Original Article

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Milligan Morgan Haemorrhoidectomy vs LigaSure Haemorrhoidectomy: Comparative Postoperative Outcomes

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[3]Drafting and revision of work
[4]Conception and data acquisition
[5]Data analysis and interpretation
[6]Critical revision of intellectual content

Funding Source: None
Conflict of Interest: None

Received: Oct 29, 2020
Accepted: Mar 5, 2021

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ABSTRACT

Objective: To compare the traditional Milligan Morgan haemorrhoidectomy with haemorrhoidectomy using LigaSure in terms of postoperative complications, patient satisfaction and hospital stay.

Methodology: This is a randomized controlled trial carried out at the Department of Surgery Liaquat university hospital Jamshoro from July 2017 to June 2019. A total of 88 patients were admitted with the diagnoses of 3rd and 4th degree haemorrhoid were included in the study. Patients were randomly divided into two groups by lottery method. Group A underwent Milligan Morgan Haemorrhoidectomy and group B underwent Haemorrhoidectomy by Ligasure after the informed consent. Outcomes of both procedures were also compared by complications, patient satisfaction and hospital stay.

Results: Out of 88 patients 35 were male (39.78%) and 53 were female (60.22%). The most common group of age involved was between 35–55 years. Third degree Haemorrhoids were present in 40 (45.45%) of patients while the remaining 48 (54.55%) had fourth degree Haemorrhoids. Group A included 44(50%) cases while Group B included 44 (50%) cases. The mean operating time of Group A was 50.5 (minutes) with a standard deviation of 11.5 while it was 35.5 ± 9.4 in B group. The mean blood loss in group A was 65.30 ml with a standard deviation of 14.58 while it was 45.45 ml ± 20.49 in group B.

Conclusion: The Haemorrhoidectomy done by Ligasure is comparatively better than the Milligan Morgan Heamorrhoidectomy, in terms of operative time, less bleeding, less pain, less hospital stays and early return to work.

Keywords: Heamorrhoidectomy, Milligan Morgan, LigaSure, operative and postoperative outcomes.

Cite this article as: *Surahio AR, Khan AG, Danish AA, Memon S, Khan AA, Shah Syed AA. Milligan Morgan Haemorrhoidectomy vs LigaSure Haemorrhoidectomy: Comparative Postoperative Outcomes. Ann Pak Inst Med Sci.2020; 17(1):47-51. doi. 10.48036/apims.v17i1.385*

Introduction

Haemorrhoids are one of the commonest causes for rectal bleeding in general population of our country. While the treatment for first and second degree haemorrhoids remains non-surgical, third and fourth degree haemorrhoids are always treated surgically. Several surgical procedures, varying from open or closed excision, laser therapy, ultrasonic scalpel dissection and stapled hemorrhoidectomy are used worldwide. Fear amongst the lay people due to the anatomical location of the pathology and postoperative pain are some of the reasons why surgery remains last option of treatment of the patients.[1]

Same stands true for many surgeons, who remain concerned for an increased incidence of pain at the operative site for a prolonged period after surgery.[2]

Patients with haemorrhoids in our public sector hospitals have been undergoing traditional Milligan Morgan haemorrhoidectomy. The haemorrhoidal pedicle is ligated by a transfixing suture and the haemorrhoidal bed is left raw and allowed to heal by second intention. This is associated with an increased incidence of complications,

such as bleeding, wound infection and intolerable pain, increasing hospital stay of the patient, and an additional burden on the limited hospital resources in terms of manpower and finances.[3] It is believed that avoiding vascular pedicle ligation would ensure a reduction in the incidence of both pain and secondary bleeding; the ligatures cause ischemia and subsequent necrosis, not only of the pedicle but a part of the sphincter muscles, causing acute postoperative pain and bleeding[4]. Moreover, sutures, if applied deeply, can induce inelastic circular scarring at the anus in the long term, further increasing to the misery of the patients. It is therefore hypothesized that avoiding use of the transfixing ligature and instead sealing the vascular pedicle by LigaSure would help reduce such postoperative complications.[5]

This study aims to compare the traditional Milligan Morgan haemorrhoidectomy with haemorrhoidectomy with LigaSure in terms of operative / postoperative complications, patient satisfaction, and hospital stay

Methodology

This randomized control study was conducted in department of surgery, Liaquat University Hospital Jamshoro, Pakistan from July 2017 to June 2019. A total number of 88 patients were included in this study. Patients were randomly divided into two groups. Group A patients underwent haemorrhoidectomy with Milligan & Morgan haemorrhoidectomy, and patients in group B were treated with LigaSure. Primary steps in both surgeries were same and consist of examination under anesthesia, delivery of haemorrhoids by two artery forceps, applied at the muco-cutaneous junction and at the pedicle base respectively. Haemorrhoidal tissue was dissected off the internal sphincter by monopolar diathermy or scissors.

Once dissected, the hemorrhoid pedicle was transfixed with 0 Vicryl suture in the Milligan Morgan group. In the Ligasure group, the jaws of the handset were applied to the pedicle and the instrument was activated by the foot paddle, initiating coagulation of the mucosa and blood vessels. A digitally managed feedback circuit automatically stopped flow of energy when coagulation of the vessels and mucosa was achieved. No sutures were applied in this group as the LigaSure device achieved mucosal fusion. Anal canal packing was not usually done except when there was any doubt about securing heamostasis.

Patients were discharged on the first postoperative day, unless otherwise indicated. All patients underwent Sits bath twice daily. Patients were then followed up in the surgical outpatient department on 1st, 2nd, 3rd and 4th weeks post- discharge. Patients were educated with a 10-point visual analogue pain score from zero to ten.

All data were collected on a predesigned pro forma. Statistical analysis was performed with SPSS software version 20. Independent sample T- test was applied to compare the operative time, blood loss and post-operative pain in both groups. Post-stratification Independent Sample T-test was applied; a P value ≤ 0.05 was taken as significant.

Results

Out of total 88 patients 35 were male (39.78%) and 53 were females (60.22%). The most common group of age involved was between 35–55 ±5.5 and 40-60 ±6.5 years respectively in both groups A and B. Third degree Haemorrhoids were present in 40 (45.45%) of patients while remaining 48 (54.55%) had fourth degree Haemorrhoids. Group A included 44 (50%) cases while Group B included 44 (50%) cases. The mean operating time of Group A was 50.5 ± 9.5 with a standard deviation of 11.5 while it was 35.5 ±6.5 in the other group. (Table II) The mean blood loss in group A was 65.50 ± 20.50 mL with standard deviation of 14.50 while it was 50.50 ±14.5 ml in group B. After surgery pain score was observed 02 ± 06 standard deviation 2.00 and 03±08 standard deviation 2.75 in both groups A and B, less in patients who underwent Haemorrhoidectomy by Ligasure as compared with conventional haemorrhoidectomy and hospital stay 01 ± 02 standard deviation 0.75 and 02 ± 03 standard deviation 1.25 in both groups, more in group A as compared with group B.

Table I: Descriptive statistic of postoperative pain and hospital stay. (n=88)

Variables	Groups	Number of Patients	Minimum	Maximum	Mean	Standard Deviation (SD)
Post-operative pain (VAS)	Haemorrhoidectomy with LigaSure	44	02	06	3.00	2.00
	Conventional Haemorrhoidectomy	44	03	08	5.5	2.75
Hospital Stay (Days)	Haemorrhoidectomy with LigaSure	44	01	02	1.5	0.75
	Conventional Haemorrhoidectomy	44	02	03	2.5	1.25

Table-II. Stratification of post-operative pain (VAS) (n=88)				
Variables		**Group A Conventional Haemorrhoidectomy**	**Group B Haemorrhoidectomy with LigaSure**	**P- Value**
Gender	Male	6.5±1.5	3.00±1.25	0.000
	Female	5.5 ±1.5	4.5 ±1.25	0.05
Haemorrhoids	3rd degree	6.00 ±1.5	3.25 ±1.2	0.000
	4th degree	3.5 ±1.00	5.5 ±1.25	0.002
Duration of Disease	Six months	5.9 ±1.25	3.50 ±1.25	0.001
	One year	5.25 ±1.5	3.25 ±1.00	0.01
	Two years	5.5 ±1.25	3.00 ±1.00	0.013
Operating time		50.5 ±9.5	35.5 ±6.5	< 0.05
Bleeding in ML		65.5 ±20.5	50.50 ±14.50	<0.05

Table-III. Stratification of hospital stay in days (n=88)				
Variables		**Group A Conventional Haemorrhoidectomy**	**Group B Haemorrhoidectomy with LigaSure**	**P- Value**
Gender	Male	02 ±1.75	01±0.5	0.03
	Female	2.5 ±02	1.5 ±01	0.04
Haemorrhoids	3rd degree	02 ±1.5	01 ±1.5	0.000
	4th degree	03 ±1.75	1.5 ±1.9	0.000
Duration of Disease	Six months	1.75 ±01	01 ±0.75	0.000
	One year	2.5 ±1.5	01 ±0.9	0.00
	Two years	03 ±1.75	1.5 ±0.95	0.07

Discussion

Conventional haemorrhoidectomy has more operative/post-operative complications like bleeding, more pain, retention of urine and late complications of stenosis of anus and incontinence. More modifications have done in the previous surgical procedure to improve the post-operative results specially to decrease the postoperative pain.

LigaSure vessel sealing system is one of the most recent device in practice to decrease haemorrhoidectomy main complains compared with conventional haemorrhoidectomy.[6, 7] It is more difficult to evaluate the benefits of its use in terms of postoperative pain and requirement of analgesic medicines, and only few studies have conducted in national and international literature. Mastakov et al confirms LigaSure is more effective as compare to conventional haemorrhoidectomy in all parameters.[8, 9] In a prospective multi center randomized trial on 273 patients showed a significant reduction in postoperative pain, a shorter operating time, and a faster return to work, but no difference in the incidence of postoperative bleeding and late complications up to 28 days after the operation. Milito et al.[10] review eleven randomized trials done on 850 patients and shows a significant difference in postoperative pain, healing of wound and duration of surgery. However, there is no difference in bleeding during surgery and complications between both groups. Kraemer et al.[11] compared LigaSure with conventional haemorrhoidectomy and reported a better reputation for postoperative pain, with a slightly good trend of LigaSure in the outcome of patients with fourth-degree piles.

Another study of 4th degree haemorrhoids patient compares open conventional haemorrhoidectomy, LigaSure always preserves and intact anoderm and mucosal bridges between the wounds. Ligasure faster healing and a more suitable and favorable environment support a faster return to daily activities. Overall patients of the LigaSure group returned to work activities in a significantly shorter time than conventional haemorrhoidectomy patients (12.2 versus 16.4 days, P < .0001). Chung and Wu et al[12] observed no difference in this parameter while Milito et al. reported a less time off work after LigaSure haemorrhoidectomy compared to other techniques (P < .001). Sayfan et al.[13] observed a decreased convalescence period (7.4 versus 18.6 days) compares to Altomare et al. patients.[9] Regarding LigaSure safety, there is no recurrence was found as well as no complaint of any kind of incontinence due to sphincter damage, also same results were found in conventional haemorrhoidectomy patients.

The present study compares the Liga-Sure system to conventional haemorrhoidectomy mostly in fourth-degree haemorrhoids patients, where the Milligan-Morgan is the treatment of choice. The LigaSure is effective according to most studies and allows a shorter operating time with a statistically significant difference (22.3 versus 27.4min).[12, 13] Moreover, the system is simple and easy to learn and the

meantime reported in our series, ranging from 17.2 to 27.4 minutes, is mainly due to the size of the piles than to the "learning curve. Less Postoperative pain score, due to a minor tissue damage, and faster wound healing are reported in LigaSure group.[14] The pain trend does not differ between the two groups early after the operation and in the first postoperative day, but it becomes significant during the third and fourth postoperative days, decreasing similarly in the two groups one week after surgery.[15] The patients with LigaSure haemorrhoidectomy are free from pain earlier than those with conventional haemorrhoidectomy.[16]

Compare with the other studies our results are superior in terms of shorter surgery time, bleeding, pain and hospital stay.[17]

Moreover, the absence of sutures transfixing vascular pedicles could be another additional advantage in reducing the bleeding and pain in LigaSure group.[18]

Conclusion

LigaSure haemorrhoidectomy as compared with conventional haemorrhoidectomy is associated with less operative time, less bleeding, shorter hospital stays and decrease postoperative pain irrespective of age, sex and grade of the haemorrhoids.

Limitation and recommendations: Due to the fact our patients had a short follow up, results from more big clinical trials will confirmed the benefits of the technique in a mid-term perspective if the device was correctly applied.

A limitation of the present study can be identified in the small size of the sample and limited follow up. Thus, the benefits of LigaSure as a low-pain and long-term effective technique need to be further evaluated in larger series.

Finally, in our experience LigaSure haemorrhoidectomy resulted in a shorter operative time and a lower postoperative pain, with a faster return to work and an overall complications rate similar to conventional haemorrhoidectomy. The procedure is safe, with a minimum risk of continence. As compared with the economic situation are concerned, the more cost of the disposable device is more, as compared with the shorter operative time, the possibility of a day-case surgery, and an earlier return to work.

References

1. Bulus H, Tas A, Coskun A, Kucukazman M. Evaluation of two hemorrhoidectomy techniques: Harmonic scalpel and Ferguson's with electrocautery. Asian Journal of Surgery. 2014 Jan 1;37(1):20-3.
2. Ravi Kumar GV, Madhu BS, Vishal T, Navin Kumar Reddy M, Pawar PM. Harmonic scalpel compared with conventional open (Milligan-Morgan) method in surgical management of symptomatic haemorrhoids. Int Surg J 2017; 4(6):2010-13 https://doi.org/10.18203/2349-2902.isj20172402
3. Lim DR, Cho DH, Lee JH, Moon JH. Comparison of a hemorrhoidectomy with ultrasonic scalpel versus a conventional hemorrhoidectomy. Ann Coloproctol 2016; 32(3):111-6. https://doi.org/10.3393/ac.2016.32.3.111
4. Talha A, Bessa S, Abdel Wahab M. Ligasure, harmonic scalpel versus conventional diathermy in excisional haemorrhoidectomy: a randomized controlled trial. ANZ J Surg .2017; 8(4)7:252-56. https://doi.org/10.1111/ans.12838
5. Bakhtiar N, Moosa FA, Jaleel F, Qureshi NA, Jawaid M. Comparison of hemorrhoidectomy by LigaSure with conventional Milligan Morgan's hemorrhoidectomy. Pak J Med Sci. 2016;32(3):657-61. https://doi.org/10.12669/pjms.323.9976
6. Palazzo FF, Francis DL, and Clifton MA, Randomized clinical trial of Ligasure versus open haemorrhoidectomy, British Journal of Surgery.2002; 89(2):154-57. https://doi.org/10.1046/j.1365-2168.2002.01993.x
7. Milit G, Gargiani M, and Cortese F, "Randomized trial comparing LigaSure haemorrhoidectomy with the diathermy dissection operation. Techniques in Coloproctology;2002;6(3):171-75. https://doi.org/10.1007/s101510200038
8. Mastakov MY, Buettner PG and Ho YH, updated meta-analysis of randomized controlled trials comparing conventional excisional haemorrhoidectomy with LigaSure for haemorrhoids. Techniques in Coloproctology;2008;12(3): 229-39. https://doi.org/10.1007/s10151-008-0426-6
9. Altomare DF, Milito G, Andreoli R, Arcanà F, Tricomi N, Salafia C et al. Ligasure precise vs. conventional diathermy for Milligan-Morgan hemorrhoidectomy: a prospective, randomized, multicenter trial. Diseases of the Colon and Rectum.2008;51(5):514-19. https://doi.org/10.1007/s10350-007-9171-6
10. Milito G, Cadeddu F, Muzi M.G, Nigro C, and Farinon A.M, Haemorrhoidectomy with Ligasure vs conventional excisional techniques: meta-analysis of randomized controlled trials. Colorectal Disease;2010;12(2): 85-93. https://doi.org/10.1111/j.1463-1318.2009.01807.x
11. M Kraemer, T Parulava, M Roblick, L Duschka and H. Muller-Lobeck, Prospective, randomized study: proximate PPH Stapler vs. Ligasure for hemorrhoidal surgery," Diseases of the Colon and Rectum;2005;48(8):1517-22. https://doi.org/10.1007/s10350-005-0067-z
12. Y. C. Chung and H J Wu. Clinical experience of suture less closed hemorrhoidectomy with Ligasure. Diseases of the Colon and Rectum;2003;46(1):87-92. https://doi.org/10.1007/s10350-004-6501-9
13. J. Sayfan, A. Becker, and L. Koltun, "Sutureless closed hemorrhoidectomy: a new technique. Annals of Surgery.2001;234(1):21-24. https://doi.org/10.1097/00000658-200107000-00004
14. Bilgin Y, Hot S, Barlas, IS, Akan A & Eryavuz Y. Short-and long-term results of harmonic scalpel hemorrhoidectomy

versus stapler hemorrhoidopexy in treatment of hemorrhoidal disease. Asian. J. Surg. 2015;38:(4), 214-19. https://doi.org/10.1016/j.asjsur.2014.09.004

15. Naldini G, Martellucci J, Rea R, Lucchini S, Di Visconte MS, Caviglia A. et al. Tailored prolapse surgery for the treatment of haemorrhoids and obstructed defecation syndrome with a new dedicated device: TST STARR Plus. Int. J. Colorectal. Dis. 2014;29(5): 623-29. https://doi.org/10.1007/s00384-014-1845-7
16. Altomare DF, Pecorella G, Tegon G, Aquilino F, Pennisi D, De Fazio M. Does a more extensive mucosal excision prevent haemorrhoidal recurrence after stapled haemorrhoidopexy? Long-term outcome of a randomized controlled trial. Colorectal. Dis.2017;19(6):559-62. https://doi.org/10.1111/codi.13549
17. Picchio M, Greco E, Di Filippo A, Marino G, Stipa F, Spaziani E. Clinical outcome following hemorrhoid surgery: a narrative review. Indian. J.Surg. 2015;77(suppl 3):1301-07. https://doi.org/10.1007/s12262-014-1087-5