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ORIGINAL ARTICLE

Cause of Early Failure of Laser Hemorrhoidoplasty with Mucopexy in 3rd and 4th Degree Hemorrhoids at Shifa Hospital Saidu Sharif Swat

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ABSTRACT

Purpose of Study: Common surgical approaches in the management of hemorrhoid disease such as standard Milligan Morgan hemorrhoidectomies are with severe postoperative pain and long recovery time. Studies aimed to perform laser hemorrhoidoplasty (LHP) in patients with symptomatic hemorrhoidal disease show less pain and early return to work. But some time LHP with mucopexy fails. My study is designed to search out the cause of early failure of LHP with mucopexy in 3rd degree and 4th degree hemorrhoidal disease at Shifa Hospital Saidu Sharif Swat.

Methods: In our study 65 patients with 3rd and 4th degree hemorrhoids were retrospectively included for LHP with mucopexy. Outcomes such LHP and mucopexy failure with in first ten days and its causes were evaluated by Digital rectal examination and external examination. After counselling patients, they were called back for follow-up after 6 weeks and examination under anesthesia was carried out.

Results: Out of 65 patients 3 patients came with early prolapse of hemorrhoid pedicle and pain although 62 patients had no prolapse after LHP with mucopexy with mild pain in first ten days. Among those who came back with early prolapse after LHP with mucopexy one patient came on 3rd post op day the second and third patients came on 5th post op day with lump coming out of anus. On external examination and DRE it was noticed that the stich taken up for mucopexy was visible detached from the mucosa at the pedicel level. So, after proper counselling and analgesic use these patients were called back after 6 weeks and were put back for examination under anesthesia and LHP with mucopexy was done again in the prolapsed part. Further they were called back at 10th day and after 6 weeks and there was no evidence of prolapse or other complication.

Conclusion: This study demonstrates disruption of suture after mucopexy with laser application as a cause of early failure after LHP with mucopexy. The most probable cause of this suture disruption seems to be the firing of laser too close to the stitch. In order to prevent this disruption of suture it is better to fire laser at least one centimeter away from the stich site and to avoid excessive firing.

Keyword: Hemorrhoids, laser, hemorrhoidoplasty, mucopexy hemorrhoidectomy.

INTRODUCTION

Hemorrhoid disease is a common surgical disease mostly associated with constipation[1], with a worldwide prevalence of up to 27.9%[2]. It is estimated 50% or more will experience symptoms from hemorrhoid disease at some part of their life. [3,4].

The treatment of hemorrhoidal disease usually depends upon the grading and symptoms. Grade I hemorrhoidal disease are usually managed conservatively whereas symptomatic 2nd degree hemorrhoid and 3rd and 4th degree hemorrhoidal disease mostly require intervention. Milligan Morgen hemorrhoidectomy[5,6] is the gold standard procedure but, it is associated with post op complications and pain[7].

Other non-excisional managements such as band ligation and sclerotherapy are associated with complication such as pain, sepsis and high recurrence rates. As there are different surgical procedures for the treatment of hemorrhoid disease but the main concern for the patient and the surgeon is quick recovery and decreased post-operative pain which improves quality of life and early return to work[7].

In the treatment of hemorrhoids, the use of laser was first introduced 32 years back[7,8]. The proper utilization of laser for hemorrhoids is started recently. A laser hemorrhoidoplasty (LHP) with mucopexy involves 1 mm stab at the base of hemorrhoid at the mucocutaneous junction through which the hemorrhoidal tissue is coagulated using the conical laser fiber[9]. Laser having wave length of 1470 nanometer(nm) and power of 10 watts is used at our setup for this procedure. A hemorrhoidal laser procedure with mucopexy uses finger guided Hemorrhoidal artery ligation (HAL). The first stitch is taken 2cms away from the dentate line which is 5mm deep and it is taken with vicryl 2/0 next the hemorrhoid pedicle is then targeted via laser to coagulate the feeding vessels and hemorrhoidal cushion about 1 cm below the first stitch. After done with laser firing cold fomentation with pressure is applied to the cushion for at least 2 minutes. And then the mucopexy is done with the first stitch taken up high 2cms away from the dentate line.

Laser treatment with mucopexy in 3rd and 4th degree hemorrhoids reported low postoperative pain scores as well as satisfactory symptom relief and low recurrence rates on long-term follow-up[10]. Along with symptomatic relief, the patient quality of life and early return to routine activities is related. But there are some patients who come in early period of their surgery with failed procedure and presented with lump coming out of anus before ten post-operative day were not satisfied with the outcomes of LHP with mucopexy.

The author is presenting the study investigating the cause of failure of the procedure in patients who underwent LHP with mucopexy in the first ten days in Malakand division of Pakistan operated in Shifa Hospital Saidu Sharif Swat. The patients reported with a lump coming out of anus in the first ten days after the procedure. We observed that LHP with mucopexy has failed in these patients because of the disruption of the mucopexy suture which was disrupted because of the laser firing too near to it.

MATERIAL & METHODS

Study design: In this cross-sectional study done at Shifa Hospital Saidu Sharif Swat Pakistan, we selected 65 patients with symptomatic 3rd degree and 4th degree hemorrhoids from August 2022 to August 2023. Consecutive patients who presented to the clinic with symptomatic 3rd and 4th degree hemorrhoids were assessed with DRE and proctoscopy and, with informed consent, selected for LHP with mucopexy. After performing the procedure, we called patients back for examination on tenth post op day. Among 65 patients 3 patients landed before tenth day with lump coming out of anus and so their external examination and DRE was performed. And upon these two parameters these patients were assumed to have disruption of suture from mucopexy site by the firing of laser.the outcomes, measured using a 10-day postoperative

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questionnaire, were as follows if there is any lump coming out of the anus.

Inclusion criteria: patient with symptomatic 3rd degree and 4th degree hemorrhoids

Exclusion criteria: patients with Previous history of perianal disease, History of neurological deficit or chronic pain syndrome, Unfit for surgery or anaesthesia and Pregnant.

Procedure: The procedure was performed under general anesthesia or saddle block in lithotomy position. Anoscope was used to visualize the hemorrhoidal pedicles. The dentate line was identified and 2 centimeters away from it up the hemorrhoidal artery was palpated via finger and FGHAL(finger guided hemorrhoidal artery ligation)was done with vicryl 2/0. It can be done with help of Doppler ultrasound too but we used FGHAL. The stitch was 5mm deep and 2cms away from dentate line. The laser fiber was fixed in 14 G introducer sheath. The anoderm near to the hemorrhoidal pedicle was stabbed with a conical fiber and fiber was introduced up to the main pedicle above the dentate line in submucosal plane but 1cms below the initial stitch which was taken up.

The hemorrhoid tissue was coagulated using a 10-W, 1,470-nm diode laser system by Leonardo mini via 14 G cannula. We delivered not more than 300 joules to each pedicle. Pulse mode of cycle with 3 seconds energy delivering with 1 second pause. 3 pulses were given 1 cm above the dentate line, next 3 pulses given at the dentate line and 2 pulses were given to the lower cushion part. (fig 1). A cold wet gauze was applied for at least two minutes and pressed against hemorrhoid to reduce swelling and allow cooling of tissues in order to decrease thermal relaxation time. After two minutes of cooling and pressure the mucopexy with first stitch was carried out and again pressure with dry gauze was given for 30 seconds. This was repeated for all present hemorrhoid. All patients were discharged home after 4 hours of procedure on same day.

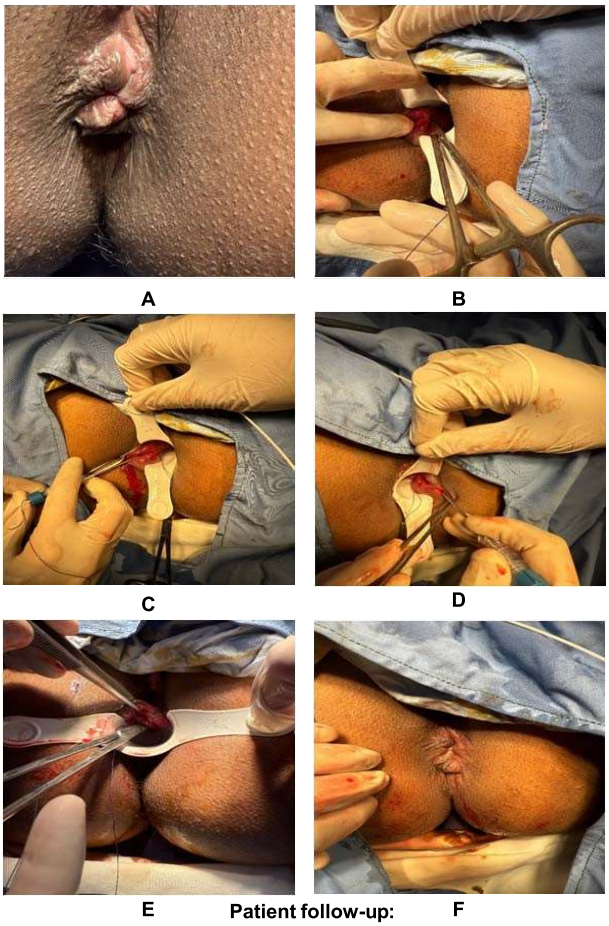

Figure: 1 A. pre operation image of the hemorrhoid. B. figure showing hemorrhoidal artery ligation C. insertion of the laser fiber with cannula at the mucocutaneous junction D. laser hemorrhoidoplasty. E. mucopexy F. post-operative image

At day 10th postoperatively patients were followed clinically with digital rectal examination (DRE) only. After one-month patient were followed clinically with DRE and proctoscopy. At 2nd month followed for any recurrence or residual hemorrhoid with proctoscopy. In mean time three patients came with lump coming out of anus before tenth day. Patients were followed for lump coming out of anus before tenth day of procedure. while the remaining 62 patients were satisfied with results.

Statistical analysis: Data were summarized using mean, median (range), and number (%) according to type and distribution. Short-term continuous outcomes (lump coming out of anus) were assessed using the SPSS (2016) and calculating frequency and estimated mean for outcome over the 10th day period.

RESULTS

In our study, 65 patients underwent LHP with mucopexy. All the patients were recruited, and all patients were followed on tenth day for lump coming out of anus. Three patients reported lump coming out of anus before tenth day with a failure of procedure LHP with mucopexy.

The median age in the LHP with mucopexy group was 43.5 years (range, 32–88 years) and were female patients. This group had no smokers, with 4 patients on oral anticoagulation (withheld perioperatively). 9 patients (13%) had a history of previous hemorrhoid procedures. The median of the grade of hemorrhoids was III (range, II–IV) and without significant comorbidities. Baseline characteristics are further presented inTable 1.

The mean procedure time of the laser procedure was 30 to 40 minutes (range, 30-40minutes), average total laser energy used per patient was 800J_1400J (range, 250J-1300J). In LHP with mucopexy in our study 62 patient (95.3%) does not show any lump coming out of anus before 10th postoperative day. While 3 patients presented with lump coming out of the anus before 10th postoperative day as mention in table 2.

Lump coming out of anus was assessed using external examination and digital rectal examination tenth post op day, and after 6 weeks 62 patients (95.3%) were having no lump post operatively. 3 Patients (4.61%) were complaining of having lump coming out of anus before tenth day and were effectively evaluated. They were called back after 6 weeks after proper counselling sitz bath and analgesics use and were re LHPied and mucopexied after 6 weeks.

Table 1: Recurrence

Characteristic	Laser hemorrhoidoplasty group (n=60)
Age (yr)	43.5 (32–88)
Female sex	65 (100%)
Smoking status	0 (0%)
Anticoagulation	4 (6.15%)
Previous hemorrhoid surgery[a]	9 (13%)
Grade of hemorrhoids	
I	0 (0)
II	0 (0)
III	45(53.4)
IV	20(30)
No. of hemorrhoids	
1	0 (0)
2	0(0)
3	45(69.2%)
4	20(30.7%)

Table 2: Recurrence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no recurrence	62	95.4	95.4	95.4
	recurence	3	4.6	4.6	100.0
	Total	65	100.0	100.0	

DISCUSSION

This study evaluated the failure of LHP with mucopexy in 3rd and 4th degree hemorrhoids at Shifa hospital Saidu Sharif in the population of Malakand division. This study demonstrated that LHP with mucopexy can result in early failure in very few patients whose procedure is done with excessive firing of laser and if firing of laser is done very close to the suture for mucopexy.

The ideal choice of treatment for 3rd and 4th degree hemorrhoids is not easy job to be decided. A traditional hemorrhoidectomy is considered to be the gold standard and allows complete remission of hemorrhoidal disease with recurrence estimated to be 2% to 16% for 2nd to 4th degree hemorrhoids at 1 year; however, it is very painful procedure[11,12]. Therefore, we are always looking for alternative procedure.

Significant complications such as lump coming out of anus before tenth post op day is common in 3rd and 4th degree hemorrhoids done with LHP with mucopexy.

Our sample of participants undergoing LHP with mucopexy in all female patients. A New Zealand cross-sectional study by Xia et al[13].in 2020 of over 45,000 participants identifies that the incidence of hemorrhoids in women is 4% less than in men. As these proportions may therefore not be reflective of the general population, our sample may be more reflective of the local demographic of our institution and may have the potential for bias and is a limitation of the small-sampled feasibility study.

This is the study to trial laser techniques in the use of symptomatic hemorrhoidal disease in the population of Malakand division and to find the cause of early recurrence of LHP with mucopexy.

This study demonstrates the cause of early failure of LHP with mucopexy in 3rd and 4th degree hemorrhoid in the population of Malakand division demonstrating the safety use of laser with mucopexy in symptomatic hemorrhoidal disease. LHP with mucopexy resulted in significantly lower pain scores, defecation pain scores, and opioid analgesia use in the early postoperative period but inadvertent use of laser can cause the early failure of mucopexy done with laser. Additionally, there was statistically significant symptom resolution and improvement in symptom-related patient quality of life on long-term follow-up.

CONCLUSION

This study demonstrates the cause of early failure of laser use with mucopexy in 3rd and 4th degree hemorrhoidal disease disruption of laser firing near the suture at level of hemorrhoidal artery ligation and the prevention which is to avoid firing laser near the suture and treatment of such complication.

Author contributions: DR Hunain: concept and design of study, collection of data and statistical analysis

Dr. Mahboob Ahmad Khan: writing of main script, critical review of main script.

Dr. Shamsher: analysis of data and data collection Dr Uzma: analysis of data and data collection

Dr. Adnan Ishaq: analysis of data and data collection

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