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ORIGINAL RESEARCH ARTICLE

COMPARISON OF OUTCOME OF LASER HAEMORRHOIDECTOMY VS OPEN HAEMORRHOIDECTOMY AT GOVERNMENT MEDICAL COLLEGE & ESI HOSPITAL, COIMBATORE, TAMIL NADU

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ABSTRACT

Background: Haemorrhoids are the very common anorectal condition. It presents as symptomatic enlargement and distal displacement of the normal anal cushions. **Aim:** The aim of this study is to compare the efficacy and the outcome of Laser Haemorrhoidectomy and Open Haemorrhoidectomy among the patients with symptomatic haemorrhoids in the Department of General surgery, GMC and ESI hospital, Coimbatore, Tamil Nadu, India.

Materials and Methods: This is a cross sectional study done in the Department of General Surgery in the GMC and ESI Hospital ,Coimbatore, Tamil Nadu, India, for a period of March 2021 to February 2022.The study participants who fulfilled the inclusion and the exclusion criteria were included in this study. The final sample size obtained was 60. 30 in each group. Demographic details like name, age, sex were taken. Duration of surgery, intraop bleeding and postoperative pain, ambulation and duration of hospital stay were noted. The collected data was entered in the MS excel and statistics were done with SPSS 23.Categorical variables expressed in numbers and percentages and continuous variables were expressed in terms of mean and standard deviation. P value <0.05 is considered as significant.

Result: The most common age group of the study participants in Group 1 is 30-39 years 10(33.3%). The mean age of our study participants in Group 1(Laser Haemorrhoidectomy) was found to be 41.7 ±10.1 and Group 2 (Open Haemorrhoidectomy) was found to be 40.6±10.3..Male predominance is observed in our study Group 1 -19(63.3%) and Group 2 17(56.7%).The most common Preoperative symptom was Bleeding per rectum followed by Pain.The mean duration of surgery, Bloodloss, analgesic use and duration of recovery was less in Group 1(Laser Haemorrhoidectomy) compared to Group 2(Open Haemorrhoidectomy).The Postoperative pain was found to be lesser in the Laser Haemorrhoidectomy group compared to the Open Haemorrhoidectomy group. Secondary Bleeding 1(3.3%),Urinary retention 5(16%),Anal discharge 2(6.7%), Anal stenosis 3(10%), Edema 5(16%), Stricture and recurrence 1(3.3%) were reported among Open Haemorrhoidectomy group.

ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

Conclusion: Our study concluded that Laser Haemorrhoidectomy was better than Open Haemorrhoidectomy in terms of duration of surgery, blood loss, Postoperative pain and other complications.

Keywords: Hemorrhoidectomy, Laser Hemorrhoidectomy, bleeding, pain.

INTRODUCTION

Haemorrhoids are the most common anorectal condition. It ranked first among the diseases which occurs in rectum and large intestine. The prevalence was estimated worldwide ranging 2.9% to 27.9%. 4% of the patients among the estimation will be symptomatic.[1,2] Among the study participants one third of patients. The peak incidence of the disease ranges from 45 years and 65 years.[3,4] It presents as symptomatic enlargement and the displacement of normal anal cushions distally.

Around millions of people gets affects all over the world and was found to be the major socioeconomic and medical problem.[5] In India the incidence being around 75% of its population.[6] People age ranging from 45-65 tends to get affected more. But after 65 years the incidence rate tends to decrease. Men found to be most commonly affected than women.[7]

The preservation of continence mainly depends on anorectal vascular cushions and internal anal sphincter (IAS) as it gives soft tissue support and maintains the tight closure of the anal canal. Thus the downward displacement of suspensory (Treitz) muscle leads to Hemorrhoids.[8] The two cardinal symptoms of hemorrhoids are bleeding per rectum and prolapse.[9] Patients can be both asymptomatic and symptomatic hemorrhoids. Asymptomatic hemorrhoids do not need management. Treatment varies from dietary modification, alternate defecatory habits, office maneuvers and operative hemorrhoidectomy.

The non surgical treatments include cryotherapy, rubber band ligation (RBL),injection sclerotherapy, lasertherapy,infrared coagulation and diathermy coagulation. Most of these can be done as outpatient procedures without anesthesia. Non surgical methods are considered to be essential procedure for Grade I to Grade II haemorrhoids.[10] Cases of symptomatic hemorrhoids which is refractory to medical therapy requires the surgical treatment.[11-12]

Aim

The aim of this study is to compare the efficacy and the outcome of laser haemorrhoidectomy and open haemorrhoidectomy among the patients with symptomatic haemorrhoids in the Department of General surgery, GMC and ESI hospital, Coimbatore, Tamil Nadu, India.

Objectives

- To compare the VAS score after open haemorrhoidectomy and laser haemorrhoidectomy among the patients.
- To compare the requirement of analgesics, duration of hospital stay and recovery time after both procedures.

MATERIALS AND METHODS

Study Setting

This study was conducted in the Department of General Surgery, Inpatient ward, Government Medical College and ESI Hospital, Coimbatore, TamilNadu, India. The study was done for a period of one year from March 2021 to February 2022.

Study Design

Comparative Cross sectional study

Sample Size

The study participants fulfilling the inclusion and the exclusion criteria were included in the study through out the study period. The final attained sample is 60.The study participants were grouped into 2. The study participants undergoes Laser Haemorrhoidectomy in Group 1. In Group 2 Open Haemorrhoidectomy was done.

ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

Inclusion Criteria

- All the patients aged 18 years and above.
- Patients of Grade I and Grade II based on American Society of Anestheiologists.
- Symptomatic hemorrhoidal disease of III and IV degree with failure of conservative medical treatment.

Exclusion Criteria

- Age < 18 years.
- Pregnant patients.
- Haemorrhoids with infection and inflammation.
- Coexisting anorectal disease like perianal fistula ,anal fissure or abscess.
- Previous history of anorectal surgery.
- Regular use of immunosuppressants or analgesics.
- Neurologic deficit,chronic pain syndrome and patients who are unfit for either surgery or anesthesia.

Data Collection Method

After obtaining the Institutional Ethical Committee clearance, study was started after obtaining patients consent**.** The study participants recruited during the study period i.e 60 will undergo the routine investigations and then the preanesthetic fitness**.**

Group 1 study participants will undergo Laser Haemorrhoidectomy and Group 2 will undergo Open Haemorrhoidectomy. The consent was obtained from the study participants before the procedure.

Operative Procedures

In both groups the operations were performed in standardized spinal anaesthesia and patient was posted in Lithotomy position.The procedures were performed by the surgeons and his team who are expert in the proctologic surgery .

Open Haemorrhoidectomy

Group 2 underwent standardized Milligan-Morgan Open Haemorrhoidectomy.

Laser Haemorrhoidectomy

In Group 1,a diode laser of 1470 nm and of 8.5 watts was used which has a continuous pulse. Based on the size of haemorrhoids the bare fiber of 0.6 mm thickness with a dose of 150-350 Joules were used. The energy was delivered at the apex of the hemorrhoidal mass in the submucosal plane, inside the venous plexus. As the tissue absorbs the energy their occurs fibrotic shrinkage and the hemorrhoid reduction as a result of haemorrhoidal vessels destruction.

The baseline demographic details like patients name,age,sex, clinical presentation ,operating time, postoperative complications were noted**.**

Statistical Analysis

The obtained data was entered in the MS Excel Windows 10.Statistical analysis was done with the help of SPSS 23.Continuous data was expressed in terms of Mean and Standard deviation. Categorical data was expressed in terms of numbers and percentages. Test of association for Categorical data was Chi square test and for Continuous data was t test and Anovatest. p value of <0.05 is considered to be statistically significant.

ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

RESULTS

Table 1: Demographic characteristics of the study participants

Characteristics	Laser Haemorrhoidectomy (Group 1)	Open Haemorrhoidectomy (Group 2)	P value
Age			
20-29 years	3(10%)	4(13.3%)	
30-39 years	10(33.3%)	7(23.4%)	0.8
40-49 years	8(26.7%)	10(33.3%)	
50-59 years	6(20%)	6(20%)	
60-70 years	3(10%)	3(10%)	
Mean age	41.7±10.1	40.6±10.3	0.67
Sex			
Male	19(63.3%)	17(56.7%)	0.29
Female	11(36.7%)	13(43.3%)	
Preoperative symptoms			
Bleeding	28(94%)	27(90%)	0.32
Pain	13(43.3%)	16(53.3%)	0.21
Itching	7(23.3%)	10(33.3%)	0.45

The most common age group of the study participants in Group -1 is 30-39 years 10(33.3%) and in group- 2 is 40-49 years10(33.3%). The mean age of our study participants in Group - 1 (Laser Haemorrhoidectomy) was found to be 41.7 ±10.1 and Group-2 (Open Haemorrhoidectomy) was found to be 40.6±10.3 Male predominance is observed in our study Group 1 -19 (63.3%) and Group 2 17(56.7%).

The most common Preoperative symptom was Bleeding Group 1-28(94%) ,(Group -2-(27(90%) followed by Pain Group 1-13(43.3%),Group 2-16(53.3%).There is no statistically significant difference among the baseline characteristics.

Table 2: Outcome of the study participants

Outcome	Laser Haemorrhoidectomy (Group 1)	Open Haemorrhoidectomy (Group 2)	P value
Duration of surgery (Minutes)	22.2±1.8	33.3±5.4	<0.001*
Blood loss	14±5.4	37.5±8.7	<0.001*
Analgesic usage	2.8±1.4	7.7±2.4	<0.001*
Duration of hospital stay (Days)	1.1±0.2	4.2±0.2	<0.001*
Duration of Recovery (Days)	14.2±4.8	18.1±3.0	<0.001*

The mean duration of surgery, blood loss, analgesic use and duration of recovery was less in Group1(Laser Haemorrhoidectomy) compared to Group 2(Open Haemorrhoidectomy).There is a difference between the groups and it was found to be statistically significant. Duration of hospital study was less in the group1 and the difference was found to be statistically significant.

ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

Table 3: Postoperative Complications

Postoperative complications	Laser Haemorrhoidectomy (Group 1)	Open Haemorrhoidectomy (Group 2)	P value
Abscess	1(3.3%)	0(0%)	0.5
Secondary Bleeding	0(0%)	1(3.3%)	0.5
Urinary retention	0(0%)	5(16%)	0.05
Anal discharge	0(0%)	2(6.7%)	0.07
Anal stenosis	0(0%)	3(10%)	0.03*
Edema	1(3.3%)	5(16%)	0.04*
Stricture	0(0%)	1(3.3%)	0.5
Recurrence	0(0%)	1(3.3%)	0.5
Postoperative pain			
Day 1	2.2±1.04	4.1±1.10	<0.001*
First week	1.5±0.07	3.7±1.22	<0.001*
Second Week	1.0±0.03	1.7±0.11	<0.001*
Third Week	0.5±0.02	1.4±0.08	<0.001*
Fourth Week	0.1±0.01	0.7±0.02	<0.001*

Secondary Bleeding1(3.3%),Urinary retention 5(16%),Anal discharge 2(6.7%),Anal stenosis 3(10%),Edema5(16%),Stricture 1(3.3%) reported among Open Haemorrhoidectomy group. Whereas Abscess 1(3.3%) and Edema 1(3.3%) were noticed in Laser Haemorrhoidectomy group. There was a statistically significant difference between groups for complications like Anal stenosis, edema and Postoperative pain.The Postoperative pain was found to be lesser in the Laser Haemorrhoidectomy group compared to the Open Haemorrhoidectomy group. The pain tends to decrease from Day 1 to fourth week.

DISCUSSION

In Advanced Haemorrhoid problems Laser Haemorrhoidectomy was considered as a new modality of minimally invasive procedure.[13] In 2006 Laser Haemorrhoidectomy was the presented as alternative minimal invasive treatment for the haemorrhoidal disease.[14] The diode used for the laser was 1470 nm. The laser beam penetrated upto 2 mm and will cause submucosal denaturation and shrinks the hemorrhoidal tissue.The damage for the surrounding tissue was less and prevents the formation of the sphincteric lesions.[15] Management of Haemorrhoids based on subjective perception .The challenge of management is determined by the conventional degree of haemorrhoids and not the severity of the symptoms.[16]

Open haemorrhoidectomy is the most widely accepted technique in the treatment of symptomatic patients with haemorrhoids. But this method related to considerable complications include blood loss, postoperative pain and wound sepsis which leads to prolonged hospitalization.[17] The most common age group of the study participants in Group 1 is 30-39 years 10(33.3%) and in group 2 is 40-49 years 10(33.3%).The mean age of our study participants in Group 1(Laser Haemorrhoidectomy) was found to be 41.7 ±10.1 and Group 2 was found to be 40.6±10.3.Male predominance is observed in our study Group 1- 19(63.3%) and Group-2 ,17(56.7%).The most common Preoperative symptom was Bleeding Group 1-28(94%) ,Group 2-27(90%) followed by Pain Group-1-13(43.3%) and Group 2-16(53.3%).These results were similar to the results of Hosni Mubarak Khan et al study.[18]

In our study the postoperative pain was found to be significantly lower in Laser Haemorrhoidectomy group when compared to Open Haemorrhoidectomy. This is similar to

ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

results of Hosni Mubarak Khan et al, Majeed S et al[19], Mohammed AF et al[20], Crea N et al[21] and Plapler H.[7] On Day1 the postoperative pain was found to be 2.2±1.04 in Laser group and 4.1 ±1.10 in Open Haemorrhoidectomy. After 4 weeks the pain was found to be 0.1±0.01 in Laser Haemorrhoidectomy whereas it was be 0.7 ±0.02 in Open Hemorrhoidectomy group. This results were similar to Hosni Mubarak Khan et al[18] study and Maloku H et al study.[22]
In our study the lower blood loss and less duration for surgery was found among laser group. Similarly complications like anal stenosis, urinary retention and anal discharge were reported-nil in our study in laser group. Similar results also seen in Mohammed AF et al study.[20]

Limitations of the Study

The sample size is small in our study. Our study was done in a tertiary care centre which is a small geographical area. Multicentre trial has to be done to draw solid conclusions. No long term follow up was done after the procedure is done among the study participants as it is a cross sectional study so a follow up study have to be done.

CONCLUSION

The efficacy and safety of Laser Haemorrhoidectomy is better compared to Open Hemorrhoidectomy. The postoperative complications are found to be low in Laser Hemorrhoidectomy compared to Open Hemorrhoidectomy. When comparing with operative time, analgesic usage and duration of recovery Laser Haemorrhoidectomy was far superior than Open Hemorrhoidectomy.

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Competing Interest

There is no Competing interest

Authors Contribution

All authors in our study contributed to the data collection of the patients

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ISSN: 0975-3583, 0976- VOL14, ISSUE 01, 2023

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