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Original Research Article

Laser Hemorrhoidoplasty Procedure Vs Stapler Surgical Hemorrhoidopexy: Treatment for Hemorrhoids of Third and Fourth Degree in Rural Areas of Thodupuzha

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Abstract:

Objective: According to the ‘‘vascular’’ theory, arterial overflow in the superior hemorrhoidal arteries would lead to dilatation of the hemorrhoidal venous plexus. Hemorrhoid laser procedure (LHP) is a new laser procedure for outpatient treatment of hemorrhoids in which hemorrhoidal arterial flow feeding the hemorrhoidal plexus is stopped by laser coagulation.

Aim: Our aim was to compare the hemorrhoid laser procedure with stapler haemmorhoidopexy procedure for outpatient treatment of symptomatic hemorrhoids.

Material and Method: A comparison trial between hemorrhoid laser procedure or stapler haemmorhoidopexy was made. This study was conducted at Department of General Surgery, Al Azhar Medical College Thodupuzha. Patients with symptomatic grade III or grade IV hemorrhoids with minimal or complete mucosal prolapse were eligible for the study: 40 patients treated with the laser hemorrhoidoplasty, and 40 patients–with open surgery hemorrhoidectomy. Operative time and postoperative pain with visual analog scale were evaluated.

Results: A total number of 40 patients (23 men and 17 women, mean age, 46 years) entered the trial. Significant differences between laser hemorrhoidoplasty and stapler procedure were observed in operative time and early postoperative pain. There was a statistically significant difference between the two groups regarding the early postoperative period: 1 week, 2 weeks, 3 weeks and 1 month after respective procedure ($p<0.01$). The procedure time for LHP was 15.94 min vs. 26.76 min for stapler surgery ($p<0.01$).

Conclusion: The laser hemorrhoidoplasty procedure was more effective than stapler surgical hemorrhoidectomy. Postoperative pain and duration time are only two indicators for this difference between there procedures.

Keywords: Laser Hemorrhoidoplasty, Stapler Surgery, Pain, Duration Time.

Introduction

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 [1,2]. 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 [3,4].

Men are more frequently affected than women [5]. The anorectal vascular cushions along with the internal anal sphincter are essential in the maintenance of continence by providing soft tissue support and keeping the anal canal closed tightly. Hemorrhoids are considered to be due to the downward displacement suspensory (Treitz) muscle [6,7]. The treatment options for symptomatic hemorrhoids have varied over time. Measures have included conservative medical management, non-surgical treatments and various surgical techniques. The various non-surgical treatments include rubber band ligation (RBL), injection sclerotherapy, cryotherapy, infrared coagulation, laser therapy and diathermy coagulation; all of which may be performed as outpatient procedures without anaesthesia.

These nonsurgical methods are considered to be the primary option for grades one to three (grade I-III) hemorrhoids [8]. If conservative measures fail to control symptoms, patients may be referred to a

surgeon for operative management. The indications for the surgical treatment include the presence of a significant external com- ponent, hypertrophied papillae, associated fissure, extensive thrombosis or recurrence of symptoms after repeated RBL. The technique employed may be stapler and the instruments used are scalpel, scissor, electrocautery or laser.

Milligan-Morgan hemorrhoidectomy is the gold standard and frequently performed procedure in the United Kingdom [9]. Post hemorrhoidectomy pain is the commonest problem associated with the surgical techniques.

The other early complications are urinary retention (20.1%), bleeding (secondary or reactionary) (2.4%–6%) and subcutaneous abscess (0.5%). The long-term complications include anal fissure (1% - 2.6%), anal stenosis (1%), incontinence (0.4%), fistula (0.5%) and recurrence of hemorrhoids [10,11].

The aim of this study was to compare pain and duration time of intervention between of the two methods, laser hemorrhoidoplasty (LHP) and surgical stapler haemmorhoidopexy.

Material and Method

In this comparative and prospective study 40 patients were included, of which, 20 patients were treated with laser hemorhoidoplasty method and 20 patients were treated with stapler haemmo rhoidopexy.

Patients were allocated in different groups, according to the stage of hemorrhoids: patients with stage III and minimal prolapse of mucosa were treated with LHP and patients with stage IV and prolapse, with open surgical method. This study was performed in Al Azhar Medical College Thodupuzha from January 2019 to June 2021. After a detailed physical examination and proctoscopy, the laser procedure was performed with Lasotronix. 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 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.

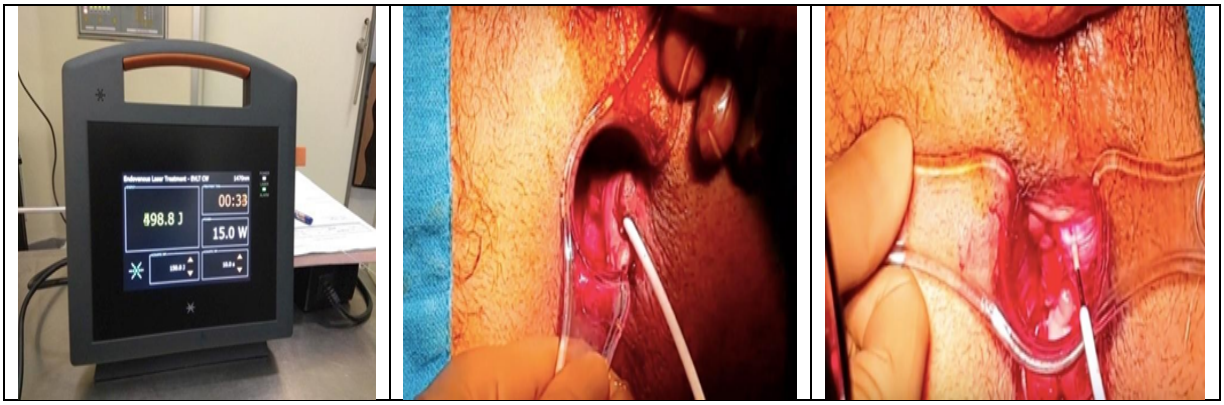

Figure 1:

Through a 1000-micron optic fiber, five laser shots generated at a power of 13 W with duration of 1.2 s each and a pause of 0.6 s caused shrinkage of tissues to the depth of approximately 5 mm. This procedure was performed as an out- patient procedure. No bowel preparation was required.

Two enemas were administered 2 hours before the intervention. Others, 20 patients were treated with stapler haemmorhoidopexy in the spinal anesthesia. Patients were discharged within 4 to 12 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, 3 weeks, 1 month, 2 months and 6 months. The duration of intervention was recorded in minutes. 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. 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 may be better than the stapler procedure.

Figure 2:

Results

The LHP procedure was performed on 20 consecutive patients which had symptomatic grade III hemorrhoids with moderate mucosal prolapse at proctoscopy and a medical his- tory of rare episodes of prolapse manual reduction, with mean age 47 ± 12.6 (range, 24–70) years. There were 11 men and 9 women. The open surgical procedure was performed on 20 patients who had symptomatic grade IV hemorrhoids and with complete prolapse and no response to manual reduction 40%.As far as pain is concerned, early postoperative pain is dominantly lower in the LHP group compared with surgical group. The same values also resulted for the period of one month.

The mean operative time was 15.94 ± 3.5 min in the LHP group and 26.76 ± 5.8 min ($p<0.01$). No major adverse effects or complications were reported. Bleeding was observed in one case (the patient was taking aspirin). In one case surgical hemostasis was necessary. Minor pain that required medication was reported in three cases, one in the LHP group and two in open surgery. No blood transfusions were needed in any of cases.

Table 1: Identifying the factors affecting the outcome

Age	correlation	0.116	-0.032	0.132	0.102	0.052	0.051	0.045	-0.046
	P value	0.421	0.823	0.359	0.483	0.719	0.727	0.756	0.751
Sex	correlation	0.12	0.145	0.226	0.35	-0.011	-0.091	0.191	0.037
	P value	0.405	0.317	0.115	0.013	0.941	0.53	0.184	0.799
Co-morbidities	correlation	-0.135	-0.097	0.039	0.056	0.095	0.168	0.051	0.114
	P value	0.349	0.502	0.789	0.7	0.51	0.245	0.723	0.431
Pain	correlation	-0.097	0.2	0.044	0.036	0.066	-0.13	-0.083	-0.212
P value	0.504	0.163	0.759	0.803	0.649	0.366	0.567	0.14	
Bleeding	correlation	0.169	0.246	0.231	0.295	0.16	0.13	0.313	0.212
P value	0.239	0.086	0.107	0.038	0.268	0.366	0.027	0.14	
Active bleeding	correlation	0.067	0.089	0.1	0.018	0.043	0.023	0.055	0.037
P value	0.645	0.539	0.488	0.901	0.768	0.876	0.707	0.799	
Prolapse	correlation	-0.11	0.161	0.05	0.012	0.171	0.091	0.082	0.147
P value	0.448	0.263	0.729	0.934	0.235	0.53	0.572	0.307	
Grade of piles	correlation	0.323	0.215	0.191	0.209	0.088	0.085	0.204	0.138
P value	0.022	0.134	0.185	0.145	0.544	0.556	0.154	0.339	
Operative time	correlation	0.513	0.357	0.394	0.402	0.143	0.144	0.255	0.111
P value	<0.001	0.011	0.005	0.004	0.322	0.318	0.074	0.442	

Discussion

The need for treatment for hemorrhoids is primarily based on the subjective perception of severity of symptoms and the assignment of treatment is decided on the traditional classification of hemorrhoids [12], which is not connected to the severity of symptoms. Multiplicity of treatment modalities has complications including pain, bleeding and wound infection which can result prolonged hospital stay [16].

We found that the pain scores were significantly lower in the LHP group compared with open hemorrhoidectomy procedure group, in the early postoperative period after VAS score was 5 vs. 0 for score 0-1, 15 vs. 18 for score 2-5 and 0 vs. 2 for score above 5 in the respective groups. Postoperative pain is the most important complication that disturbs our patients and makes them reluctant to surgery. In our study, postoperative pain during the first month after both procedures, was significantly lesser in the laser hemorroidectomy compared with stapler haemmorhoidopexy ($p<0.05$). Our study showed that laser hemorrhoidoplasty is a safe procedure associated with less postoperative pain. Laser hemorrhoidectomy is associated with lesser duration time compared with stapler haemmorhoidopexy which is satisfactory for symptomatic hemorrhoidal patients with III or IV stage (15.94 vs. 26.76 min and $p<0.01$).

Conclusion

In summary, laser hemorrhoidoplasty procedure is more preferred in comparison with conventional stapler haemmorhoidopexy. Postoperative pain is significantly lesser in laser procedure compared with surgical procedure ($p<0.05$). Duration time is significantly shorter in laser procedure ($p<0.01$).

Strengths and Limitations of the Study

The strength of our study is that it is a prospective comparative study on a reasonably sized cohort of patients with adequate short-term follow-up. All the surgeries were performed by the same operating team led by the same surgeon. Protocols for perioperative pain and patient management are well-defined in the study and in our hospital, thereby eliminating the chances of any interventional-bias between the groups. The data collection and the analysis were blinded to prevent any confounding factors or subjective bias towards any procedure. There is no study in the literature which compares stapler and laser procedures for hemorrhoids. This study can act as a foundation for further research in the search for the most ideal and effective treatment for hemorrhoids.

There are some limitations of this study. Firstly, patients of different grades are not matched to their corresponding grades in both the groups. The bleeding and prolapse profiles in these groups need to be matched and the analysis adjusted. Unfortunately due to smaller sample size, this analysis could not be performed. Second, the follow up time varies from 3 months to 11 months. Hence, the long-term outcomes of LH and SH cannot be accurately compared. Third, patients were discharged after 24 hours when the quantity of analgesics taken by the patients may have influenced the results of pain scores at 1 week or later. Fourth, within the laser group, the application of energy at single location or circumferential may likely affect the outcome and need to be studied. Lastly, patient blinding was not feasible due to paucity of study duration and achieving the required sample size

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