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Research Article

A COMPARATIVE STUDY OF LASER HEMORRHOIDOPLASTY VERSUS OPEN HEMORRHOIDECTOMY [MILLIGAN MORGAN METHOD]

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Abstract

Introduction: Hemorrhoidal disease is one of the most common proctological disease and affects between 7 and 30% of the general population. It is a consequence of an increased blood flow to the superior rectal artery, which causes dilatation of the hemorrhoidal plexus. There is also degradation of the supportive tissue that results in sliding down of haemorrhoids.[1] Open hemorrhoidectomy was first described in 1937 by Milligan-Morgan and is still considered as the gold standard therapy. However, it is associated with significant pain, bleeding and wound infection which can result in prolonged hospital stay.

Materials and Methods: A Prospective Study was conducted for a period of 3 years (with follow up period of 1 year) (January 2022 To December 2024) at Shivamogga Institute of Medical Sciences, Shimoga. All patients aged 21–90 years who were reviewed for symptomatic haemorrhoids were considered for inclusion. All of them underwent a clinical and proctoscopic assessment to ascertain that haemorrhoids are the only cause of their symptoms. A Randomized prospective study comparing LHP and open surgical methods for hemorrhoidal disease was conducted at Shivamogga Institute of Medical Sciences, Shimoga. All the surgeries were performed by Surgeons with good experience and skills at performing both the methods of surgery included in the study. Double Blinding was done for both the patients and the operating surgeon to rule out the "bias".

Results: The LHP procedure was performed on 28 consecutive patients with mean age 47 ± 12.6 (range, 24–70) years. There were 14 men and 14 women. The open surgical procedure was performed on 26 patients with mean age 49 ± 12.3 (range 28-72) years. There were 13 men and 13 women. As far as pain is concerned, early postoperative pain is dominantly lower in the LHP group compared with surgical group. The same values also resulted for the period of one month. These results are presented in tables and in figures. The post operative bleeding episodes were relatively lower in the LHP group compared with the open surgical group consistently at different post operative period. These results are presented in the tables and figures.

Conclusion: In summary, laser hemorrhoidoplasty procedure is more preferred in comparison with conventional open surgical hemorrhoidectomy. Postoperative pain is significantly lesser in LHP compared with surgical procedure ($p<0.05$). Intra operative duration time is significantly shorter in LHP ($p<0.01$). Post operative bleeding is relatively less in LHP than open surgery assessed at different intervals. However, there was no significant difference in the recurrence rate at the of 1 year post operatively. Therefore, laser hemorrhoidoplasty procedure was more effective than open surgical hemorrhoidectomy.

Keywords: Hemorrhoidal Disease, Clinical and Proctoscopic Assessment, Open Surgical Hemorrhoidectomy.

INTRODUCTION

Hemorrhoidal disease is one of the most common proctological disease and affects between 7 and 30% of the general population. It is a consequence of an increased blood flow to the superior rectal artery, which causes dilatation of the hemorrhoidal plexus. There is also degradation of the supportive tissue that

results in sliding down of haemorrhoids.[1] Open hemorrhoidectomy was first described in 1937 by Milligan-Morgan and is still considered as the gold standard therapy. However, it is associated with significant pain, bleeding and wound infection which can result in prolonged hospital stay. Therefore, various non-excisional therapies such as laser therapies have been developed to reduce pain and improve recovery.[2] Laser Hemorrhoidoplasty (LHP) first described in 2007 by Karahaliloglu et al in which hemorrhoidal arterial flow feeding the hemorrhoidal plexus is stopped by laser coagulation. But there is conflicting evidence regarding their resolution of symptoms and recurrence rates.[3]

Hemorrhoidal disease is ranked first amongst diseases of the rectum and large intestine, and the estimated worldwide prevalence ranges from 2.9% to 27.9%**.** Hemorrhoidal disease is one of the most common disease affecting 50% of population over the past 50 years, affecting all ages and are gender non specific. Surgery is a mode of treatment for hemorrhoids of grades II, III, and IV.[4]

One of the most prominent surgical procedures for hemorrhoids is Milligan and Morgan hemorrhoidectomy. Other techniques includes stapler hemorrhoidectomy or procedures such as laser therapy.

Laser hemorrhoidoplasty (LHP) was first described between 2007 and 2009 and represents one of the latest techniques to be described which seeks to provide optimal therapy for haemorrhoidal disease. Using lasers in the treatment of hemorrhoid leads to minimal tissue damage and good haemostasis, and it can also reduce the duration of surgery and hospital stay.[5]

AIMS AND OBJECTIVES

Aim: The aim of the present study is to evaluate and compare the efficacy and outcomes of laser hemorrhoidoplasty with that of Milligan Morgan hemorrhoidectomy

Objective: To evaluate the effectiveness of the treatment, the duration of surgery, and the possible immediate and delayed complications including recurrence.

MATERIALS AND METHODS

Study Type: A Prospective Study.

Study Period: 3 years (with follow up period of 1 year) (January 2022 to December 2024).

Study Centre: Shivamogga Institute of Medical Sciences, Shimoga.

Sample Size: 54 [using Yamini's equation ie. $n/1+n(e)^2$]

Randomization: Patients were allocated in different groups, based on the chit method.

Study Population and Eligibility Criteria: All patients aged 21–90 years who were reviewed for symptomatic haemorrhoids were considered for inclusion.

All of them underwent a clinical and proctoscopic assessment to ascertain that haemorrhoids are the only cause of their symptoms.

Inclusion Criteria:

- No prior surgery for hemorrhoids (except for prior rubber-band ligation).
- Patients between 21 and 90 years.
- ASA I–III.
- Able to fully participate and give written informed consent.
- Willing to attend follow-up visits.

Exclusion Criteria:

- Previous surgical treatment of hemorrhoids (except rubber-band ligation).
- Cause of symptoms that are not solely attributed to hemorrhoids.
- Usage of anti-platelets and/or anti-coagulation drugs
- A history of any hypercoagulable or prothrombotic conditions.
- Immunocompromised and/or on immunosuppressive medications.
- Incidental asymptomatic hemorrhoids that are unrelated to the presenting symptoms.

METHODOLOGY

A Randomized prospective study comparing LHP and open surgical methods for hemorrhoidal disease was conducted at Shivamogga Institute of Medical Sciences, Shimoga.

All the surgeries were performed by Surgeons with good experience and skills at performing both the methods of surgery included in the study

Double Blinding was done for both the patients and the operating surgeon to rule out the "bias".

Institutional board approval and Ethical committee clearance was taken.

For LHP, Laser shots were delivered with a 980-diode laser through a 1000-nm optic fiber in a pulsed fashion to reduce undesired degeneration of periarterial normal tissue. The depth of shrinkage was regulated by the power and duration of the laser beam.

RESULTS

The LHP procedure was performed on 28 consecutive patients with mean age 47 ± 12.6 (range, 24–70) years. There were 14 men and 14 women.

The open surgical procedure was performed on 26 patients with mean age 49 ± 12.3 (range 28-72) years. There were 13 men and 13 women.

As far as pain is concerned, early postoperative pain is dominantly lower in the LHP group compared with surgical group. The same values also resulted for the period of one month. These results are presented in tables and in figures.

The post operative bleeding episodes were relatively lower in the LHP group compared with the open surgical group consistently at different post operative period. These results are presented in the tables and figures.

However, the post operative recurrence rate assessed after 1 year of post operative period of the two study groups didn't show much difference and had a similar recurrence rate. These results are presented in the tables and figures.

TABLE 1: Age wise distribution of the patients subjected to both open and LHP surgeries combined

		N	%
Age Distribution	20-30 years	6	11.1%
	30-40 years	10	18.5%
	40-50 years	15	27.8%
	50-60 years	13	24.1%
	>60 years	10	18.5%
	Total	54	100.0%

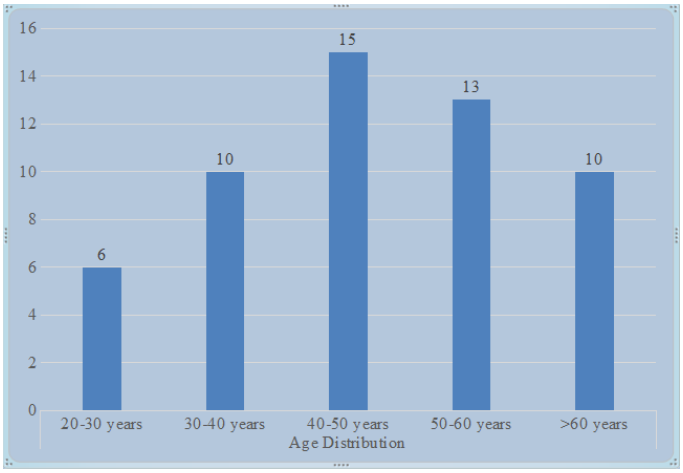

Figure 1: Age wise distribution of the total number of patients subjected to the study

TABLE 2: Age wise distribution of total number of patients subjected to respective OPEN and LHP surgeries

		Group					
		Open		LHP		Total	
		N	%	N	%	N	%
Age Distribution	20-30 years	1	3.8%	5	17.9%	6	11.1%
	30-40 years	4	15.4%	6	21.4%	10	18.5%
	40-50 years	8	30.8%	7	25.0%	15	27.8%
	50-60 years	7	26.9%	6	21.4%	13	24.1%

	>60 years	6	23.1%	4	14.3%	10	18.5%
	Total	26	100.0%	28	100.0%	54	100.0%

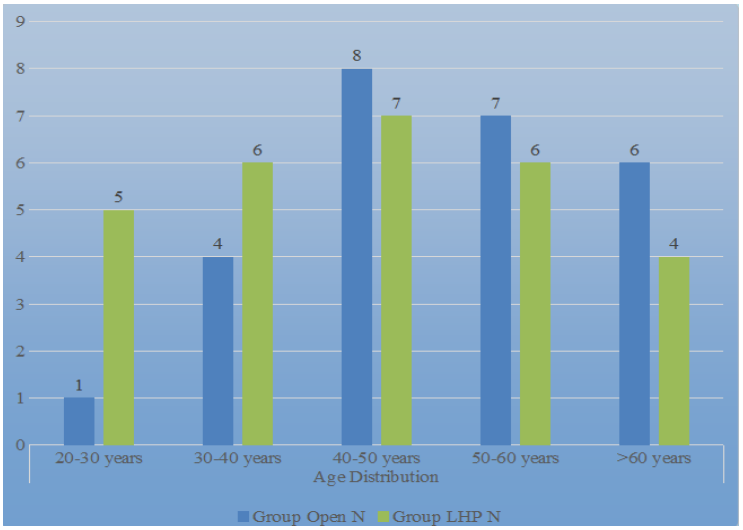

FIGURE 2: Age wise distribution of total number of patients subjected to respective OPEN and LHP surgeries

TABLE 3: Gender wise distribution of total number of patients subjected to respective OPEN and LHP surgeries

		Group					
		Open		LHP		Total	
		N	%	N	%	N	%
Sex	Females	13	50.0%	14	50.0%	27	50.0%
	Males	13	50.0%	14	50.0%	27	50.0%
	Total	26	100.0%	28	100.0%	54	100.0%

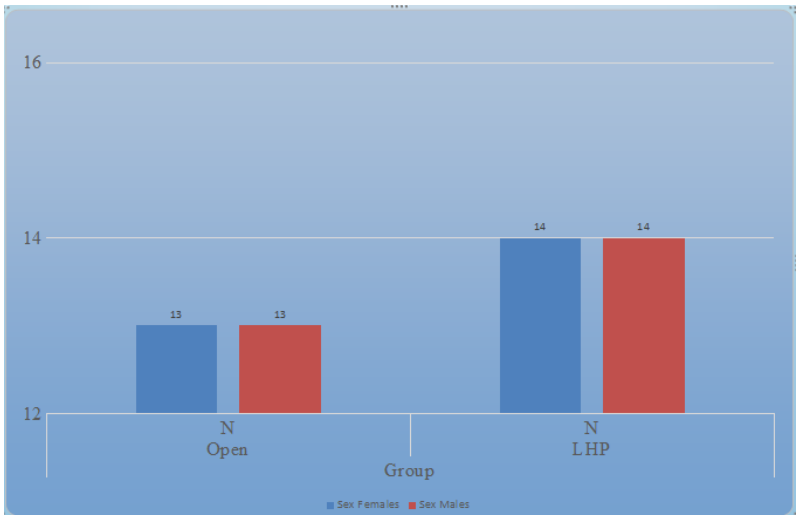

FIGURE 3: Gender wise distribution of total number of patients subjected to respective OPEN and LHP surgeries

TABLE 4: Distribution based on grades of haemorrhoids for the study population.

		Group					
		Open		LHP		Total	
		N	%	N	%	N	%
Grades of	Grade	12	46.2%	13	46.4%	25	46.3%

Hemorrhoids	3						
	Grade 4	14	53.8%	15	53.6%	29	53.7%
	Total	26	100.0%	28	100.0%	54	100.0%

TABLE 5: Average of intra-operative duration for OPEN and LHP surgeries with p value

		Duration of surgery (MINS)		t Score	P value
		Mean	Standard Deviation		
Group	Open	35.04	4.09	13.473	<0.0001
	LHP	17.50	5.34		
	Total	25.94	10.03		

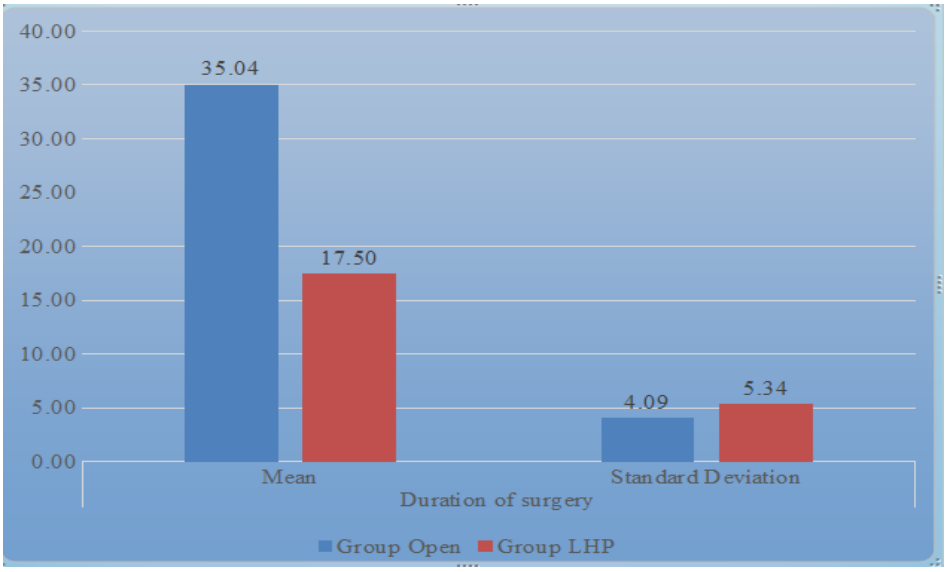

FIGURE 4: Average of intra-operative duration for OPEN and LHP surgeries with p value

TABLE 6: Pain presentation by VAS score in the OPEN AND LHP group during the post-operative follow up period

	Group					
	Open		LHP		Mann Whitney U test	
	Mean	Standard Deviation	Mean	Standard Deviation	U value	P value
VAS POD1	5.96	1.31	2.39	1.03	13.00	<0.0001
VAS POD7	2.73	1.46	0.32	0.61	40.00	<0.0001
VAS 1Month	0.12	0.43	0.00	0.00	336.00	0.139
VAS 6month	0.04	0.20	0.04	0.19	363.00	0.958

TABLE 7: Grading of severity of pain in the OPEN AND LHP group during post operative follow up period

		Group					
		Open		LHP		Statistic	
		N	%	N	%	Chi square	P value
Pain on POD1	No pain	0	0.0%	0	0.0%	43.146	<0.0001
	Mild pain (1-4)	3	11.5%	28	100.0%		
	Moderate pain (5-7)	19	73.1%	0	0.0%		

	Severe pain (>8)	4	15.4%	0	0.0%		
Pain on POD7	No pain	0	0.0%	21	75.0%	32.504	<0.0001
	Mild pain (1-4)	23	88.5%	7	25.0%		
	Moderate pain (5-7)	3	11.5%	0	0.0%		
	Severe pain (>8)	0	0.0%	0	0.0%		
Pain on Post op 1 month	No pain	24	92.3%	28	100.0%	2.237	0.227
	Mild pain (1-4)	2	7.7%	0	0.0%		
	Moderate pain (5-7)	0	0.0%	0	0.0%		
	Severe pain (>8)	0	0.0%	0	0.0%		
pain after 6 month	No pain	26	100.0%	28	100.0%	-	
	Mild pain (1-4)	0	0.0%	0	0.0%		
	Moderate pain (5-7)	0	0.0%	0	0.0%		
	Severe pain (>8)	0	0.0%	0	0.0%		

TABLE 8: Assessment of severity of bleeding in the OPEN AND LHP group during post-operative follow up period

		Group					
		Open		LHP		Statistic	
		N	%	N	%	Chi square	P value
Bleed POD1	No bleeding	20	76.9%	25	89.3%	1.984	0.371
	Mild bleeding	5	19.2%	3	10.7%		
	Moderate bleeding	1	3.8%	0	0.0%		
	Severe bleeding	0	0.0%	0	0.0%		
Bleed POD7	No bleeding	20	76.9%	26	92.9%	2.712	0.100
	Mild bleeding	6	23.1%	2	7.1%		
	Moderate bleeding	0	0.0%	0	0.0%		
	Severe bleeding	0	0.0%	0	0.0%		
Bleed 1Month	No bleeding	25	96.2%	28	100.0%	1.097	0.295
	Mild bleeding	1	3.8%	0	0.0%		
	Moderate bleeding	0	0.0%	0	0.0%		
	Severe bleeding	0	0.0%	0	0.0%		
Bleed 6month	No bleeding	24	92.3%	27	96.4%	1.104	0.576
	Mild bleeding	1	3.8%	1	3.6%		
	Moderate bleeding	1	3.8%	0	0.0%		

	Severe bleeding	0	0.0%	0	0.0%		

TABLE 9: Assessment of recurrence in the OPEN AND LHP group during the post-operative follow up period

		Group					
		Open		LHP		Total	
		N	%	N	%	N	%
Recurrence at 1 year	Absent	25	96.2%	27	96.4%	52	96.3%
	Present	1	3.8%	1	3.6%	2	3.7%
The chi square statistic is 0.003 and p value is 0.00957							

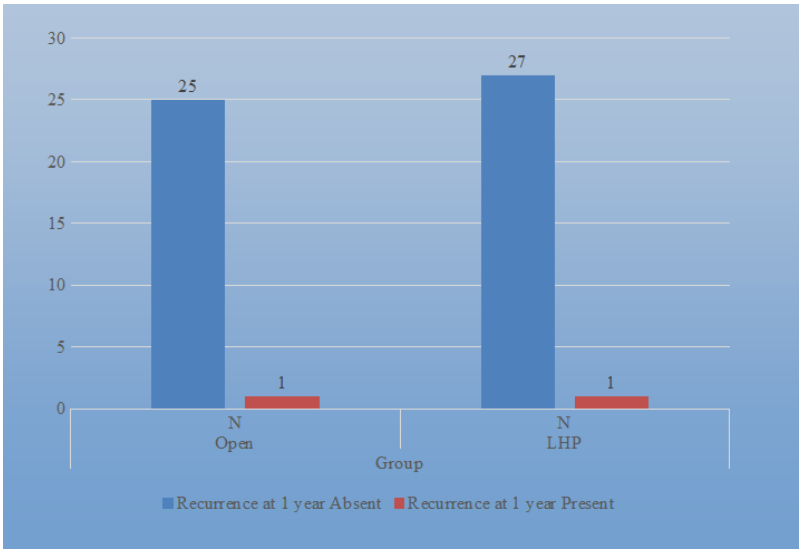

FIGURE 5: Assessment of recurrence in the OPEN AND LHP group during the post-operative follow up period

DISCUSSION

Laser Hemorrhoidoplasty (LHP) is a new minimally invasive procedure for hemorrhoids in which hemorrhoidal arterial flow feeding the hemorrhoidal plexus is stopped by laser coagulation. It also induces hemorrhoidal tissue shrinkage by causing submucosal protein denaturation. This subsequently leads to cellular fibrosis, followed by adherence to its underlying tissue, thereby preventing recurrent prolapse in the long term.[6] The diode laser (wavelength = 1470nm) penetrates up to 2 mm, determining a submucosal denaturation and a controlled shrinkage of the hemorrhoidal tissue. It is selectively and better adsorbed by the hemoglobin, as compared to Nd:YAG laser, and consequently less harmful to the surrounding tissue, preventing any sphincter damage. Laser therapies conferred the advantages of a quick return to normal activities and low postoperative pain. The latter is explained by the absence of excision of tissue below the dentate line, where pain fibers are present.[7]

The need for treatment for hemorrhoids is primarily based on the subjective perception of severity of symptoms and the assignment of treatment is decided on the traditional classification of hemorrhoids.[8]

Postoperative pain is the most important complication that disturbs our patients and makes them reluctant to surgery.

In a similar study at the university of Sao Paolo, Brazil, they stated that laser hemorrhoidectomy had the advantages of being haemostatic, bactericidal, fast healing, not affecting neighboring structures, less postoperative complications, less hemorrhage and stenosis.[9]

Our study showed that laser hemorrhoidoplasty is a safe procedure associated with less postoperative pain, less intra operative duration and less post operative bleeding, which is satisfactory for symptomatic hemorrhoidal patients with III or IV stage.[10]

CONCLUSION

In summary, laser hemorrhoidoplasty procedure is more preferred in comparison with conventional open surgical hemorrhoidectomy. Postoperative pain is significantly lesser in LHP compared with surgical procedure ($p<0.05$). Intra operative duration time is significantly shorter in LHP ($p<0.01$). Post operative bleeding is relatively less in LHP than open surgery assessed at different intervals. However, there was no significant difference in the recurrence rate at the of 1 year post operatively. Therefore, laser hemorrhoidoplasty procedure was more effective than open surgical hemorrhoidectomy.

REFERENCES

1. Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation. An epidemiologic study.Gastroenterology. 1990 Feb; 98(2): 380–6.
2. Riss S, Weiser FA, Schwameis K, Riss T, Mittlböck M, Steiner G, et al. The prevalence of hemorrhoids in adults. Int J Colorectal Dis. 2012 Feb; 27(2): 215–20.
3. Loder PB, Kamm MA, Nicholls RJ, Phillips RK. Haemorrhoids: pathology, pathophysiology and aetiology. Br J Surg. 1994 Jul; 81(7): 946–54.
4. Cocchiara JL. Hemorrhoids. A practical approach to an aggravating problem. Postgrad Med. 1991 Jan; 89(1):149–52.
5. Arroyo A, Pérez F, Miranda E, Serrano P, Candela F, Lacueva J, et al. Open versus closed day-case haemorrhoidectomy: is there any difference? Results of a prospective randomised study. Int J Colorectal Dis. 2004 Jul; 19(4): 370–3.
6. Faucheron JL, Trilling B, Reche F. HAL-RAR® procedure: A safe operation for hemorrhoids. J Visc Surg. 2015 Apr; 152(2): 143–4.
7. Faucheron JL, Poncet G, Voirin D, Badic B, Gangner Y. Doppler-guided hemorrhoidal artery ligation and rectoanal repair (HAL-RAR) for the treatment of grade IV hemorrhoids: long-term results in 100 consecutive patients. Dis Colon Rectum. 2011 Feb; 54(2): 226–31.
8. Burch J, Epstein D, Baba-Akbari A, Weatherly H, Fox D, Golder S, et al. Stapled haemorrhoidectomy (haemorrhoidopexy) for the treatment of haemorrhoids: a systematic review and economic evaluation. Health Technol Assess. 2008 Apr; 12(8):iii–iv.
9. Longo A. Stapled anopexy and stapled hemorrhoidectomy: two opposite concepts and procedures. Dis Colon Rectum. 2002 Apr; 45(4): 571–2.
10. van Tol RR, Bruijnen MP, Melenhorst J, van Kuijk SM, Stassen LP, Breukink SO. A national evaluation of the management practices of hemorrhoidal disease in the Netherlands. Int J Colorectal Dis. 2018 May; 33(5): 577– 88.