ORIGINAL RESEARCH PAPER

General Surgery

LASER HEMORRHOIDOPLASTY VERSUS HARMONIC SCALPEL HEMORRHOIDECTOMY FOR GRADE III AND IV HEMORRHOIDS: A COMPARATIVE STUDY

KEY WORDS:

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ABSTRACT

Background: Surgical management is often required for grade III and IV hemorrhoids. Minimally invasive techniques such as Laser Hemorrhoidoplasty (LHP) and Harmonic Scalpel Hemorrhoidectomy (HSH) have been increasingly used to improve postoperative outcomes. **Aim:** To compare the effectiveness and postoperative outcomes of Laser Hemorrhoidoplasty and Harmonic Scalpel Hemorrhoidectomy in patients with advanced hemorrhoids. **Methods:** A prospective comparative study was conducted at Rajarajeswari Medical College and Hospital between November 2023 and November 2024. Thirty-four patients with grade III or IV hemorrhoids were randomized into two groups: LHP (n=17) and HSH (n=17). Data regarding operative time, postoperative pain, discharge, wound healing, and complications were analyzed using SPSS version 25. **Results:** Operative time was comparable between LHP (17.18±2.21 minutes) and HSH (15.59±2.40 minutes). Postoperative pain was significantly lower in the LHP group during the first three postoperative weeks ($p<0.05$). Seromucous discharge was more common in the HSH group at 24 hours (41.2% vs 0%, $p=0.007$). Wound healing was significantly faster in LHP patients (6.94±1.56 days vs 13.76±2.31 days, $p<0.001$). No significant differences were observed in bleeding, stenosis, incontinence, or recurrence. **Conclusion:** Both procedures are effective for grade III and IV hemorrhoids; however, LHP provides advantages in reduced postoperative pain, faster wound healing, and less postoperative discharge.

INTRODUCTION

Hemorrhoidal disease is one of the most common anorectal disorders, affecting approximately 13–36% of the general population. Patients with grade III and IV hemorrhoids frequently require surgical intervention due to persistent symptoms suchas prolapse, bleeding, and pain.

Conventional hemorrhoidectomy has been the gold standard for many years; however, it is associated with significant postoperative pain and delayed recovery. Recent advances in surgical technology have introduced minimally invasive techniques such as Laser Hemorrhoidoplasty (LHP) and Harmonic Scalpel Hemorrhoidectomy (HSH).

Laser Hemorrhoidoplasty works by delivering controlled laser energy to hemorrhoidal tissue, causing shrinkage and fibrosis while preserving the mucosa. Harmonic scalpel hemorrhoidectomy uses ultrasonic energy to simultaneously cut and coagulate tissues, reducing blood loss and operative trauma.

This study aims to compare the outcomes of these two modern surgical techniques in patients with grade III and IV hemorrhoids.

Aim and Objectives

To compare the effectiveness and postoperative outcomes of Laser Hemorrhoidoplasty and Harmonic Scalpel Hemorrhoidectomy in patients with grade III and IV hemorrhoids.

Objectives

- To compare operative time between the two techniques.
- To evaluate postoperative pain levels.
- To assess postoperative complications including bleeding, discharge, and wound healing.
- To evaluate recurrence, incontinence, and anal stenosis.

MATERIALS AND METHODS

Study Design: Prospective comparative study.
Study Setting: Department of General Surgery, Rajarajeswari Medical College and Hospital.
Study Period: November 2023 to November 2024.
Sample Size: Thirty-four patients diagnosed with grade III or IV hemorrhoids.

Grouping:

- Laser Hemorrhoidoplasty group (n=17)
- Harmonic Scalpel Hemorrhoidectomy group (n=17)

Inclusion Criteria:

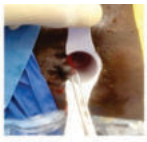
- Age between 18 and 75 years
- Symptomatic grade III and IV hemorrhoids

Exclusion Criteria:

- Recurrent hemorrhoids
- Thrombosed hemorrhoids
- Inflammatory bowel disease
- Chronic liver disease

Clinical Presentation

Age: LHP 36.0±10.85 years, HSH 41.65±8.83 years.
Sex: Male predominance in both groups.
Symptoms: Pain, prolapse, bleeding typical for grades III and IV.



Procedure

All procedures were performed under spinal anesthesia with the patient in lithotomy position.

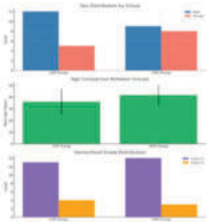
Statistical Analysis

Data were analyzed using SPSS version 25. Quantitative variables were expressed as mean ± standard deviation, while qualitative variables were expressed as frequencies and percentages. A p-value of <0.05 was considered statistically significant.

RESULTS

The demographic characteristics were comparable between the two groups with no statistically significant differences in age, sex, or hemorrhoid grade.

Demographic Parameter	LHP Group (N=17)	HSH Group (N=17)	p-value
Sex (Male/Female)	12 (70.6%) / 5 (29.4%)	9 (52.9%) / 8 (47.1%)	0.290 (NS)
Age (Years)	36.0 ± 10.85	41.65 ± 8.83	0.106 (NS)
Hemorrhoid Grade			
- Grade III	13 (76.5%)	14 (82.4%)	1.000 (NS)
- Grade IV	4 (23.5%)	3 (17.6%)	



Operative Time

Mean operative time was 17.18±2.21 minutes for LHP and 15.59±2.40 minutes for HSH, with no significant difference.

Postoperative Pain

Patients undergoing LHP reported significantly lower pain scores during the first three postoperative weeks ($p<0.05$).

Discharge

Seromucous discharge was observed more frequently in the HSH group compared with the LHP group during the early postoperative period.

Parameter	Laser Hemorrhoidoplasty (LHP)	Harmonic Scalpel Hemorrhoidectomy (HSH)	Statistical Significance (p-value)
Operative Time (min)	17.18 ± 2.21	15.59 ± 2.40	0.053 (NS)
Postoperative Pain (VAS)			
- 24 hours	2.94 ± 1.09	6.35 ± 1.66	<0.001*
- 1 week	1.18 ± 0.53	3.76 ± 1.09	<0.001*
- 3 weeks	1.06 ± 0.24	1.71 ± 1.05	0.038*
Postoperative Bleeding			
- 24 hours	11.8%	17.6%	1.000 (NS)
- 1 week	5.9%	11.8%	1.000 (NS)

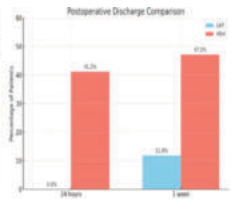
Wound Healing

Healing time was significantly shorter in the LHP group (6.94±1.56 days) compared with the HSH group (13.76±2.31 days).

Complications

No statistically significant differences were observed between the two groups regarding postoperative bleeding, anal stenosis, fecal incontinence, or recurrence at 6-week follow-up.

Parameter	Laser Hemorrhoidoplasty (LHP)	Harmonic Scalpel Hemorrhoidectomy (HSH)	Statistical Significance (p-value)
Postoperative Discharge			
- 24 hours	0%	41.2%	0.007*
- 1 week	11.8%	47.1%	0.024*
Wound Healing (days)	6.94 ± 1.56	13.76 ± 2.31	<0.001*
Complications			
- Stenosis	0%	0%	NS
- Incontinence	0%	0%	NS
- Recurrence (6 weeks)	0%	0%	NS



DISCUSSION

This study demonstrates that both Laser Hemorrhoidoplasty and Harmonic Scalpel Hemorrhoidectomy are safe and effective surgical options for advanced hemorrhoids.

However, LHP showed superior postoperative outcomes in terms of reduced pain, faster wound healing, and lower rates of postoperative discharge. These findings support previously published studies highlighting the minimally invasive nature of laser procedures.

Harmonic scalpel hemorrhoidectomy remains a reliable technique with acceptable operative time and complication rates, but postoperative discomfort may be greater compared with LHP.

CONCLUSION

Laser Hemorrhoidoplasty and Harmonic Scalpel Hemorrhoidectomy are both effective techniques for the management of grade III and IV hemorrhoids. However, Laser Hemorrhoidoplasty provides advantages in terms of reduced postoperative pain, faster wound healing, and improved patient comfort. Larger multicenter studies with longer follow-up periods are recommended to evaluate long-term recurrence rates and overall outcomes.

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