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Evaluation of Laser Hemorrhoidoplasty and a Combination Procedure of Finger Guided Hemorrhoidal Artery Ligation (FGHAL) and Laser Hemorrhoidoplasty for Surgical Treatment of Hemorrhoidal Cases in a Tertiary Care Centre: An Observational Study

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ABSTRACT
The combination of laser hemorrhoidoplasty (LH) with Finger Guided Hemorrhoidal Artery Ligation (FGHAL) is a newer technique to treat patients with hemorrhoidal diseases. To evaluate the role of laser hemorrhoidoplasty (LH) and a combination procedure of FGHAL +LH for treatment of hemorrhoidal diseases to check the patient's efficiency, safety, and complication in the early and long-term results. It is an observational study done from 1st July 2022 to 31st May 2023 and follow up for 6 months (October 2023), 80 patients were included in this study. Patients were evaluated in terms of duration of surgery, wound healing time, time to symptom relief, pre-and postoperative Visual Analogue Scale (VAS) scores for pain and short term and long term complication rate. Out of 80 patients, 48(60%) were male and 32(40%) were female. The majority of cases belong to the age group 50-59 years (38 cases-47.5%). The most common indication for operative intervention was bleeding (100%) per rectum which is followed by pain. Although the local complications like local hematoma, pain/ burning sensation and thrombosis was more in the combined group (6.25 %) w.r.t LH (2.5%), the long term benefits of combined procedure was significant. Average wound healing time, time for symptom relief and pain score was comparably similar in both the groups after 1 week, 1 month and 6 month follow up however chance of recurrence is minimal in the latter group. A combination procedure (FGHAL+LH) might be an acceptable treatment modality in patients with haemorrhoidal diseases with a low level of complication rate when compared to Laser Hemorrhoidoplasty alone. However, multicentric larger number of cases are needed to derive any proper conclusion.

INTRODUCTION

Hemorrhoidal disease (HD) is a prevalent anorectal disorder that significantly affects the quality of life of patients[1]. Patients with hemorrhoidal disease may have symptoms such as bleeding, discomfort and itching. Treatment options include traditional resection methods like Milligan-Morgan or Ferguson hemorrhoidectomy, as well as suspensory treatments like Longo techniques and their variations[2]. These procedures have demonstrated effectiveness in treating hemorrhoids, but may lead to significant consequences including discomfort, discharge and anal stenosis in Milligan-Morgan hemorrhoidectomy (MM), or defecatory urgency, severe pain and tenesmus following hemorrhoidopexy[3]. Thus, minimally symptomatic patients frequently postpone surgical treatment for this benign condition due to concerns about postoperative pain, complications and prolonged wound healing.

Recently, minimally invasive non-excisional techniques such as transanal hemorrhoidal dearterialization (THD) and hemorrhoidal artery ligation (HAL) have been suggested to address these problems[4]. Laser hemorrhoidoplasty (LHP) is a minimally invasive day-surgery method used to treat bothersome hemorrhoids. It involves using a diode laser to reduce the hemorrhoidal piles and induce tissue degeneration at various depths[5].

Hemorrhoidal disease is the most common condition affecting the rectum and large intestine, with a global prevalence estimated to be between 2.9% and 27.9% and over 4% of cases being symptomatic. Roughly one third of these patients see physicians for advice. The age distribution follows a Gaussian curve, peaking between 45 and 65 years and decreasing after 65 years.Men are more commonly impacted than women[6]. The anorectal vascular cushions and internal anal sphincter play a crucial role in maintaining continence by providing soft tissue support and ensuring tight closure of the anal canal. Hemorrhoids are believed to result from the downward displacement of the suspensory (Treitz) muscle[7]. Treatment options for symptomatic hemorrhoids have changed throughout time. Treatment measures have encompassed cautious medical therapy, non-surgical interventions and a range of surgical methods. Non-surgical treatments for this condition include rubber band ligation (RBL), injectable sclerotherapy, cryotherapy, infrared coagulation, laser therapy and diathermy coagulation. These procedures can be done on an outpatient basis without anesthesia. Nonsurgical techniques are the main treatment option for grades I-III hemorrhoids. If non-invasive treatments are unsuccessful in managing symptoms, patients may be directed to a surgeon for surgical intervention. Surgical treatment is indicated when there is a notable external component, enlarged papillae, accompanying fissure, severe thrombosis, or symptoms persist despite repeated rubber band ligation. The procedure can be performed using either an open approach known as Milligan-Morgan or a closed technique known as Ferguson. Instruments utilized include scalpel, scissor, electrocautery, or laser. Milligan-Morgan hemorrhoidectomy is the commonly used and highly regarded surgical treatment in the United Kingdom. Postoperative pain following hemorrhoidectomy is the most common issue related to the surgical procedures. Additional first problems include bladder retention (20.1%), secondary or reactionary bleeding (2.4%-6%) and subcutaneous abscess (0.5%). Long-term consequences may include anal fissure (1%-2.6%), anal stenosis (1%), incontinence (0.4%), fistula (0.5%) and recurrence of hemorrhoids[1,8].

RESULT

In our study, 2 (2.5%) patients were 18-29 years of age, 3 (3.75%) patients were 30-39 years of age, 17 (21.25%) patients were 40-49 years of age, 38 (47.5%) patient were 50-59 years of age and 20 (25.0%) patients were 60 years of age (Table 1). In our study, 48 (60.0%) patients were Female and 32 (40.0%) patients were male. In our study, out of 80 patients all patients had 80 (100.0%) patients had Constipation (Table 2), Bleeding and Pain. Out of all the study subjects, 40 cases were treated with LH and LH+FGHAL groups respectively. In our study, 40 (50.0) patients had LH <30 min and 40 (50.0) patients had FGHAL+LH >30 min (Table 3). At 1 week follow up, In LH, 8 (20.00%) patients had Bleeding, 1 (2.5%) patient had Local Hematoma, 4(10.0%) patients had Burning Sensation During defecation, 13 (32.5%) patients had Mild Pain (VAS), 2 (5.0%) patients had Moderate Pain (VAS), 2 (5.0%) patients had Thrombosis (Table 4). In FGHAL+LH after 1 week follow up, 5 (12.5%) patients had Bleeding, 3 (7.5%) patients had Local Hematoma, 13 (32.5%) patients had Burning Sensation During defecation, 15 (37.5%) patients had Mild Pain (VAS),

Table 1: Frequency of Age

Parameters	Number	Percentage
Age in Group		
18-29	2	2.5
30-39	3	3.75
40-49	17	21.25
50-59	38	47.5
≥60	20	25
Total	80	100
Sex		
Male	48	60
Female	32	40
Total	80	100

Table 2: Frequency of Symptoms

Symptoms	Percentage
Constipation	100
Bleeding	100
Pain	100

Table 3: Frequency of Duration of Surgery

Duration of Surgery	Percentage
LH	<30 min
FGHAL+LH	>30 min

Table 4: Frequency of 1st Week Follow Up

1st Week Follow Up	LH	Percentage	FGHAL+LH	Percentage
Bleeding	8	20.00	5	12.5
Local Hematoma	1	2.50	3	7.5
Secondary Hematoma	0	0	1	2.5
Burning Sensation During defecation	4	10.00	13	32.5
Pain (VAS)				
Mild	13	32.5	15	37.5
Moderate	2	5.00	2	5.0
Severe	0	0	0	0
Thrombosis	2	5.00	5	12.5

Table 5: Frequency of 1 month Follow Up

One month Follow Up	LH	Percentage	FGHAL+LH	Percentage
Bleeding	3	7.5	1	2.5
Pain (VAS)				
Mild	7	17.5	6	15.0
Moderate	0	0	0	0
Severe	0	0	0	0
Burning sensation during defecation	1	2.5	2	5.0

Table 6: Frequency of 6 month Follow Up

6 month Follow Up	LH	Percentage	FGHAL+LH	Percentage
Bleeding	6	15.0	0	0

2 (5.0%) patients had Moderate Pain(VAS), 5 (12.5%) patients had Thrombosis. At 1moth follow up, In LH, 3(7.5%) patients had Bleeding, 7 (17.5 %) patients had Mild and 1 (2.5%) patients had Burning sensation during defecation (Table 5). In FGHAL+ LH, after 1 month follow up 1(2.5%) patients had Bleeding, 6 (15.0 %) patients had Mild and 2 (5.0%) patients had Burning sensation during defecation. After 6 month follow up, In LH, 6 (15.0%) patients had Bleeding where as no bleeding (0%) in FGHAL+LH (Table 6).

DISCUSSION

The study population was predominantly composed of patients aged 50-59 years (47.5%), followed by those aged 60 years (25.0%). Patients aged 40-49 years accounted for 21.25% of the sample, while those aged 30-39 and 18-29 years represented 3.75% and 2.5% of the cohort, respectively. This distribution suggests a notable prevalence of middle- aged and older individuals in the study, with a relatively smaller representation of younger age groups.

The study comprised of 48 (60.0%) female and 32 (40.0%) male patients, indicating a majority of female participants.

In the study, all 80 (100.0%) patients experienced constipation, bleeding and pain as primary symptoms. Similar study by Gupta *et al*.[9] showed that the study included a total of 346 patients within 27 to 75 years of age. The presenting features were bleeding (93%), pain (89%) and prolapsed hemorrhoids (69%). Most patients had grade II hemorrhoids (60.7%).

In our study, 40 (50.0) patients had LH <30 min and 40 (50.0) patients had FGHAL+LH >30 min.

In the LH group, 8 (20.0%) patients bleeding, 1 (2.5%) patient presented with local hematoma, 4 (10.0%) reported burning sensation during defecation, 13 (32.5%) had mild pain as per VAS, 2 (5.0%) reported moderate pain as per VAS and 2 (5.0%) had thrombosis after 1 week. In the FGHAL+LH group, after 1week, 5 (12.5%) patients had bleeding, 3 (7.5%) had local hematoma, 13 (32.5%) experienced burning sensation during defecation, 15 (37.5%) reported mild pain on VAS, 2 (5.0%) had moderate pain on VAS and 5 (12.5%) had thrombosis. The distribution of symptoms suggests a range of manifestations within both groups, with bleeding and pain being common across both. The prevalence of burning sensation during defecation appears higher in the FGHAL+LH group, indicating potential differences in symptom profiles between the two groups. Further analysis may elucidate the significance of these variations in symptoms between the LH and FGHAL+LH groups.

In the LH group, at 1 month follow up 3(7.5%) patients bleeding, 7(17.5%) reported mild symptoms and 1 (2.5%) presented with burning sensation during defecation. In the FGHAL+LH group, 1 (2.5%) patient had bleeding, 6 (15.0%) exhibited mild symptoms and 2 (5.0%) reported burning sensation during defecation at 1 month follow up. These findings indicate variations in symptom prevalence between the two groups, with a notable majority experiencing mild symptoms. Further analysis is warranted to understand the implications of these differences in symptom presentation.

At the end of 6 months follow up it was noticed that only 6 (15%) patients out of the total 40 cases treated with LH experienced some form of recurrence in the form of bleeding. However no such thing was noticed for the FGHAL+LH group.

This is the most notable phenomenon in the favor of FGHAL+LH combined procedure. Although the other parameters as bleeding to post operative pain of variable degrees were comparable in both the study groups, the 6 month follow revealed that the combination procedure is much safer in terms of chances of recurrence.

CONCLUSION

A combination procedure (FGHAL+LH) might be an acceptable treatment modality in patients with haemorrhoidal diseases with a low level of complication rate when compared to Laser Hemorrhoidoplasty alone. However, multicentric larger number of cases are needed to derive any proper conclusion. These findings suggest potential differences in symptom manifestation between the two groups and variable outcomes upon three follow up schedules. Given the variations in symptom prevalence and presentations at follow up, further comprehensive analysis is essential to discern the clinical implications and contribute to a deeper understanding of the conditions under study.

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