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STAPLER VERSUS LASER HAEMORRHOIDS SURGERY:

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ABSTRACT:

Introduction:

Stapler hemorrhoidopexy has evolved over time as a procedure of choice over conventional surgery due to less postoperative pain. Laser hemorrhoidoplasty is a novel procedure aimed at shrinking the terminal branches of hemorrhoidal arteries with fewer complications. The present study is aimed to compare these procedures.

Methodology: 40 patients with grade II-III hemorrhoids were randomized in to two groups: Stapler hemorrhoidopexy and Laser hemorrhoidoplasty with 20 patients in each group. Results were compared and patients were followed up for minimum period of 3 months.

Results: The mean operative time was 20 min in Laser Group and 32 min in Stappler Group.

Conclusion: In terms of early postoperative pain and complications, Laser offers better results as compared to stapler . It was associated with a shorter hospital stay and early return to work. No significant complications were noted in Laser compared to Stappler. Laser is an extremely viable alternative to the popular Stappler for grade II-III hemorrhoids.

Keywords: Hemorrhoids; stapler hemorrhoidopexy; laser hemorrhoidoplasty; anal canal; anorectal diseases

INTRODUCTION:

Hemorrhoids are one of the commonest ailment that afflicts mankind, and theirtreatment has been subject of consideration in medical literature since Egyptianpapyruses earlier than 3000 BC. Hippocrates in 400 BC mentioned burning,strangling and excision [1]. The word ‘hemorrhoid’ is derived from the Greekadjective hemorrhoids, meaning bleeding (haima- blood, rhoos- flowing) which ismost prominent symptom. The word ‘piles’ is derived from the Latin

word pilameaninga ball which refers to a swelling around the anus. These terms are oftenused synonymously. This stands true till today as, it is difficult to obtain anyaccurate idea of their incidence, but rate of surgery for hemorrhoids varies form oftheir incidence, but rate of surgery hemorrhoids varies from 35/ 100,000population/ year in UK to 50-60 /100,000 population / year in US [2] Prevalencein US population is 4.4% [3].

Many alternative treatment methods have been developed for hemorrhoids.

Milligan – Morgan hemorrhoidectomy i.e. conventional or open hemorrhoidectomy

was described in 1937, and is still the most popular surgical treatment forhemorrhoids. It has good result but is a very painful procedure resulting inincreased hospital stay and having complications like immediate hemorrhage,urinary retention and late complication like incontinence, stenosis [4,5]. problem associated with the surgical techniques. The other early complications are urinary retention, bleeding (secondary or reactionary) and subcutaneous abscess. The long-term complications include anal fissure, anal stenosis,incontinence, fistula andrecurrence of hemorrhoids. Pain after surgery for hemorrhoids is a major worry [6]. Spasm of the internal sphincter is thought to play an important role in postoperative pain. However,there is no evidence that simultaneous internalsphincterotomy is helpful [7]. In fact, this maylead to long-term sequelae of mild incontinencein 22% of patients. Topical application of 0.2%glycerine trinitrate gel, 'chemical sphincterotomy'has no benefit on improvement of pain, however,it may affect more rapid wound healing [8].Postoperative hemorrhage is a relativelycommon complication. Bleeding in the immediatepostoperative period is almost always due toinadequate intraoperative hemostasis. In theexisting literature, this complication occurs in 4 to25% of cases [9]. Delayed hemorrhage between7 and 14 days occurs in 2.4% of cases [10].Small amount of bleeding, especially with bowelmovements, is expected. A massive hemorrhagein the immediatepostoperative period mandatesreturn to the operating room where sutureligation of the bleeding vessel solves theproblem. Late bleeding, 7 to 10 days aftersurgery, occurs when the necrotic mucosa

overlying the vascular pedicle sloughs. Somepatients can be managed observantly, whilesome will require examination under anesthesiaand ligation of bleeding vessel. The other early complications are urinaryretention, bleeding (secondary or reactionary)and subcutaneous abscess. The long-termcomplications include anal fissure, anal stenosis,incontinence, fistula and recurrence ofhemorrhoids. Pain after surgery for hemorrhoidsis a major worry [6].Spasm of the internal sphincter is thought to playan important role in postoperative pain. However,there is no evidence that simultaneous internalsphincterotomy is helpful [7].

With theadvent of minimal invasive surgery, the scenario has changed. More recently, Dr.Antonio Longo (1998) has advocated circular stapler hemorrhoidectomy forhemorrhoids [6]. This technique has been named "Procedure for Prolapse andHemorrhoids (PPH)" and should be referred to as stapled hemorrhoidectomy. Ithas come up as a day care procedure with minimal post-operative pain and earlyreturn to work. Although it showed early promising results, expensive instrument,specialized training and a long learning curve limits the use of staplerhemorrhoidectomy.

In 2009, the Hemorrhoidal LASER Procedure(HeLP) technique was described as a minimallyinvasive technique, which requires photocoagulationof arterial branches using a LASER diode fiber [11]. Laser ablation has opened newpossibilities for the minimally invasive treatmentof hemorrhoids. A variety of lasers have beenused for this such as Carbon dioxide, Argon, andNd:YAG lasers. The laser beam causes tissueshrinkage and degeneration at different depthsdepending on the laser power (irradiance) andthe duration of laser light application [12].

Recentevidence has supported this modality oftreatment for symptomatic hemorrhoids. It can beused alone or in combination with othermodalities. However, long term results and itscomparison with other methods are lacking inliterature [13].

The present study is designed to compare make a comparative assessment of the Stapled hemorrhoidectomy against laser hemorrhoidoplasty in the surgical treatment of hemorrhoids.

Aims and Objectives

1. To make a comparative assessment of the Stapled hemorrhoidectomy against Laser hemorrhoidoplasty in the surgical treatment of hemorrhoids.
2. To compare stapler hemorrhoidectomy with Laser hemorrhoidoplasty in term of: Operative time, Post-operative pain, Bleeding, Duration of hospital stay, Anal Incontinence/ Stenosis, Other post-op complications.

MATERIAL AND METHODS

Study Duration : April 2022 to February 2024

Study Population All eligible cases undergoing Laser hemorrhoidoplastyand stapled hemorrhoidectomy in the Department of surgery, Dhiraj GeneralHospital, Pipariya Vadodara during thestudy period.

Inclusion Criteria

1. Age more than 18 years
2. Symptomatic hemorrhoids

Exclusion criteria

1. Asymptomatic hemorrhoids
2. Thrombosed haemorrhoids
3. Hemorrhoids with fistula in ano
4. Other ano rectal pathology

Methodology of Study

All patients admitted to both Hospital with hemorrhoids explained about the cost factor. If the patient agrees, then only Patient was operated. A detailed historywas taken and all patients were subjected to thorough clinical examinationincluding per rectal and proctoscopy examination by which further hemorrhoidswas graded. According to the grades of hemorrhoids 1st grade was excluded fromthe surgical treatment as they were not indicated and so Grade II, Grade III, andGrade IV were included in the study for surgical treatment. Routine labinvestigations like blood and screening of chest were done. A total of 25 patientsunderwent stapled procedure (Group A) and other 25 patients underwent Laser hemorrhoidoplasty (Group B) procedure according to the patients will after explaining the procedure. The studygroup was analyzed post operatively on factors such as: Post-operative pain:assessed by visual analogue scale, Bleeding, Wound infections, Urinary retention,Anal incontinence and Anal stenosis All patients were assessed during the firstpost-operative day, day of discharge, and at follow up visits at 1st week and 3rdweek post operatively.

Sample size

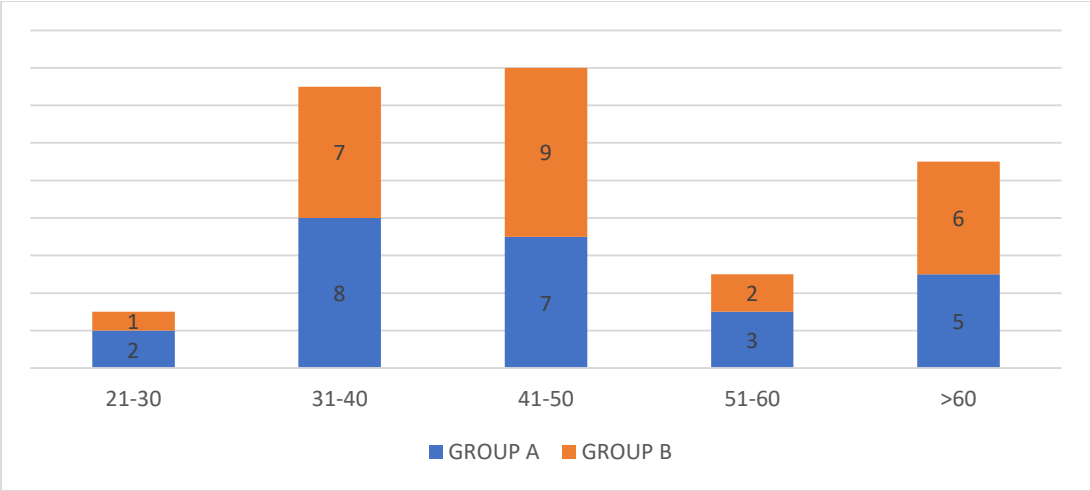
Sample size for stapled and Laser hemorrhoidoplasty was 25 each (Total50).

RESULTS AND DISCUSSION:

Hemorrhoidectomy is the accepted method for the treatment of symptomatic piles. Conventional hemorrhoidectomies are effective operations that have withstood the

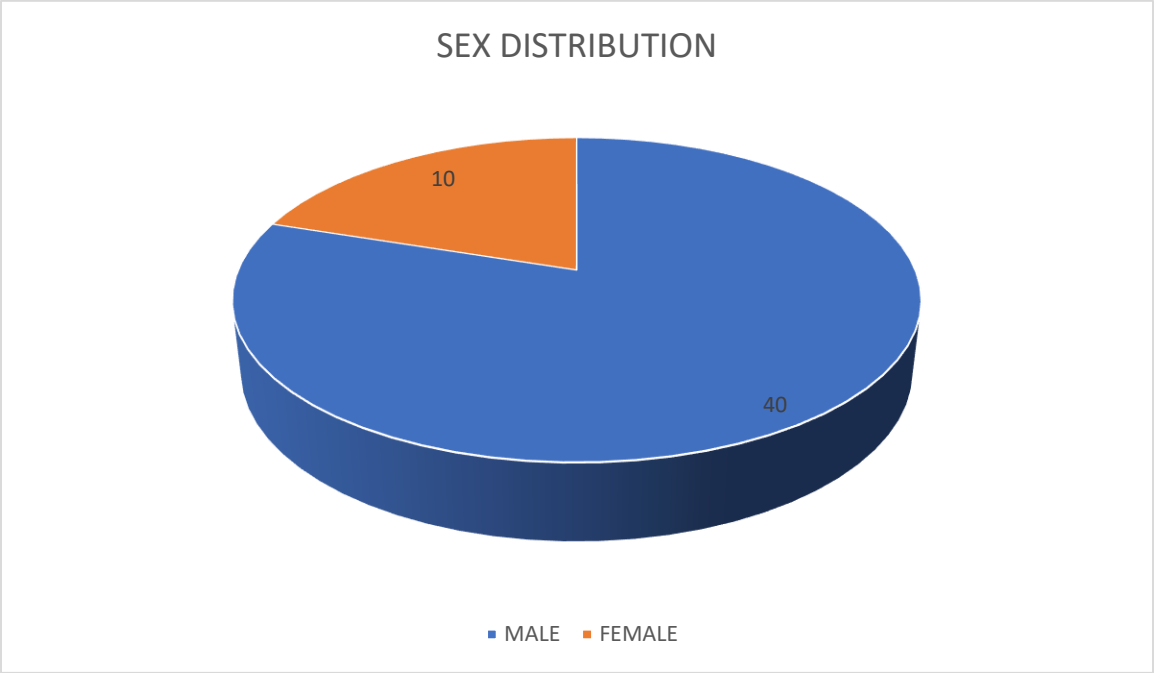
test of time; however, the problem of postoperative pain has never beensatisfactorily addressed in conventional hemorrhoidectomy. The postoperativepain related to excisional hemorrhoidectomy is well known. Patients willfrequently avoid definitive treatment of their disease for many years so as to avoidthis problem. Also, the high postoperative morbidity and long recovery hasprompted the need for an alternative procedure. Several techniques, includingdiathermy hemorrhoidectomy, dilatation with banding and cry hemorrhoidectomy, Laser hemorrhoidoplastyhave been tried.

1. Age Comparision:



Most common age group affected by Hemorrhoids was between 41-50 years of age with mean age of 47.9 years.

2. Gender Comparision:



Males are more commonly affected than females .

3. Presenting Complain Comparision

Most common presenting complaint in patients of hemorrhoids was bleeding (96%) followed by something coming out of rectum (prolapse 92%), Constipation (62%) and pain (52%).

4. Grade of Hemorrhoids

Out of the 50 study cases, 12% were of grade 2 hemorrhoids while remaining 58% and 30% had grade III and IV hemorrhoids. No difference was observed between the study groups as per grade of hemorrhoids ($p>0.05$).

5. Time Required for Surgery

In presents study, mean operative time was significantly less in Laser group as compared to stapler surgery group (20.19 vs 32.78 mins; $p<0.01$).

6. Post-Operative Pain & Analgesic Requirement

Post-op complains of pain (as measured by VAS score) immediately after surgery (6 hrs.) and at day 1 and day 3 was significantly less in laser group ascompared to stapler surgery group ($p<0.01$). No post-op analgesia wasrequired in 92% cases of laser group compared to 30% in stapler group.

7. Hospital Stay

Mean hospital stay was significantly longer in laser surgery group as compared to stapler group (1.92 vs 3.52 days; $p<0.01$).

8. Complications

No significant difference was observed in the incidence of complications in the 2 groups ($P> 0.05$). Post-op complications after conventional surgery includes bleeding (18%), urinary retention (3%), wound infection, anal incontinence (1% each) and anal stenosis (1%).

Hemorrhoidal Laser Procedure (HeLP) wasdescribed by Giamundo et al. [14] as a noveldoppler-guided procedure using a special laserdevice to shrink terminal branches of the superiorhemorrhoidal artery. The procedure has beendescribed for the treatment of second and thirddegree hemorrhoids. It is intended to accelerate postoperative downstaging of the hemorrhoids.Spontaneous resolution is noted after severaldays. Ram et al. [15] studied 58 procedures withoperation duration mean 20.8 minutes.Postoperative pain was noted to be VAS 0 in80.6% patients at the first defecation, VAS 0 in82.3% patients at 1 week and VAS 0 in 95.2% at1 month. Other complications noted werebleeding (2.4–6%), abscess (0-5%) and urineretention in 20.1%. Long term complicationsinclude fissure (1-2.6%), anal stenosis (1%),incontinence (0.4%), fistula (0.5%). Laser dearterialization has the advantage ofpreservation of the anatomy and physiology ofthe anal canal, when compared to other forms oftreatment. Thus, it minimizes the risk ofpostoperative impaired anal function. As thetechnique spares the sensitive region below thedentate line, the pain in the postoperative periodis very less when compared to other methods.Incidence of postoperative bleeding is also lessercompared to other methods. It may not requireanesthesia for the procedure; however, regionalanesthesia is preferred to allay the patientanxiety. Patient can be discharged the same dayevening. At three months follow up, nocomplications have been reported.In comparison, laser coagulation does notgenerate excessive heat and the beam isfocused on the target tissue avoiding the lateraldamage. Laser hemorrhoidoplasty is nearly painfree,minimally invasive procedure withacceptable patient satisfaction. In the presentstudy, the first one of its kind, laserhemorrhoidoplasty is fairly comparable to stapler

hemorrhoidopexy and is associated with lessoperative time, less bleeding and significantlylesser number of complications. Since last twodecades, stapler hemorrhoidopexy has becomea low-pain

alternative for prolapsed hemorrhoids.However, the supra-anal mucosal resectioninvolved in the procedure causes a severe
circular trauma. This unique step of staplerprocedure, the mucosal resection andanastomosis, becomes the root-entry for avariety of specific complications related tostapler procedure. On the contrary, the diodelaser serves to denaturize the hypertrophic hemorrhoidal tissue submucosally and thusdowngrades the disease. The entry to thehemorrhoidal pedicle is achieved via 2 mm smallnick at mucocutaneous junction wherein thepointed laser probe is inserted submucosally untilit has reached the area underneath the distalanal mucosa. After application of laser pulses,the tissue's response can be seen as slightreduction, but the better contraction response isseen later on follow-up. For patients withsymptomatic or significant mucosal prolapse, ashort distance mucopexy can be added, abovethe dentate line. However, the comparativeresults and complications related to mucopexyneed to be studied.
In our comparative analysis, we found that bothstapler hemorrhoidopexy and laser
hemorrhoidoplasty are safe and effectiveprocedures for hemorrhoids. However, significantdifference was noted in the operative blood lossand outcome parameters like hospital stay,immediate postoperative VAS and complications.The operative bleeding was lesser in laser thanin stapler procedures. More importantly, therewas only one patient with postoperative bleedingin laser group compared to significant number ofpatients in stapler who needed re-entry to theoperating room to re-explore for postoperativebleeding. The complication rate is higher instapler group, however further future studies withlarger sample size need to be conducted to verifythe results.
Cost-effectiveness is an important factor for thesurgeons and the patients when deciding whichtechnique to opt for. In India, Laser apparatus isnot affordable and accessible to all because of itsprice and availability. The awareness regardingthe laser procedure is not widespread due to thenovelty of the procedure. However, with thepresent study and the further research in thesubject, it may gain popularity as a procedure ofchoice by many surgeons as well as patients. Inour current study, we were able to match theequipment cost between stapler device and laserprobe. It may not be possible to procure laserset-up at equivalent cost as stapling devices.
However, in regard to significantly reducedhospital stay, reduced incidence of postoperativere-exploration and complications, theoverall cost-effectiveness of laser surgery maybe better than the stapler procedure.

CONCLUSION

Laserhemorrhoidoplasty requires less operative time, reduces hospital stayand decreases post-operative pain. Return to normal activity is also significantlyfaster with laser surgery. Laser haemorrhoidectomy is thus recommended forall patients undergoing surgery of haemorrhoids. However there is a need toconduct larger prospective double-blind trials with longer period of follow-up tostudy rate of recurrence alongwith trials for cost effectiveness.

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