International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 16s, 2025
https://www.theaspd.com/ijes.php

Impact of Patient Characteristics on Outcome of Laser Hemorrhoidoplasty

Prajwal Chandrashekhara[1], Dhananjay Kumar[2], Karuturi Satya Prapoorna[3]
[1]Assistant Professor, Department of General Surgery, K S Hegde Medical Academy, NITTE (Deemed to be University), Deralakatte, Mangalore, Karnataka, India- 575018
[2]Assistant Professor, Department of General Surgery, K S Hegde Medical Academy, NITTE (Deemed to be University), Deralakatte, Mangalore, Karnataka, India- 575018
[3]Post Graduate, Department of General Surgery, K S Hegde Medical Academy, NITTE (Deemed to be University), Deralakatte, Mangalore, Karnataka, India- 575018

Abstract

Background:*Haemorrhoidal disease is common and impacts quality of life. While conventional haemorrhoidectomy is effective, it carries significant postoperative morbidity. Laser Hemorrhoidoplasty (LHP) offers a minimally invasive alternative, but data on factors influencing its outcomes are limited.*

Methodology:*This retrospective study included 41 patients (aged 20–80) undergoing LHP at KS Hegde Medical Academy between January 2023 and June 2024. Patients with Grade I haemorrhoids, other anorectal diseases, or pregnancy were excluded. Data on demographics, BMI, smoking, haemorrhoid grade, and outcomes were analyzed using the chi-square test ($p < 0.05$).*

Results:*Better symptom resolution was seen in males, non-smokers, and patients with normal BMI. Higher complications were noted in males, those aged 40–59, and patients with Grade III haemorrhoids. Recurrence was more common in the 20–39 age group, males, and those with BMI > 25. Hospital stay tended to be longer in older patients, females, and those with higher-grade haemorrhoids.*

Conclusion:*LHP is a safe and effective option for haemorrhoidal disease. Outcomes are influenced by age, gender, BMI, and smoking status. Larger studies are needed to validate these findings and refine patient selection.*

INTRODUCTION

Haemorrhoidal disease is a common anorectal disorder, affecting up to 27.9% of the global population. It has profoundly affected patients' quality of life and imposed a considerable strain on the medical and economical sectors (1-3). It is projected that over fifty percent of the population may encounter haemorrhoid symptoms at some stage in their lives (4, 5). The therapy of symptomatic haemorrhoids has evolved over time. These include various surgical options, noninvasive methods, and conservative strategies. Following the failure of conservative measures, surgical intervention is considered for symptomatic individuals. The classic haemorrhoidectomy has thus far been regarded as the gold standard. Nonetheless, its inescapable consequences, including seromucous discharge, haemorrhage, anal stenosis, chronic fissure, and urine retention, have hindered its widespread application (6).

The aetiology of internal haemorrhoids remains incompletely elucidated. One theory posits that a persistent increase in intra-abdominal pressure, coupled with the lack of valves in rectal veins, may restrict venous drainage from sinusoids during defecation, leading to abnormal dilation of the sinusoids and consequent bleeding due to rupture and/or mucosal injury (7, 8). The Goligher classification is frequently employed to assess the severity of haemorrhoids, hence guiding the choice of surgical intervention (9). Grade I refers to non-prolapsing haemorrhoids, while Grade II pertains to prolapsing haemorrhoids that reduce spontaneously upon defecation (10). In advanced phases, further disintegration of the conjoined longitudinal muscle leads to their permanent exteriorisation from the anus, which may be manually reducible (third degree) or irreducible (fourth degree) (11, 12).

Lasers were initially described for the treatment of haemorrhoidal illness over 30 years ago, but their application has only lately been adopted. Despite its widespread adoption in Europe and Asia, its implementation in India has been constrained by expense and insufficient expertise (13). There are two primary laser methodologies for treating haemorrhoidal illness. A laser hemorrhoidoplasty (LH) entails an incision at the hemorrhoid's base, through which the haemorrhoidal tissue is coagulated using a laser

probe. A haemorrhoidal laser procedure employs a Doppler ultrasound probe to locate the terminal branches of the superior rectal artery, which are subsequently coagulated using laser radiation (14, 15).

Recent information indicates that nursery surgery for bothersome haemorrhoids has enhanced outcomes regarding both safety and efficacy by the application of laser diode technology. Notwithstanding its advantages in enhanced outcomes, there is a paucity of evidence (16, 17) to validate its short-term results in low and middle-income nations, especially in rural regions.

Numerous studies evaluate the clinical outcomes and efficacy of laser treatment for hemorrhoidoplasty; however, there is currently little literature examining the factors influencing the results of laser hemorrhoidoplasty. The aim of this study is to evaluate the parameters influencing the clinical outcomes of laser hemorrhoidoplasty.

MATERIALS AND METHODS

Ethics Statement

This retrospective investigation was performed in compliance with the ethical guidelines established by the institutional research committee of KS Hegde Medical Academy. Ethical permission was secured before the initiation of the investigation. All patients whose data were included granted informed consent for the utilisation of their anonymised medical information for research purposes. Patient confidentiality was preserved during the study.

Study Design

This was a retrospective observational study carried out in the Department of General Surgery at KS Hegde Medical Academy during a duration of eighteen months, from January 2023 to June 2024. Fourty one patients, aged 20 to 80 years, who attended to the outpatient department with haemorrhoids and underwent Laser Hemorrhoidoplasty (LHP), were included in the study.

Exclusion criteria were:

- Patients with Grade I haemorrhoids
- Age less than 20 years
- Presence of other anorectal pathologies (abscess, inflammatory bowel disease, fistula)
- Pregnant patients

Information on risk factors, encompassing demographic details (age, gender), symptoms, smoking history, BMI, and haemorrhoid grade, was extracted from medical records.

Procedure

All patients received Laser Hemorrhoidoplasty in a same manner. The procedure was conducted under spinal anaesthesia with the patient positioned in lithotomy. A diode laser (EUPHOTON) with a wavelength of 1470 nm and a power output of 8.5 watts in continuous pulse mode was utilised. A 0.6 mm bare fibre was utilised, providing a total energy of 150–350 joules per haemorrhoid, contingent upon its size.

Approximately 70–80 joules of laser energy were administered at the apex of the haemorrhoidal pedicle (2–4 cm above the dentate line) on the mucosal side for dearterialization. Subsequently, the laser probe was introduced into the submucosal plane at the same level, delivering an additional 70–80 joules to the pedicle.

Ultimately, 150–200 joules were administered to the haemorrhoidal mass within the submucosal venous plexus. The laser energy induced selective death of haemorrhoidal vessels, resulting in fibrotic shrinking and a decrease in haemorrhoidal mass due to tissue absorption.

Patient Follow-Up

Postoperative data were extracted from hospital medical records and encompassed outcomes such as symptom remission, length of hospital stay, and postoperative complications (pain, haemorrhage, and infection). A follow-up was performed at six months post-procedure by personally contacting the patients to evaluate symptom recurrence. Statistical Examination The data were examined to evaluate the correlation between risk variables and outcomes of the Laser Hemorrhoidoplasty surgery. Statistical investigation utilised the chi-square test to assess the significance of associations between factors including age, gender, BMI, smoking status, and haemorrhoid grade concerning treatment outcomes. A p-value of less than 0.05 was deemed statistically significant.

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 16s, 2025
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Table 1: Association between Risk factors and resolution of symptoms

Factors		Resolution symptoms		Total	Chi square	p value
		No	Yes			
Age	20-39 years	1	18	19		
		14.3%	52.9%	46.3%		
	40-59 years	5	11	16		
		71.4%	32.4%	39.0%		
	60 and above	1	5	6		
		14.3%	14.7%	14.6%		
Total		7	34	41		
		100.0%	100.0%	100.0%	4.144	0.125
Sex	Female	1	8	9		
		14.3%	23.5%	22.0%		
	Male	6	26	32		
		85.7%	76.5%	78.0%		
Total		7	34	41		
		100.0%	100.0%	100.0%	0.29	0.591
Smoking	No	7	31	38		
		100.0%	91.2%	92.7%		
	Yes	0	3	3		
		0.0%	8.8%	7.3%		
Total		7	34	41		
		100.0%	100.0%	100.0%	0.666	0.414
Diet	Mixed	4	18	22		
		57.1%	52.9%	53.7%		
	Mixed (pred veg)	1	9	10		
		14.3%	26.5%	24.4%		
	pred non veg	2	3	5		
		28.6%	8.8%	12.2%		
	Veg	0	4	4		
		0.0%	11.8%	9.8%		
Total		7	34	41		
		100.0%	100.0%	100.0%	3.052	0.384
BMI	<18.5	1	2	3		
		14.3%	5.9%	7.3%		
	18.6-24.9	2	25	27		
		28.6%	73.5%	65.9%		
	>25	4	7	11		
		57.1%	20.6%	26.8%		
Total		7	34	41		
		100.0%	100.0%	100.0%	5.233	0.073
Grade	II	1	9	10		
		14.3%	26.5%	24.4%		
	III	6	20	26		
		85.7%	58.8%	63.4%		
	IV	0	5	5		
		0.0%	14.7%	12.2%		
Total		7	34	41		
		100.0%	100.0%	100.0%	2.045	0.563

Association between risk factors and resolution of symptoms

Of those who experienced symptom resolution, over half (52.9%) were in the 20–39 age group, followed by 32.4% in the 40–59 age group, and 14.7% in the 60 and above category, indicating a greater proportion of younger individuals achieved symptom resolution compared to older age groups. Approximately 76.5% of males and 23.5% of females experienced symptom resolution, indicating a greater proportion of males achieved symptom relief. Of those who had symptom relief, 91.2% were non-smokers and 8.8% were smokers. This suggests that symptom alleviation predominantly took place in non-smokers. Of those who experienced symptom resolution, 52.9% followed a mixed diet, 26.5% adhered to a mostly vegetarian diet, 11.8% maintained a vegetarian diet, and 8.8% followed a predominantly non-vegetarian diet. A greater percentage of patients with a normal BMI exhibited symptom remission at 73.5%, compared to 20.6% in overweight individuals (BMI >25) and 5.9% in underweight individuals (BMI <18.5). Symptom relief was noted in all grades, with a greater percentage of Grade II (9 out of 10) and Grade IV (all 5) patients achieving resolution. The relationships between age (Chi-square = 4.144, p = 0.125), sex (Chi-square = 4.144, p = 0.125), smoking (Chi-square = 0.666, p = 0.414), diet (Chi-square = 3.052, p = 0.384), BMI (Chi-square = 5.233, p = 0.073), and Grade of haemorrhoids (Chi-square = 2.045, p = 0.563) and the resolution of symptoms were statistically insignificant.

Table: Association between risk factors and Post-op complication

		POst_OP_COmplications			Chi	
		No	Yes	Total	square	p value
Age	20-39years	18 52.9%	1 14.3%	19 46.3%		
	40-59years	11 32.4%	5 71.4%	16 39.0%		
	60 and above	5 14.7%	1 14.3%	6 14.6%		
Total		34 100.0%	7 100.0%	41 100.0%	4.144	0.125
Sex	Female	8 23.5%	1 14.3%	9 22.0%		
	Male	26 76.5%	6 85.7%	32 78.0%		
Total		34 100.0%	7 100.0%	41 100.0%	0.29	0.591
Smoking	No	31 91.2%	7 100.0%	38 92.7%		
	Yes	3 8.8%	0 0.0%	3 7.3%		
Total		34 100.0%	7 100.0%	41 100.0%	0.666	0.414
Diet	Mixed	18 52.9%	4 57.1%	22 53.7%		
	Mixed (pred veg)	9 26.5%	1 14.3%	10 24.4%		
	pred non veg	3 8.8%	2 28.6%	5 12.2%		
	Veg	4 11.8%	0 0.0%	4 9.8%		
Total		34 100.0%	7 100.0%	41 100.0%	3.052	0.384
BMI	<18.5	2	1	3	5.233	0.073

		5.9%	14.3%	7.3%		
	18.6-24.9	25	2	27		
		73.5%	28.6%	65.9%		
	>25	7	4	11		
		20.6%	57.1%	26.8%		
Total		34	7	41		
		100.0%	100.0%	100.0%		
Grade	II	9	1	10		
		26.5%	14.3%	24.4%		
	III	20	6	26		
		58.8%	85.7%	63.4%		
	IV	5	0	5		
		14.7%	0.0%	12.2%		
Total		34	7	41		
		100.0%	100.0%	100.0%	2.045	0.563

Association between risk factors and Post-operative complications

Among those who encountered post-operative difficulties, the predominant number (71.4%) was from the 40–59 years age group, whereas only 14.3% were from both the 20–39 years and 60 years and above groups. The data indicates that post-operative problems were more prevalent in the middle-aged cohort (40–59 years). Of the individuals with complications, 85.7% were male and 14.3% were female. Complications were somewhat more prevalent in males. All patients with problems were non-smokers (100%). persons with difficulties had a greater prevalence of mixed diets (57.1%) and mostly non-vegetarian diets (28.6%), while predominantly vegetarian diets accounted for 14.3%, and there were no persons following a strictly vegetarian diet. Among individuals with problems, 57.1% had a BMI greater than 25, 28.6% had a BMI ranging from 18.6 to 24.9, and 14.3% were classified as underweight. Among patients with surgical complications, 85.7% were categorised as Grade III and 14.3% as Grade II. issues were more prevalent in Grade III patients, whereas Grade IV individuals experienced no issues. The relationships between age (Chi-square = 4.144, p = 0.125), gender (Chi-square = 0.29, p = 0.591), smoking (Chi-square = 0.666, p = 0.414), diet (Chi-square = 3.052, p = 0.384), BMI (Chi-square = 5.233, p = 0.073), and grade of haemorrhoids (Chi-square = 2.045, p = 0.563) and postoperative complications were not statistically significant.

Table : Association between risk factors and duration of hospital stay

		Duration			Chi	
		<=7 days	>7days	Total	square	p value
Age	20-39years	16	3	19		
		53.3%	27.3%	46.3%		
	40-59years	11	5	16		
		36.7%	45.5%	39.0%		
	60 and above	3	3	6		
		10.0%	27.3%	14.6%		
Total		30	11	41		
		100.0%	100.0%	100.0%	2.98	0.225
		Duration			Chi	
		<=7 days	>7days	Total	square	p value
Sex	Female	6	3	9		
		20.0%	27.3%	22.0%		
	Male	24	8	32		
		80.0%	72.7%	78.0%		
Total		30	11	41		
		100.0%	100.0%	100.0%	0.248	0.618

		Duration			Chi	
		<=7 days	>7days	Total	square	p value
Smoking	No	28	10	38		
		93.3%	90.9%	92.7%		
	Yes	2	1	3		
		6.7%	9.1%	7.3%		
Total		30	11	41		
		100.0%	100.0%	100.0%	0.07	0.792
		Duration			Chi	
		<=7 days	>7days	Total	square	p value
Diet	Mixed	16	6	22		
		53.3%	54.5%	53.7%		
	Mixed (pred veg)	8	2	10		
		26.7%	18.2%	24.4%		
	pred non veg	3	2	5		
		10.0%	18.2%	12.2%		
	Veg	3	1	4		
		10.0%	9.1%	9.8%		
Total		30	11	41		
		100.0%	100.0%	100.0%	0.688	0.8759
		Duration			Chi	
		<=7 days	>7days	Total	square	p value
BMI	<18.5	3	0	3		
		10.0%	0.0%	7.3%		
	18.6-24.9	19	8	27		
		63.3%	72.7%	65.9%		
	>25	8	3	11		
		26.7%	27.3%	26.8%		
Total		30	11	41		
		100.0%	100.0%	100.0%	1.209	0.546
		Duration			Chi	
		<=7 days	>7days	Total	square	p value
Grade	II	8	2	10		
		26.7%	18.2%	24.4%		
	III	18	8	26		
		60.0%	72.7%	63.4%		
	IV	4	1	5		
		13.4%	9.1%	12.2%		
Total		30	11	41		
		100.0%	100.0%	100.0%	1.241	0.743

Association between risk factors and duration of hospital stay

Among those with a hospital stay of 7 days or fewer, over half (53.3%) belonged to the 20–39 years age group, followed by 36.7% in the 40–59 years group, and 10.0% in the 60 years and older group. Conversely, among those with a duration of stay over 7 days, the predominant proportion came from the 40–59 years demographic (45.5%), while both the 20–39 years and 60 and above age groups constituted 27.3% each. Younger patients often experienced shorter hospitalisations, but prolonged stays were more prevalent in older age groups. Of individuals with a duration of stay over 7 days, 72.7% were male and 27.3% were female. A little greater percentage of females experienced extended hospital stays. The majority of patients with a hospital stay of 7 days or fewer were non-smokers (93.3%), whereas 6.7% were smokers. Among stays over 7 days, 90.9% were non-smokers, whereas 9.1% were smokers. Patients with

a hospital stay of 7 days or fewer largely adhered to a mixed diet (53.3%), followed by a predominantly vegetarian diet (26.7%), a vegetarian diet (10%), and a predominantly non-vegetarian diet (10%). Among stays exceeding 7 days, 54.5% followed a mixed diet, 18.2% adhered largely to a vegetarian diet, 18.2% to a non-vegetarian diet, and 9.1% identified as vegetarian. For a time of ≤7 days, 63.3% exhibited a BMI of 18.6–24.9, 26.7% had a BMI exceeding 25, and 10.0% were classified as underweight (BMI <18.5). For durations exceeding 7 days, 72.7% exhibited a BMI between 18.6 and 24.9, 27.3% had a BMI exceeding 25, and none were classified as underweight. Among patients with a hospital stay exceeding 7 days, 72.7% were categorised as Grade III, 18.2% as Grade II, and 9.1% as Grade IV. Of the hospital stays lasting 7 days or fewer, 60.0% were classified as Grade III, 26.7% as Grade II, and 13.4% as Grade IV. A marginally greater percentage of Grade III patients had hospital stays exceeding 7 days. The correlation between age (Chi-square = 2.98, p = 0.225), gender (Chi-square = 0.248, p = 0.618), smoking (Chi-square = 0.07, p = 0.792), diet (Chi-square = 0.688, p = 0.876), BMI (Chi-square = 1.209, p = 0.546), and Grade of haemorrhoids (Chi-square = 1.241, p = 0.743) with the duration of hospital stay was not statistically significant.

Table: Association between Risk factors and recurrence

		Recurrence			Chi	
		No	Yes	Total	square	p value
Age	20-39years	17	2	19		
		44.7%	66.7%	46.3%		
	40-59years	15	1	16		
		39.5%	33.3%	39.0%		
	60 and above	6	0	6		
		15.8%	0.0%	14.6%		
Total		38	3	41		
		100.0%	100.0%	100.0%	0.789	0.673
		Recurrence			Chi	
		No	Yes	Total	square	p value
Sex	Female	8	1	9		
		21.1%	33.3%	22.0%		
	Male	30	2	32		
		78.9%	66.7%	78.0%		
Total		38	3	41		
		100.0%	100.0%	100.0%	0.245	0.621
		Recurrence			Chi	
		No	Yes	Total	square	p value
Smoking	No	35	3	38		
		92.1%	100.0%	92.7%		
	Yes	3	0	3		
		7.9%	0.0%	7.3%		
Total		38	3	41		
		100.0%	100.0%	100.0%	0.256	0.613
		Recurrence			Chi	
		No	Yes	Total	square	p value
Diet	Mixed	20	2	22		
		52.6%	66.7%	53.7%		
	Mixed (pred veg)	9	1	10		
		23.7%	33.3%	24.4%		
	pred non veg	5	0	5		
		13.2%	0.0%	12.2%		
	Veg	4	0	4	0.919	0.8209

		10.5%	0.0%	9.8%		
Total		38	3	41		
		100.0%	100.0%	100.0%		
		Recurrence			Chi	
		No	Yes	Total	square	p value
BMI	<18.5	3	0	3		
		7.9%	0.0%	7.3%		
	18.6-24.9	26	1	27		
		68.4%	33.3%	65.9%		
	>25	9	2	11		
		23.7%	66.7%	26.8%		
Total		38	3	41		
		100.0%	100.0%	100.0%	2.671	0.263
		Recurrence			Chi	
		No	Yes	Total	square	p value
Grade	II	9	1	10		
		23.7%	33.3%	24.4%		
	III	25	1	26		
		65.8%	33.3%	63.4%		
	IV	3	1	3		
		10.5%	33.3%	12.2%		
Total		38	3	41		
		100.0%	100.0%	100.0%	6.178	0.103

Association between risk factors and recurrence

Of those who experienced recurrence, the majority (66.7%) were aged 20–39 years, followed by 33.3% in the 40–59 years group, with no cases recorded in the 60 years and older category. Notwithstanding a marginally elevated recurrence rate in the younger demographic. Of the individuals with recurrence, 66.7% were male and 33.3% were female. Recurrence was marginally more prevalent among females. Among individuals with recurrence, all (100%) were non-smokers, and none were smokers. Among those with recurrence, 66.7% adhered to a mixed diet, 33.3% mostly followed a vegetarian diet, and none maintained predominantly non-vegetarian or vegetarian diets. Of the individuals with recurrence, 66.7% had a BMI exceeding 25, 33.3% had a BMI ranging from 18.6 to 24.9, and none were classified as underweight.

Among patients with recurrence, 33.3% were classified as Grade II, 33.3% as Grade III, and 33.3% as Grade IV. Recurrence was observed across many grades, particularly within the 0049V subgroup, which exhibited a significant proportion. The correlation between age (Chi-square = 0.789, p = 0.673), gender (Chi-square = 0.245, p = 0.621), smoking (Chi-square = 0.256, p = 0.613), diet (Chi-square = 0.919, p = 0.821), BMI (Chi-square = 2.671, p = 0.263), and grade of haemorrhoids (Chi-square = 6.178, p = 0.103) with the duration of hospital stay was not statistically significant.

DISCUSSION

The optimal treatment for haemorrhoidal illness is not unequivocal. Although haemorrhoidal preservation techniques are claimed to diminish pain and enhance recovery, there exists contradictory evidence concerning their clinical effectiveness and long-term outcomes. A conventional haemorrhoidectomy is regarded as the gold standard, facilitating complete remission of haemorrhoidal disease, with recurrence rates estimated between 2% and 16% for grade II to IV haemorrhoids after one year; nonetheless, it is associated with a difficult postoperative experience (18-20).This retrospective observational study was designed to evaluate the factors influencing the clinical outcomes of laser hemorrhoidoplasty. A total of 41 patients, aged 20 to 80 years, who presented to the outpatient department with haemorrhoids and underwent Laser Hemorrhoidoplasty (LHP), were included in the study. This is the inaugural study to evaluate the parameters influencing the outcomes of laser

hemorrhoidopexy, to the best of our knowledge. This study evaluated risk factors and their correlation with symptom resolution, revealing that males exhibited a greater symptom resolution than females, non-smokers demonstrated higher symptom resolution than smokers, and patients with a normal BMI experienced greater symptom resolution. A study by Crea et al. and Gambardella et al. indicated that gender does not significantly affect the outcomes of LHP, as both male and female patients experience comparable benefits regarding symptom resolution and postoperative recovery (21, 22). No research was identified that examined alternative risk variables with the outcomes of Laser Hemorrhoidoplasty.Comparing the risk factors with the post-operative complications observed in patients revealed a significantly higher incidence of complications in the 40-59 age range. Younger individuals had a reduced incidence of postoperative complications relative to older patients. It was shown that males experienced higher post-operative difficulties than females, and Grade III haemorrhoids were associated with increased post-operative complications.This study compared various risk variables and the length of hospital stay. Despite the absence of statistically significant data, it was noticed that individuals aged 40-59 had prolonged hospital stays. Younger patients exhibit a more rapid healing rate, resulting in a shorter duration of hospital stay compared to older patients. It was noted that females exhibited a longer duration of hospital stay compared to males, and patients with Grade III haemorrhoids also experienced an extended hospital stay. According to a study by Singh et al., (23) patients undergoing LHP report reduced hospital stays and faster resumption of regular activities, with significantly shorter average surgical durations. Cheng et al. (24) observe that LHP exhibits a reduced incidence of sequelae, including anal stenosis and urine retention, in comparison to conventional techniques.The present investigation revealed that the recurrence of disease was most prevalent in the age range of 20-39 years compared to older age groups. Male patients exhibited a greater recurrence incidence, while individuals with a BMI exceeding 25 also demonstrated an elevated recurrence rate. The recurrence rate was consistent across various grades of haemorrhoids. A research by Jain et al. (13) indicates a recurrence rate of 25.0% (3 of 12) for individuals with grade II and III haemorrhoids after one year. The risk variables for recurrent disease were analogous to those for hypertension disease overall. In Godeberge et al., (25) the multivariate analysis identified several factors associated with HD recurrence following prior consultation for HD, including constipation, age group (OR 2.11; 95% CI 1.68, 2.65 for the comparison of 18–34 years vs. > 65 years), CVD CEAP class (OR 3.75; 95% CI 1.30, 10.90 for the comparison of CEAP C0a vs. C6), body mass index (BMI) category (OR 2.34; 95% CI 1.51, 3.64 for the comparison of 12–18 years vs. ≥ 31 kg/m2), and male gender (OR 1.25; 95% CI 1.11, 1.41) [7]. In women, the most significant risk variables were childbirth and the number of births ($p < 0.0001$), followed by constipation ($p < 0.001$), age group ($p < 0.0001$), the presence of cardiovascular disease (CVD) ($p = 0.0089$), and body mass index (BMI) category ($p = 0.0123$) [7]. In men, constipation emerged as the predominant risk factor ($p < 0.0001$), succeeded by age group ($p < 0.0001$), BMI category ($p = 0.0011$), and the presence of cardiovascular disease (CVD) ($p < 0.0001$) (14). Gender did not affect the probability of haemorrhoid recurrence in the univariate analysis.

CONCLUSION

This retrospective observational study offers valuable insights into the factors influencing clinical outcomes following Laser Hemorrhoidoplasty (LHP). The findings suggest that demographic and lifestyle factors such as age, gender, smoking status, and BMI, along with haemorrhoid grade, can significantly impact postoperative recovery, complication rates, and recurrence. Notably, younger, non-smoking patients with a normal BMI experienced better symptom resolution and shorter hospital stays. While LHP appears to be a safe and effective minimally invasive alternative to conventional haemorrhoidectomy, especially in terms of reduced postoperative discomfort and quicker return to daily activities, certain subgroups may be at increased risk of complications and recurrence.

Given the limited sample size and the single-centre design, larger multicentric studies with longer follow-up durations are warranted to validate these findings. Nevertheless, this study contributes to the emerging body of evidence supporting the role of laser technology in proctological surgery and highlights the importance of individualized patient assessment when selecting the optimal treatment approach for haemorrhoidal disease.

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