



A PROSPECTIVE STUDY TO EVALUATE THE CLINICAL OUTCOMES AND EFFECTIVENESS OF LASER TREATMENT FOR HEMORRHOIDS

General Surgery

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ABSTRACT

Background: Laser treatment is increasingly used in the treatment of symptomatic hemorrhoids, and several studies have attempted to describe its clinical outcomes. The present study was undertaken to evaluate the clinical outcomes and effectiveness of laser treatment for management of hemorrhoids. **Method:** A total of 60 patients of aged between 18 to 60 years of either sex presented with symptomatic hemorrhoids grade II and III according to Goligher classification with no other source of anal bleeding than hemorrhoids on colonoscopic examination were enrolled in the study. **Results:** Out of 60, maximum (41; 68.33%) were presented with grade II hemorrhoids and remaining 19(31.66%) were presented with grade III hemorrhoids. Most of the patients (36; 60%) had 3 hemorrhoids followed by 4 hemorrhoids (22; 36.66%). The mean operative time was 15.3 ± 3.4 min, ranged from 7-20 min. The mean VAS pain immediately after operation was 2.33 ± 0.82 and after 1 week of operation mean VAS pain was 0.1 ± 0.2 . There was one hemorrhoid disease recurrence observed during the follow-up period of 3 months. In 3 patient's postoperative thrombosis were seen and in 1 patient anal fissure was detected. The mean satisfaction score after 3 months of laser surgery was 9.4 ± 2.5 . The mean hospital stay was 11.61 ± 4.59 hours. **Conclusion:** Laser surgery for treatment of haemorrhoid is newly introducing surgical modality was found to be a successful, easy, and quick way of treating haemorrhoid and anal fissure. The benefits of Laser therapy include effective resolution of all clinical symptoms, decreased hospital stay and recovery time and minimal risks and side-effects. The technique also increases blood supply and decreases pain.

KEYWORDS

Hemorrhoids, Goligher classification, Laser treatment, Total colonoscopy, Visual Analogue Scale (VAS) pain, anal fissure.

INTRODUCTION

Hemorrhoidal disease (HD) affects a large part of the world's population. It is an extremely frequent anorectal disorder associated with symptomatic swelling and/or distal displacement of anal cushions [1]. The true prevalence of hemorrhoids is unknown it is certainly on a rise over time. An epidemiologic study of hemorrhoids estimated prevalence of 4.4% the United State [2].

However, hemorrhoids can be internal, external, or mixed haemorrhoids. They are classified by the degree of prolapse in the anal canal into different grades from I to IV. Treatment for hemorrhoids depends on the degree of hemorrhoids. Generally, low grade hemorrhoids are effectively treated conservatively by nonoperative measures, while high grade hemorrhoids need procedural intervention. Surgical treatment is generally reserved for the patients who fail to respond the conservative measures. Most of the Grade III & IV hemorrhoids require surgery. There are several modalities of treatment such as band ligation, stapled hemorrhoidopexy, sclerotherapy, doppler-guided artery ligation, hemorrhoidal dearterialisation and surgical excision (Milligan-Morgan's and Ferguson's techniques). Irrespective of so many modalities, still there is no single treatment method has been considered as the most effective treatment option [3]. The search for the optimal treatment of hemorrhoids is ongoing.

Today, Laser treatment is not uncommon in the treatment of hemorrhoids for outpatients. In 2009, Salfi et al first described the Laser hemorrhoidectomy as a minimally invasive technique with satisfactory outcomes [4]. Using lasers in the treatment of hemorrhoid leads to minimal tissue damage and good hemostasis, and it can also reduce the duration of surgery and hospital stay.

The success of intravenous Laser ablation of large saphenous veins led to experimental and clinical studies of intrahemorrhoidal laser coagulation [5]. In this procedure, a Doppler is used to identify the terminal branches of the superior rectal artery, which are then coagulated with apulsed Laser energy. Both techniques allow obliteration and retraction of the hemorrhoidal plexus. Moreover, the laser techniques were shown to be safe and effective for the treatment of HD [4,6]. Hence the present study was undertaken to evaluate the clinical outcomes and effectiveness of Laser treatment for management of hemorrhoids in Department of surgery at Shri Vasantrao Naik Government medical college, Yavatmal, Maharashtra.

MATERIALS AND METHODS

After obtaining Institutional Ethical Committee approval and written informed consent from all the patients, this prospective observational study was conducted in the Department of General Surgery, at Shri Vasantrao Naik Government medical college, Yavatmal, Maharashtra during a period from 25th February 2022 to 28th December 2022. During this study period, a total of 60 patients of aged between 18 to 60 years of either sex presented with symptomatic hemorrhoids grade II and III according to Goligher classification and with no other source of anal bleeding than hemorrhoids on colonoscopic examination were enrolled in the study. Patients with anal fistula, chronic anal fissure with severe spasm of anal sphincters, any stage colorectal cancer, patients on oral anticoagulants and pregnant women were excluded from the study.

The diagnosis was based on history, and DRE and Colonoscopy. After a detailed DRE, proctoscopy and colonoscopy, the Laser procedure was performed with Lasertronix diode laser and Bare fibre. With the patient in the lithotomy position, a dedicated disposable proctoscope with a diameter of 23 mm was inserted in the anal canal. Laser shots were delivered with a 980-diode Laser through a 1000-nm optic bare fiber in a pulsed fashion to reduce undesired degeneration of periarterial normal tissue. The depth of shrinkage can be regulated by the power and duration of the Laser beam.

Through a 1000-micron optic bare fiber, five Laser shots generated at a power of 13 Watt with duration of 1.2 seconds each and a pause of 0.6 seconds caused shrinkage of tissues to the depth of approximately 5 mm. This procedure was performed as an daycare procedure. No bowel preparation was required. Two enemas were administered 1 hr apart 2 hrs before the surgery. Patients were discharged within 8-24 hours and were followed for 2 to 6 months for healing progress and complications.

The patients were followed for the level of postoperative pain and duration of operation. Postoperative pain was recorded by using a 10-point visual analog scale (VAS) on which 0 represents no pain and 10 represents the worst pain imaginable. VAS protocol was followed up after 1 week, 2 weeks, 1 month, 2 months and 3 months. The duration of intervention was recorded in minutes. Duration of hospital stay in hours, postoperative complications, patients' satisfaction rate using a 10-points scale in 3 months after surgery and recurrence of rate:

Number of patients with onset of symptoms were noted.

Early postoperative period: It is defined as the time period from the completion of the surgery and up to 30 days after the surgery. An obligatory regimen of analgesia was prescribed for each patient, which includes non steroidal analgesics, paracetamol, and topical symptomatic drugs. No diet modification before or after the surgery. The patient was discharged from hospital after 24hrs if no further medical care is needed.

Late postoperative period: It is defined as the period starting at 31st day post-surgery. The patient was asked to fill out the questionnaire forms to assess the changes in the QOL and pain level after surgery as per previous consent. To ensure patient compliance to protocol requirements, all subjects were notified telephonically and/or via e-mail. If the patient was unavailable, they must be contacted at least 3 times within the follow-up timeframe, before considered dropped-out from the study.

Statistical Analysis

Data was entered in Microsoft office excel and analyzed using SPSS version 21.0 for windows. Categorical variables were presented as frequency and percentage whereas continuous variables were expressed as mean with standard deviation or median and range depending on their distribution.

OBSERVATIONS AND RESULTS

A total of 60 patients were enrolled in the study, out of them, maximum (41; 68.33%) were presented with grade II of hemorrhoid and remaining 19 (31.66%) were presented with grade III of hemorrhoid. Most of the patients (36; 60%) had 3 hemorrhoids followed by 4 hemorrhoids (22; 36.66%) and only 2 (3.33%) patients had 2 hemorrhoids. The demographic data of patients are shown in table 1.

Table 1: Demographic Profile Of The Patients

Age group	No. of patients	Percentage
Age groups (Years)		
<20	02	3.33
21 to 30	07	11.66
31 to 40	19	31.66
41 to 50	24	40.0
51 to 60	08	13.33
Gender		
Male	39	65.0
Female	21	35.0

The most frequently reported symptoms (of any grade of intensity and frequency) were bleeding in 31 (51.66%) cases followed by pain in 26 (43%), Itching/discomfort in 24 (40.0%) and prolapse in 22 (36.66%) cases as depicted in figure 1.

Out of 60 patients, 8 had previous surgeries for treatment of hemorrhoids (5 rubber band ligations, 2 PPHs and 1 THD). No patient showed complications due to the previous procedure, only hemorrhoidal disease recurrence.

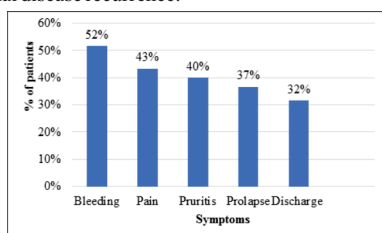


Figure 1: Distribution Of Hemorrhoid Symptom

In most of the patients (80%) had 11 to 15 min for laser procedure as depicted in figure 2. The mean operative time was 15.3 ± 3.4 min, ranged from 7 to 20 min.

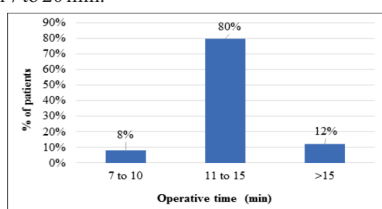


Figure 2: Operative Time

The mean VAS pain immediately after operation was 2.33 ± 0.82 and after 1 week of operation mean VAS pain was 0.1 ± 0.2 as shown in table 2.

Table 2: Patient-reported Pain Level Using Visual Analogue Scale (vas) Immediately After Surgery And During Follow Up

VAS pain	Mean
Immediately after operation	2.35 ± 0.80
1 week	0.1 ± 0.2
2 weeks	0.0 ± 0.0
1 month	0.0 ± 0.0
2 months	0.0 ± 0.0
3 months	0.0 ± 0.0

Most of the patients (79.99%) were stay in the hospital from 8 to 12 hours followed by 13 to 18 hours (8.33%) as shown in table 3. The mean hospital stay was 11.61 ± 4.59 hours

Table 3: Hospital Stay Distribution (Hour)

Hospital stays	No. of patients	Percentage
8 to 12	48	79.99
13 to 18	05	8.33
19 to 24	05	8.33
>24	02	3.33
Total	60	100.0

The majority of the patients had satisfaction score between 9 to 10 (52%) followed by 7 to 8 (45%) and 5 to 6 (3%) as depicted in figure 3. The mean satisfaction score after 3 months of laser surgery was 9.4 ± 2.5 .

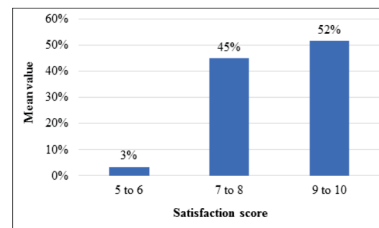


Figure 3: Patients' Satisfaction Rate Using A 10-points Scale In 3 Months After Laser Surgery.

There was one hemorrhoid disease recurrence observed during the follow-up period of 3 months. In 3 patient's postoperative thrombosis were seen and in 1 patient anal fissure was detected.

DISCUSSION

In the present study, the Laser surgery procedure showed excellent outcome in terms of resolution of hemorrhoid-related symptoms, less operative time, postoperative pain, low incidence of persistent or recurrent disease and less postoperative complications. These results support the "vascular" theory in the pathogenesis of hemorrhoidal disease. In recent years, this theory has been getting broad consensus among surgeons [7-9].

Most of the patients were from the age group of 41 to 50 years (40%) followed by 31 to 40 years (32%), with mean age of patient was 42.32 ± 9.77 years, ranged from 19 to 60 years. These findings are comparable with the study done by Yanar F et al [10]. Shabahang H et al [11]. However, according to the NIDDK, as people age, the connective tissue between the anus and rectum weakens, making them more susceptible to hemorrhoids. The male predominance (65%) was observed with male to female ratio of 1.8: 1 which is in accordance with the previous studies [10,12,13]. Hemorrhoids are believed to affect men and women equally. For men, hemorrhoids are more likely to occur as a result of heavy lifting or engaging in strenuous activities. Lifting and straining can cause added pressure on the rectum and the anus. Over time, it can cause the rectal vessels to become swollen.

The most frequently reported symptoms (of any grade of intensity and frequency) were bleeding in 31 (51.66%) cases, pain in 26 (43%), Itching/discomfort in 24 (40.0%) and prolapse in 22 (36.66%) cases. Similarly, findings are reported in Harvitkar T et al [12], Alsisiya AA et al [13] and Jane Alam ANM et al study [14].

Most the population submitted to surgery (41; 68.33% patients) was classified as having hemorrhoids grades II and 31.66% of the sample had grade III hemorrhoids at diagnosis. In the current study, it was

observed that most of the patients 36 (60%) had 3 hemorrhoids followed by 4 hemorrhoids (22; 36.66%) and only 2 (3.33%) patients had 2 hemorrhoids. These findings are comparable with the study conducted by Harvitkar T et al [12] and Jain A et al [15]. Out of 60 patients, 8 had previous surgeries for treatment of hemorrhoids (5 rubber band ligations, 2 PPHs and 1 THD). No patient showed complications due to the previous procedure, only hemorrhoidal disease recurrence. These findings are correlated with the study done by Boarini P et al [16].

Most of the patients (80%) had 11 to 15 min for laser procedure. The mean operative time was 15.3 ± 3.4 min, ranged from 7 to 20 min which is comparable with the other studies [12, 15, 17]. Postoperative pain is important factor for early return to normal daily life and work. Similarly, in present study, the postoperative pain score of the patients was lower. The mean VAS pain immediately after operation was 2.33 ± 0.82 and after 1 week of operation mean VAS pain was 0.1 ± 0.2 . There was no pain during follow up period of 2 weeks, 1 month, 2 months and 3 months. Likewise previous studies conducted by Yahya WN et al [17] and Bruscianno L et al [18] reported similar results.

The common postoperative complications in Laser surgeries include delayed bleeding, presence of urinary retention, painful defecation, fistula, acute infection fissure, anal stenosis, fecal incontinence, and postoperative thrombosis. In the present study, 3 patients had thrombosis 3–4 days after the laser surgery that they were medically treated. During the 3 months of follow-up, 1 recurrence was seen and in 1 patient anal fissure was detected. These findings are in accordance with the other studies [19, 20]. However, Jahanshahi et al reported that laser is a safe technique for the treatment of hemorrhoids due to less postoperative complications such as bleeding, pain, stenosis, and recurrence [21].

Most of the patients (79.99%) were stay in the hospital from 8 to 12 hours followed by 13 to 18 hours (8.33%). The mean hospital stay was 11.61 ± 4.59 hours which is comparable with the study conducted by Yahya WN et al [17] and Masson, [22]. Since no anesthetic was administered, the patients could be discharged a few hours after the operation.

In the present study, most of the patients had satisfaction score between 9 to 10 (52%) followed by 7 to 8 (45%) and 5 to 6 (3%). The mean satisfaction score after 3 months of laser surgery was 9.4 ± 2.5 . Similar findings are reported in Jain A et al [15] and Faes S et al study [20]. Literature suggests that Laser treatment is more suitable for lower-grade hemorrhoids (grade II and III) with low rates of recurrence [23]. A systematic review by Longchamp et al highlights that the recurrence rate of hemorrhoids after laser treatment ranges from 0% to 11.3% after 1 year for this cohort, [23]. Present study highlights a low rate of recurrence at 1.66% (1 of 60) for those with grade II and III hemorrhoids at 3 months.

However, the literature demonstrated that laser procedure is effective, with low intraoperative and postoperative morbidity, and with little postoperative pain expected. They should be considered for the treatment of grades II and III haemorrhoid diseases unresponsive to conservative management. As regards the social cost of the treatment, patients resumed normal habits and working activities earlier. The present study showed a good resolution of symptoms in the short term. The results after 3 months are as good as those after other non-excisional treatments as reported in literatures. However, studies with longer follow-up as well as controlled-randomized trials are needed to determine the accurate role of this procedure.

CONCLUSION

Laser surgery for treatment of hemorrhoid is newly introducing surgical modality was found to be a successful, easy, and quick way of treating hemorrhoid and anal fissure. The benefits of laser therapy include effective resolution of all clinical symptoms, decreased surgical time, hospital stay, recovery time and minimal risks and side-effects. Besides, this technique is also minimally invasive can be performed as a daycare procedure, has the advantage of short hospital stay, and faster recuperation. The technique is painless, and patients are more likely to accept and be satisfied with treatment; however, there are some limitations to this procedure. Surgical techniques and biostimulation effects and the methods of employing the hand pieces should be taught to surgeons. Safety is also important when working with the Laser.

A major limitation of this study is the lack of long-term follow-up. A single centre study with small number of patients. It is also important to note that the Laser procedure is more expensive than the others, but the cost of the procedure can be cut down by reduced duration of the procedure and shorter hospital stay. Similar trials with larger patient populations are awaited to demonstrate the long-term outcomes (up to 2 years) and efficacy of Laser surgery in the future

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