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Laser hemorrhoidectomy-Our experience

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Abstract

Laser (Light Amplification by Stimulated Emission of Radiation) is a high-energy light that is used to safely cut or burn the affected tissue during surgical procedures. The laser techniques are advanced and safer than before; they are scar-free, bloodless and less painful with fewer complications ^[1]. In our study, Assignment to two cohorts although not randomized, not based on duration or severity of symptoms. Operative procedures. Pre-operative work up and post-operative management were standardized. Patients couldn't come to OPD were communicated over telephone. Patients with VAS score < 4 were discharged on oral high fiber diet, with oral medication on POD1. The safety and efficacy of LHP is more than open hemorrhoidectomy accompanied with a low incidence of post-operative complications and it is more effective in third-degree than fourth degree piles. LHP technique is superior to conventional open surgical hemorrhoidectomy. With less Postoperative pain in comparison with surgical maneuver. Operative time is significantly shorter in laser procedure.

Keywords: Complications, hemorrhoidectomy, Laser

Introduction

Laser (Light Amplification by Stimulated Emission of Radiation) is a high-energy light that is used to safely cut or burn the affected tissue during surgical procedures. The laser techniques are advanced and safer than before; they are scar-free, bloodless and less painful with fewer complications ^[1].

Laser surgery or laser therapy is a day-care procedure that offers several advantages over traditional surgery. Compared to banding surgery, laser effectively treats hemorrhoids, improves symptoms and reduces post-operative pain. Similar benefits are seen for patients with severe anal spasms, external thrombosis, fissure, and sentinel tags, fistula & varicose veins due to ever-growing advantages, namely ^[2].

- Less operation time, discharge within a few hours
- Back to routine life in 3-5 days
- Greater surgical precision
- Sutureless treatment with no scars
- Fastest recovery as there are no cuts or stitches
- Quick relief from the symptoms
- Less blood loss during surgery
- No or minimal post-operative pain
- Reduced risk of infection
- Reduced risk of rectal stenosis or prolapse
- Aesthetically the best procedures – helps as a confidence-booster for the patient.
- The anal sphincter action is well preserved, (no chances of incontinence fecal leak).
- Least recurrence rates
- Fewer doctor visits post-surgery
- High success rates

No need for general anesthesia. Local or spinal anesthesia is applicable for this surgery. Laser cauterization is a technique in which the surgeon burns to shrink the swollen hemorrhoids. Alternatively, the surgeon may use a narrow beam of the laser to focus only on hemorrhoid and not damage the nearby tissues. It is a safe procedure with minimal bleeding and a quick healing time.

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A laser fiber is passed through the anal opening and laser energy is applied to the energy is applied to the haemorrhoidal mass. The controlled emission of laser energy reaches the submucosa zone, causing the haemorrhoidal mass to shrink. Fibrosis reconstruction generates new connective tissue, ensuring the mucosa adheres to the underlying tissue preventing the recurrence of prolapse [3].

Methodology

- It was a prospective analytical pilot study
- Sample size : 25 each in laser and MM groups (calculated at 5% level of significance and 80% power)
- Time period : From March 2019 to June 2020
- Follow up : 1 week, 2 weeks, 1 month and 3 months
- Antibiotic prophylaxis; LH group : Single dose of iv + 1 week orals, MM group : Single dose of iv antibiotics

Inclusion criteria

Exclusion Criteria

1. Coexisting anorectal disease
2. Not fit for General Anesthesia
3. Chronic pain syndromes and bleeding disorders
4. Regular Immuno suppressants or analgesics
5. Liver Cirrhosis
6. Uncontrolled diabetes

Statistics

- Categorical data – Frequencies/Percentages
- Continuous data – Mean +/- SD
- Comparison of qualitative variables – Fischer's exact test
- Comparison of quantitative variables – Student's t-test
- A P-Value of <0.05 considered statistically significant at 95% CI

Results

Table 1: Adult patients with Grade 2, 3, and 4 hemorrhoids

	Laser group (n=25)			MM group (n=25)			P-Value
Age	41.92+/-8.63			48.52+/-16.4			0.08
Sex							
Males	17 (68%)			15 (60%)			0.55
Females	8 (32%)			10 (40%)			0.55
Grade of hemorrhoids							
II	10 (40%)			8 (32%)			0.55
III	14 (56%)			12 (48%)			0.57
IV	1 (4%)			5 (20%)			0.08
Preoperative symptoms							
Pain	13 (52%)			17 (68%)			0.25
Bleeding	18 (72%)			21 (84%)			0.31
	Laser group (n=25)			MM group (n=25)			P-Value
Operative time	25.64 min +/- 8.97 min			31.32 min +/- 8.13 min			0.0232
Post-operative pain	Mild	Moderate	Severe	Mild	Moderate	Severe	<0.0001
POD1	(1-3)	(4-6)	(7-10)	(1-3)	(4-6)	(7-10)	-
POD7	21/25	4/25	0/25	5/25	18/25	2/25	
	10/25	-	-	18/25	4/25	-	
Urinary retention	1/25			3/25			0.6092
Post-operative bleeding	1/25			2/25			1.000

Table 2: Late- post operative outcomes

	Laser group	MM group	P-Value
Abscess	1/25	0/25	1.0000
Anal stenosis	0/25	1/25	1.0000
Return to work	3.84+/-0.97 days	9.32+/-7.81 days	0.00001

Discussion

In our study, Assignment to two cohorts although not randomized, not based on duration or severity of symptoms. Operative procedures. Pre-operative work up and post-operative management were standardized. Patients couldn't come to OPD were communicated over telephone. Patients with VAS score < 4 were discharged on oral high fiber diet, with oral medication on POD1.

According to a study by Halit Maloku, a total number of 40 patients (23 men and 17 women, mean age, 46 years) entered the trial. Significant differences between laser hemorrhoidoplasty and open surgical 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 open surgery ($p < 0.01$) [4].

According to a randomized clinical trial (RCT) by Hossein Shabahang, 85 cases with a second or third degree of hemorrhoids were assigned to two groups at random and followed for 6 months. Those patients in the intervention group were treated by laser hemorrhoidoplasty (LHP) and those in the control group underwent Milligan and Morgan hemorrhoidectomy. At the end of follow-up, 80 cases remained in the trial on whom postoperative pain [visual analog scale (VAS)], complications, and quality of life according to the 36-item Short Form Health Survey (SF-36) questionnaire were studied. Data were analyzed using R 3.5.1 software and p value. The most common complaints were bleeding (57%) and pain (41%). Postoperative pain immediately and after 6 months was not significantly different between the two groups ($p > 0.05$). No complications were seen in any groups in follow-up. All eight scales of SF-36 questionnaire, except general health, were significantly different in the two groups. Physical functioning was lower in patients who underwent LHP, whereas the patients' quality of life in other scales was better in the laser group. The total score of SF-36 was 66.1 ± 3.6 and 56.0 ± 3.3 in laser and surgery groups, respectively ($p < 0.001$). They concluded that Laser hemorrhoidectomy is a safe procedure, not associated with any excessive postoperative complications. It improves patients' quality of life and can be a substitution of other surgical methods [5].

According to a study by Ahmef Mohammed Hassan, done at the department of general surgery, Al-Al zher university Hospital, Assuit, and Al-Rehab Hospital, between November 2019 and November 2020. 40 Patients complained for grade III hemorrhoids were combatable for this study. Those patients had been divided into 2 groups. Group I: Twenty patients managed by the LHP, and Group II: Twenty patients managed with open hemorrhoidectomy. Evaluation of the time of the operation, postoperative bleeding and pain with a visual analog scale, was done.

The number of male patients was 23 and female patients were 17. There were major considerable variations in regard of operative time, postoperative bleeding and early postoperative pain between laser hemorrhoidoplasty and open surgical technique. There were statistically considerable differences among the 2 groups concerning the early postoperative period ($p < 0.01$). The Average operative time for LHP was 15.90 minutes versus 26.80 minutes for the open technique ($p < 0.01$). They concluded that LHP had greater effectiveness than the open approach concerning Postoperative pain, bleeding and operative time [6].

Conclusion

The safety and efficacy of LHP is more than open hemorrhoidectomy accompanied with a low incidence of post-operative complications and it is more effective in third-degree than fourth degree piles. LHP technique is superior to conventional open surgical hemorrhoidectomy. With less Postoperative pain in comparison with surgical maneuver. Operative time is significantly shorter in laser procedure.

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