An Observational Clinical Study in Laser Treatment of Haemorrhoids

Abstract

Haemorrhoidal disease remains a common condition of the anal canal with an estimated prevalence in India is estimated to be as high as 36% in the general population. Among colorectal diseases, hemorrhoidal disease (HD) ranked number one with prevalence ranging from 3% to 29% with more than 4% of the symptomatic population (1). The haemorrhoidectomy open and closed are the surgical options of choice for haemorrhoids. Lasers are an alternative to conventional surgeries. However, postoperative pain, haemorrhage, urinary retention, and abscess formation are the most common side effects associated with Milligan Morgan. The long-term complications include stool incontinence, fistula formation, stenosis [2,3]. Because of these drawbacks, Burch et al. have come up with a new no excisional surgical procedure known as laser hemorrhoidal procedure (LHP) (4). It is mini-invasive and mostly suitable for a symptomatic second to third-degree with minimal rectal prolapse. With LHP, it is possible to get a significant reduction and shrinkage of final branches of the superior hemorrhoidal artery [5,6].

Objective

To establish Laser treatment of haemorrhoids as a better alternative to conventional procedures for Haemorrhoids.

Methods: We studied 25 patients with haemorrhoidal disease. We operated patients over a 6-month period, from 1 June 2024 to 30 December 2024. It included patients who underwent surgical treatment by Laser for first degree, second degree and third-degree haemorrhoids.

Results: Laser haemorrhoidoplasty is a minimally invasive surgical treatment of haemorrhoids with little disruption of the anal canal structure and has good outcome, especially for first degree, second degree, and third degree haemorrhoids.

Conclusion: Lasers on the anoderm and the anal canal results in less morbidity. Grade four haemorriods with prolapse does not yield good results with laser treatment.

Introduction

Hemorrhoids are normal vascular structures within the anal. They consist of arteriovenous anastomoses, connective tissue, and smooth muscle, forming the anal cushions. When these structures become enlarged, inflamed, or prolapsed**,** they lead to symptomatic hemorrhoidal disease**.**

Hemorrhoids develop due to degenerative changes in the connective tissue supporting the anal cushions, combined with increased intra-abdominal pressure and impaired venous drainage. Contributing factors include:

- Chronic constipation and straining
- Prolonged sitting or standing
- Pregnancy and vaginal delivery
- Obesity

- Aging and genetic predisposition

Haemorrhoids are among the most common anorectal disorders. In India Estimated prevalence of ~36%, more common in urban areas. Peak incidence 45–65 years, but younger adults are increasingly affected due to sedentary lifestyles.

Patient presents with bright red rectal bleeding, prolapse (noticed during defecation, reducible in early stages), pain and discomfort, itching and irritation due to mucus discharge.

Haemorrhoids based on their location relative to the dentate (pectinate) line:

1. Internal hemorrhoids
    - Originate above the dentate line
    - Covered by columnar epithelium (insensitive to pain)
    - Present with painless rectal bleeding and prolapse
2. External hemorrhoids
    - Originate below the dentate line
    - Covered by squamous epithelium (rich in somatic pain receptors)
    - Can become thrombosed, causing severe pain and swelling
3. Mixed hemorrhoids
    - Involve both internal and external components

The most common classification used for haemorriods.

- Grade I: No prolapse, prominent vascular cushions
- Grade II: Prolapse with straining but spontaneously reduces
- Grade III: Requires manual reduction
- Grade IV: Permanently prolapsed, often thrombosed

The treatment options for haemorriods include Conservative management (for early-stage hemorrhoids) high-fiber diet, increased hydration, stool softeners, topical agents, sitz baths for symptom relief. Office-based procedures (for symptomatic, non-responding cases), rubber band ligation (RBL): First-line for Grade II–III hemorrhoids, sclerotherapy, infrared coagulation. Surgical treatment (for advanced, recurrent, or complicated cases), excisional hemorrhoidectomy (Milligan-Morgan, Ferguson): Gold standard for Grade III–IV hemorrhoids, stapled hemorrhoidopexy (PPH): Ideal for circumferential prolapsing hemorrhoids, doppler-guided hemorrhoidal artery ligation (DG-HAL).

The aim of this study was to report our data on Laser treatment of haemorrhoids through a preliminary study to discuss the short- and medium-term results.

Materials and Methods

In this observational study, 50 patients with haemorrhoidal disease presenting to the General Surgery Department of Basaweshwar teaching and general hospital, Kalaburagi were operated over a 6-month period, from 1 June 2024 to 30 December 2024. It included patients who underwent surgical treatment by Lasers for first degree, second degree and third stage haemorrhoidal disease. Informed written consent was taken from each patient before enrolment in the study. After taking

history and carrying out relevant clinical examination, patients were taken up for Laser Haemorrhoidal Procedure.

Procedure

Preoperatively Bowel preparation enema is given the night before surgery. NBM for 8 hours before surgery. Performed under spinal anaesthesia in lithotomy position. Painting and draping done.

1. Proctoscopic Examination
    - A windowed proctoscope is inserted to visualize the hemorrhoidal columns.
    - The affected hemorrhoidal tissue is identified.
2. Laser Application
    - A diode laser generator, set between 12 and 15 W in pulsed mode which delivers laser energy through a radial fibre.
    - Laser is delivered 4cms from above the dentate line to devascularize the haemorrhoids.
    - The laser fibre is inserted submucosally into the hemorrhoidal mass.
    - Energy is delivered in a controlled manner up to 360 J, causing coagulation and shrinkage of the hemorrhoidal tissue followed by application of ice cubes.
    - Mucopexy was done in cases of associated mucosal prolapse.
    - The laser seals the blood supply, reducing postoperative bleeding.
3. Tissue Shrinkage and Fibrosis Formation
    - The thermal effect of the laser induces fibrosis, which helps to fix the mucosa to the underlying tissue, preventing prolapse.
    - Unlike traditional haemorrhoidectomy, no cutting or excision of tissue is required.
4. Completion of the Procedure
    - The procedure is repeated for all affected haemorrhoids.
    - Minimal post-procedure bleeding is expected.
    - No need for sutures.

Postoperative Care:- Usually patient is observed for 24 hours and adequate analgesics given and stool softeners given and advice dietary changes and called for follow up after 2 weekly.

Results :-

Table 1 :- Demographic details with clinical profile of patients

Variables		Values
Age		43.32-+12.26years
Sex	Male	16
	Female	9
Grade of Haemorrhoids	Grade 1	0
	Grade 2	7
	Grade 3	18
	Grade 4	0
Chief complaints	Bleeding	23
	Prolapse	22
	Constipation	21
	Itching	5

Table 2 :-Intraoperative findings

Variables	Values
Operative duration	30.2+-3.4minutes
Duration of hospital stay	2+-0.5days
Intraopertaive complication	
Bleeding	1

Table 3 :- Postoperative complications

COMPLICATIONS		No of patients	Percentage
Post operative pain	VAS 0	9	18
	VAS 1	20	40
	VAS 2	16	32
	VAS 3	5	10
	VAS 4-10	0	0
Recurrence		4	8
Severe pain		2	
Wound infection		2	
Incontinence		0	
Urinary retention		0	

Reduction in size of haemorriods is by 15-20% immediately after procedure.

Reduction in size of haemorriods is by 50-80% in an duration of 3 months.

A total of 50 patients were included in the study demographic and clinical profile of patient is given in table 1. Various complications arising out of the procedure were documented such as pain, recurrence in table 3. The pain scores and complications were found to be very low, with good percentage of subjects reporting no pain, emphasizing the role of Laser Haemorrhoidal Procedure over conventional procedures in the management of Haemorrhoids as the length of hospital stay (mean: 2 ± 0.5 days) was also less as compared to conventional procedure and intraoperative duration was also less compared to conventional procedure as shown in table 2.

Conclusion

Laser haemorrhoidoplasty is a minimally invasive surgical treatment of haemorrhoidal disease with little distortion of the anal canal and has good outcome, especially for second degree, and third-degree haemorrhoids. Grade 4 haemorrhoids and haemorrhoidal prolapse remain as indications for removal by conventional surgery open haemorrhoidectomy (Milligan and Morgan). The most frequently reported complications are persistent skin tags, thrombosis and early or delayed bleeding in rare cases.

References

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