

**Original Research Article**  
**COMPARATIVE STUDY OF LASER HEMORRHOIDOPLASTY**  
**VERSUS STAPLER HEMORRHOIDOPEXY**

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**Abstract**

**Background & Methods:** The aim of the study is to compare study of Laser hemorrhoidoplasty versus stapler hemorrhoidopexy. According to the grades of hemorrhoids 1st grade was excluded from the surgical treatment as they were not indicated and so Grade II, Grade III, and Grade IV were included in the study for surgical treatment. Routine lab investigations like blood and screening of chest were done.

**Results:** The mean operative duration in LH was 25.7 min and in SH was 28.4 min, which was not statistically different. The blood loss was 8.4 ml in LH and 12.6 ml in SH, which was significantly more in the SH group ( $P = .013$ ). The mean hospital stay was 21.7 hours in LH and 31.7 hours in SH, which was significantly better in LH group ( $P = .021$ ). 08 patients in the LH group were discharged the same evening (stay of 8 hours) while the others were discharged the next day.

**Conclusion:** Patients with haemorrhoids treated with LASER Haemorrhoidoplasty had a better outcome than stapler haemorrhoidopexy in terms of early postoperative pain as well as complications and was associated with a shorter hospital stay and early return to work. LASER Haemorrhoidoplasty was most effective and alternative to the popular stapler Haemorrhoidopexy for grade III-IV haemorrhoids.

**Keywords:** Laser, hemorrhoidoplasty, stapler & hemorrhoidopexy.

**Study Design:** Comparative Study.

## 1. INTRODUCTION

Laser therapy has been widely employed in medicine and surgery, proving comparable or even superior to traditional surgical approaches for conditions including liver cancer, prostate cancer, and various gynecological conditions[1]. The ablative effect of lasers is dependent on the irradiance (power density) and duration of application.

In recent years, laser hemorrhoidoplasty (LH) has emerged as a novel treatment modality. First described separately, the early postoperative benefits have been demonstrated in comparison with other surgical methods, a likely result of the minimally invasive nature of laser therapy.

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%, of which more than 4% are symptomatic [2]. Approximately, one third of these patients seek physicians for advice. Age distribution demonstrates a Gaussian distribution with a peak incidence between 45 and 65 years with subsequent decline after 65 years.

Around half of the population has some degree of affection by the age of 50 years. In USA, the estimated prevalence is 58% in over 40 years of age [3]. Exact prevalence in the

developing countries is not known. Men are more frequently affected than women [4]. Surgical management of hemorrhoids has progressed tremendously from complex ligation procedures in the past to simpler techniques today that allow the patient to return to normal activities in a short period. The understanding of the anatomy and underlying pathophysiology of the disease has helped in continuous evolution of the surgical techniques and the quest continues to find the best physiological technique with minimal disturbances and complications. Surgery is the most effective treatment for hemorrhoids and is particularly recommended in prolapsing piles during defecation that may be reduced manually (Grade III) and irreducible hemorrhoids (Grade IV) [5]. Other indications to surgery are failure of non-operative management, patient preference and concomitant conditions (such as fissure or fistula) that require surgery. The rationale of these procedures is based on the theory that hemorrhoids are caused by vascular hyperplasia of the arteriovenous network within the anorectal submucosa. Traditional surgery for haemorrhoids aims to remove the hemorrhoids, with closure or without closure of the ensuing defect. This traditional approach is effective, but causes significant postoperative pain because of wide external wounds in the innervated perianal skin[6].

## 2. MATERIAL AND METHODS

All patients admitted to Hospital with hemorrhoids explained about the cost factor. If the patient agrees, then only Patient was operated. A detailed history was taken and all patients were subjected to thorough clinical examination including per rectal and proctoscopy examination by which further haemorrhoids was graded. According to the grades of hemorrhoids 1st grade was excluded from the surgical treatment as they were not indicated and so Grade II, Grade III, and Grade IV were included in the study for surgical treatment. Routine lab investigations like blood and screening of chest were done. A total of 50 patients underwent stapled procedure (Group A) and other 50 patients underwent Laser hemorrhoidoplasty (Group B) procedure according to the patients will after explaining the procedure. The study group was analyzed post operatively on factors such as: Post-operative pain: assessed by visual analogue scale, Bleeding, Wound infections, Urinary retention, Anal incontinence and Anal stenosis All patients were assessed during the first post-operative day, day of discharge, and at follow up visits at 1st week and 3rd week post operatively. Sample size for stapled and Laser hemorrhoidoplasty was 50 each (Total 100).

### Inclusion Criteria

1. Age more than 18 years
2. Symptomatic hemorrhoids

### Exclusion criteria

1. Asymptomatic hemorrhoids
2. Thrombosed haemorrhoids
3. Hemorrhoids with fistula in ano
4. Other ano rectal pathology

## 3. RESULT

**Table No. 1: Gender & Symptoms**

S. No.	Sex	No.	Percentage	P Value
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1	Male	77	77	0.71
2	Female	23	23	
	<b>Symptoms</b>			0.04
1	Pain	34	34	
2	Bleeding	66	66	
3	Constipation	47	47	
4	Prolapse	81	81	
5	Co-morbidities	32	32	

There was no significant age difference between the groups. However, LH group had 91% males and 9% females, while the SH group had 67% males and 33% females, the difference was statistically significant. Both the surgical groups were fairly comparable in their presenting symptoms and the examination findings. Only one parameter was significantly different, the bleeding per rectum as a symptom. However, on examination, the active bleeding was present in both the groups and had significant difference.

**Table No. 2: Grade of Piles**

S. No.	Sex	No.	Percentage	P Value
1	II	18	18	.032
2	III	82	82	
3	Active bleeding	21	21	
4	Mucosal prolapse	44	44	

We found, Grade III in 82% with significance of P (0.032).

**Table No. 3: Comparing Surgical Groups**

S. No.		LH		SH		P Value
	Mean	Mean	SD	Mean	SD	
1	Operative time (min)	25.7	6.6	28.4	11.9	0.046
2	Blood loss (ml)	8.4	4.1	12.6	4.1	0.013
3	Hospital stay (hours)	21.7	5.8	31.7	18.2	0.021

The mean operative duration in LH was 25.7 min and in SH was 28.4 min, which was not statistically different. The blood loss was 8.4 ml in LH and 12.6 ml in SH, which was significantly more in the SH group ( $P = .013$ ). The mean hospital stay was 21.7 hours in LH and 31.7 hours in SH, which was significantly better in LH group ( $P = .021$ ). 08 patients in the LH group were discharged the same evening (stay of 8 hours) while the others were discharged the next day.

#### 4. DISCUSSION

Hemorrhoidal Laser Procedure (HeLP) was described by Giamundo et al. [14] as a novel doppler-guided procedure using a special laser device to shrink terminal branches of the superior hemorrhoidal artery [7]. The procedure has been described for the treatment of second and third degree hemorrhoids. It is intended to accelerate postoperative down staging of the hemorrhoids. Spontaneous resolution is noted after several days. Ram et al. [15] studied 58 procedures with operation duration mean 20.8 minutes. Postoperative pain was noted to be VAS 0 in 80.6% patients at the first defecation, VAS 0 in 82.3% patients at 1 week and VAS 0

in 95.2% at 1 month. Other complications noted were bleeding (2.4–6%), abscess (0–5%) and urinary retention in 20.1%. Long term complications include fissure (1–2.6%), anal stenosis (1%), incontinence (0.4%), fistula (0.5%). Laser dearterialization has the advantage of preservation of the anatomy and physiology of the anal canal, when compared to other forms of treatment. Thus, it minimizes the risk of postoperative impaired anal function. As the technique spares the sensitive region below the dentate line, the pain in the postoperative period is very less when compared to other methods[8]. Incidence of postoperative bleeding is also lesser compared to other methods. It may not require anesthesia for the procedure; however, regional anesthesia is preferred to allay the patient anxiety. Patient can be discharged the same day evening. At three months follow up, no complications have been reported. In comparison, laser coagulation does not generate excessive heat and the beam is focused on the target tissue avoiding the lateral damage[9]. Laser hemorrhoidoplasty is nearly pain free, minimally invasive procedure with acceptable patient satisfaction. In the present study, the first one of its kind, laser hemorrhoidoplasty is fairly comparable to stapler hemorrhoidopexy and is associated with less operative time, less bleeding and significantly lesser number of complications. Since last two decades, stapler hemorrhoidopexy has become a low-pain alternative for prolapsed hemorrhoids. However, the supra-anal mucosal resection involved in the procedure causes a severe circular trauma. This unique step of stapler procedure, the mucosal resection and anastomosis, becomes the root-entry for a variety of specific complications related to stapler procedure. On the contrary, the diode laser serves to denature the hypertrophic hemorrhoidal tissue submucosally and thus downgrades the disease[10]. The entry to the hemorrhoidal pedicle is achieved via 2 mm small nick at mucocutaneous junction wherein the pointed laser probe is inserted submucosally until it has reached the area underneath the distal anal mucosa. After application of laser pulses, the tissue's response can be seen as slight reduction, but the better contraction response is seen later on follow-up. For patients with symptomatic or significant mucosal prolapse, a short distance mucopexy can be added, above the dentate line. However, the comparative results and complications related to mucopexy need to be studied.

In our comparative analysis, we found that both stapler hemorrhoidopexy and laser hemorrhoidoplasty are safe and effective procedures for hemorrhoids. However, significant difference was noted in the operative blood loss and outcome parameters like hospital stay, immediate postoperative VAS and complications[11]. The operative bleeding was lesser in laser than in stapler procedures. More importantly, there was only one patient with postoperative bleeding in laser group compared to significant number of patients in stapler who needed re-entry to the operating room to re-explore for postoperative bleeding. The complication rate is higher in stapler group, however further future studies with larger sample size need to be conducted to verify the results.

Cost-effectiveness is an important factor for the surgeons and the patients when deciding which technique to opt for. In India, Laser apparatus is not affordable and accessible to all because of its price and availability. The awareness regarding the laser procedure is not widespread due to the novelty of the procedure[12]. However, with the present study and the further research in the subject, it may gain popularity as a procedure of choice by many surgeons as well as patients. In our current study, we were able to match the equipment cost between stapler device and laser probe. It may not be possible to procure laser set-up at equivalent cost as stapling devices. However, in regard to significantly reduced hospital stay, reduced incidence of post-operative re-exploration and complications, the overall cost-effectiveness of laser surgery maybe better than the stapler procedure.

## 5. CONCLUSION

Patients with haemorrhoids treated with LASER Haemorrhoidoplasty had a better outcome than stapler haemorrhoidopexy in terms of early postoperative pain as well as complications and was associated with a shorter hospital stay and early return to work. LASER Haemorrhoidoplasty was most effective and alternative to the popular stapler Haemorrhoidopexy for grade III-IV haemorrhoids.

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