hayat N, Ahmed I. Comparison of Open Hemorrhoidectomy Versus Ligasure Hemorrhoidectomy. *Annals of King Edward Medical University*. 2021 Nov 4;27(Special Issue (Jul-Sep)):377-82.
19. Noori IF. LigaSure hemorrhoidectomy versus excisional diathermy hemorrhoidectomy for all symptomatic hemorrhoids. *Med J Babylon* 2018;15:83-8
20. Brisinda G, Vanella S, Cadeddu F, Marniga G, Mazzeo P, Brandara F, Maria G. Surgical treatment of anal stenosis. *World Journal of Gastroenterology: WJG*. 2009 Apr 4;15(16):1921.