



A COMPARATIVE STUDY BETWEEN LASER HEMORRHOIDOPLASTY PROCEDURE VS OPEN HEMORRHOIDECTOMY IN THIRD AND FOURTH DEGREE HEMORRHOIDS.

General Surgery

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ABSTRACT

Haemorrhoids are common anorectal condition which can be defined as a symptomatic enlargement and distal displacement of normal anal cushion. It affects both gender and all ages equally and is believed to be caused by chronic constipation. Haemorrhoids affect the daily routine of the affected individual and common symptoms include rectal bleeding, pain, anal irritation and prolapse. Management of haemorrhoids can be divided into surgical and non-surgical methods and many techniques are used to treat haemorrhoids. All patients cannot be treated with only one procedure and in this study, we are comparing laser haemorrhoidoplasty with open haemorrhoidectomy technique. **Objectives:** To compare the outcomes of laser haemorrhoidoplasty versus open haemorrhoidectomy among patients presenting with second- and third-degree haemorrhoids. **Methodology:** A hospital based prospective cross-sectional comparative study design was adopted for our study and the source of our data were the patients attending surgery OPD at Navodaya Medical College with a clinical diagnosis of second and third degree haemorrhoids. Study duration was for 18 months and 80 was our sample size based on sample size calculation. who were recruited based on purposive sampling technique. Once recruited patients were randomly divided into two groups with 40 patients each and one group underwent laser haemorrhoidoplasty and another group underwent open haemorrhoidectomy. All the patients were followed up on day 0, day 1, day 2, day 7, one month and at 6 months post-operatively to record post-operative pain, return to work, wound infection, rectal bleeding and any other complications if encountered. All the findings were compared between the groups to assess better technique with respect to various parameters included. **Results:** Majority of the patients were in the age group between 30 to 50 years and male predominance (76.25%) was seen. Bleeding and prolapse were the major complaints and 55% of them presented with 3rd degree haemorrhoids and 45% with 2nd degree haemorrhoids. Patients who underwent laser haemorrhoidoplasty had significantly lesser duration of surgery, shorter hospital stay and less post-operative pain compared to open haemorrhoidectomy technique. Incidence of post-operative urinary retention, constipation, bleeding, sub-mucous abscess was slightly more among patients who underwent open haemorrhoidectomy compared to laser technique. Also, patient who underwent laser haemorrhoidoplasty returned to work earlier and had no recurrence, while patients who underwent open haemorrhoidectomy took more time to return to work and recurrence was seen in two patients. **Conclusion:** Laser haemorrhoidoplasty seemed to be better technique compared to open haemorrhoidectomy considering duration of surgery, required hospital stay, post-operative pain, post-operative return to work, constipation, bleeding and other complications. Laser technique had better outcome compared to open technique.

KEYWORDS

Haemorrhoids, Laser haemorrhoidoplasty, Open haemorrhoidectomy, Post-operative pain.

INTRODUCTION

Haemorrhoids are common anorectal condition which can be defined as a symptomatic enlargement and distal displacement of normal anal cushion.¹ The disease is widely believed to be caused by chronic constipation². Both the genders and all age groups are equally affected by haemorrhoids. Across the world the prevalence of haemorrhoids is estimated to be 85% of total population. In India the prevalence is estimated to be 75%.³ The term haemorrhoid is derived from Greek meaning bleeding (Haema–Blood; Rhoos–flow). This emphasizes the most prominent symptom in most cases. The term piles (Latin–Pila, “a ball”) emphasizes the Haemorrhoidal swellings. Haemorrhoids are universally present in healthy individuals as cushions surrounding the anastomoses between the superior rectal artery and superior, middle and inferior rectal veins. Haemorrhoids are commonly characterized by pathological process of symptomatic disease instead of a normal anatomical structure.⁴ Haemorrhoids affect the daily routine of the affected individual.⁵ Common symptoms include rectal bleeding, pain, anal irritation and prolapse which leads to altered quality of life. Many techniques are used to treat haemorrhoids, but the idea procedure should be most effective and cause minimal no discomfort to the patient.⁶ Management of haemorrhoids can be divided into surgical and non-surgical methods. Non-surgical techniques include rubber band ligation, injection of sclerotherapy, infrared coagulation, cryosurgery, bipolar diathermy, and direct current electrotherapy. Surgical techniques include open and closed haemorrhoidectomy, doppler guided artery ligation, stapled haemorrhoidopexy and use of lasers. The decision on the technique to be used in the management of haemorrhoids depend on the degree of haemorrhoids, age, signs, and symptoms of the patient⁷

AIMS AND OBJECTIVES

To compare the outcomes of laser haemorrhoidoplasty versus open haemorrhoidectomy in second- and third-degree haemorrhoids with respect to,

1. Duration of surgery in minutes
2. Duration of hospital stay in days

3. Pain for which visual analogue score will be used
4. Return to work post-surgery
5. Constipation
6. Rectal Bleeding
7. Other complications on follow up.

MATERIALS AND METHODS

Among the surgical methods available in treatment of hemorrhoids, two methods have gained wide acceptance which are the conventional open hemorrhoidectomy and the other one is laser haemorrhoidoplasty and in this study we have compared the two techniques with respect to various aspects in order to establish a better and superior technique of the two.

Source Of Data: All the patients attending the Surgery OPD at Navodaya Medical College Hospital and Research Centre, Raichur with a clinical diagnosis of second and third degree haemorrhoids were the source of our data collection.

Study Design

The study design used for our study was a hospital based prospective cross-sectional comparative study design.

Study Period

The study was carried out in the Navodaya Medical College Hospital and Research Centre, Raichur in the department of General surgery for a duration of 18 months from 1st January 2021 to 30th June 2022

Inclusion Criteria

1. The patients to be enrolled should be aged more than 18 years.
2. Clinically diagnosed cases of second and third degree haemorrhoids.

Exclusion Criteria

1. Clinically diagnosed cases of grade one and four haemorrhoids.
2. Patients with pathological haemorrhoids (varices/abscess)
3. Patients with recurrence of haemorrhoids following past surgery.

- Patients with portal hypertension.
- Patients with bleeding diathesis.
- Patients who are not willing to participate in the study.

Sampling Procedure

All the patients attending surgery OPD with a clinical diagnosis of grade 2 and grade 3 haemorrhoids in Navodaya Medical College Hospital and Research Centre, Raichur fulfilling the inclusion and exclusion criteria were selected for our study after obtaining an informed written consent from them and the patients were recruited until our sample size was attained in the given duration of time for our study.

The participants will be randomly divided into two groups with 40 patients each where in, one group of patients will undergo open haemorrhoidectomy and the other group will undergo laser haemorrhoidoplasty. All the enrolled patients in both the groups will undergo a standard screening for anaesthetic fitness and will be operated by a single consultant under the spinal block.

Before the surgical procedure, all the patients received standard antibiotic prophylaxis and bowel preparation. Post-operatively all the patients received a high fibre diet, sitz bath with warm water and betadine, ointment with local anaesthetic and regular analgesia.

Figures And Tables

Table 1: Association Between Type Of Intervention And Age, Duration Of Surgery And Duration Of Hospital Stay.

Sl. No	Parameters	Type of intervention		t test value	p value
		Open (n=40) (Mean $\pm$ SD)	Laser (n=40) (Mean $\pm$ SD)		
01	Age (years)	39.62 $\pm$ 11.54	37.88 $\pm$ 10.18	0.715	0.4767 NS
02	Duration of surgery (min)	28.25 $\pm$ 4.13	16.28 $\pm$ 3.15	14.575	<0.0001 *
03	Duration of hospital stay (days)	4.65 $\pm$ 0.96	1.98 $\pm$ 0.79	13.582	<0.0001 *

(t test, NS – not significant, * significant at p value <0.05)

Table2: Post-operative Pain Comparison Between The Two Groups

Type of intervention	Post-operative pain [Mean (SD)]					ANOVA - p value
	Day 0	Day 1	Day 2	Day 7	Day 10	
Open (n=40)	7.75 (0.87)	6.15 (0.89)	5.33 (0.76)	1.23 (2.15)	0.2 (0.89)	<0.00001 *
Laser (n=40)	3.88 (1.44)	2.83 (1.28)	1.85 (0.77)	0	0	<0.00001 *
t test, p value	<0.0001 *	<0.0001 *	<0.0001 *	---	---	---

(ANOVA test, t test: NS – not significant, * significant at p value <0.05)

Table3: Comparison Between Two Groups Based On Return To Work Post-surgery.

Sl. No	Return to work post-surgery	Type of intervention		p value
		Open (n=40)	Laser (n=40)	
01	< 5 days	16	38	<0.0001 *
02	>5 days	24	2	
	Mean (SD)	5.875 (1.36)	3.175 (0.80)	<0.0001 *

(chi square test, t test: NS – not significant, * significant at p value <0.05)

Table 4: Post-operative Bleeding Comparison Between Two Groups.

Sl. No	Post-operative day	Presence of post-operative bleeding	
		Open (n=40)	Laser (n=40)
1	Day 0	3	1
2	Day 1	3	1
3	Day 2	1	0
4	Day 7	0	0
5	Day 10	0	0
6	6 months	0	0

Table 5: Distribution Of Patients Based On Complaints Of Constipation.

Sl. No	Post-operative day	Presence of post-operative constipation
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		Open (n=40)	Laser (n=40)
01	Day 0	4	1
02	Day 1	6	0
03	Day 2	5	0
04	Day 7	4	0
05	Day 10	1	1
06	6 months	3	2



Figure1: Procedure Of Laser Hemorrhoidoplasty

DISCUSSION

Our study analysed 80 patients with grade II and grade III haemorrhoids, out of which 40 participants underwent open haemorrhoidectomy and 40 patients underwent laser haemorrhoidoplasty and various parameters were compared between the two techniques.

The mean age of the patients in our study noted was 38.75 years with a SD of 10.92 years with male predominance (76.25%). Naderan M, et al., in their study had similar results with respect to age distribution, but they had similar gender wise distribution contradictory to our results.⁵ Slightly higher age predominance was seen in a study by Nardi De et al with median age being 44 years.⁶ Lim S Y, et al., also had higher age predominance with mean age being 49.8 years and almost equal distribution gender wise.²⁵ Similarly Faes S, et al., had participants with median age of 46 years with almost equal gender wise distribution.²⁶ Similar to our findings was seen in a study by Shabahang H, et al, which reported a mean age of 38.13 years, but with equal gender wise distribution of cases.²⁷ The median age of participants was 48 years as reported in Harvitkar R V, et al., with almost equal sex wise distribution.²⁸ Similar to our findings results was also seen in a study by Yahya W N, et al., which reported that their mean age of patients was 36.03 years with no difference regarding sex distribution.³⁰ Mean age was found to be 47 years with equal gender distribution as seen in Maloku H, et al.³²

In our study all the patients had complaints of bleeding and prolapse, while 23.75% of them had pain and 5% of them complained irritation. 45% of them had second degree haemorrhoids and rest 55% of them had third degree haemorrhoids. Similar findings were seen in Nardi De et al, which reported that most frequently reported symptoms were bleeding (92.20%) and pain (43.1%) followed by prolapse.⁶ Bleeding was the main cause for referral to hospital being in 65% of the cases as reported by Shabahang H, et al.²⁷ Bleeding was the most common symptom (66%) as reported by Harvitkar R V, et al., followed by pain and itching.³³

In our study the mean duration of the surgery was significantly lesser with a mean of 16.28 minutes among laser group compared to open group with mean of 28.25 minutes. Naderan M, et al., in their study found out that operative time was significantly shorter in laser group with mean time 33.1 minutes compared to open group with mean time 52.6 minutes, the findings similar to our results.⁵ Similarly Nardi De, et al., in their study observed that mean time of surgery was 21.29 minutes, similar to our findings.⁶ The median time taken for the laser procedure was 19 minutes as reported by Harvitkar R V, et al., which was quite similar to our findings.²⁸ Similar to our findings results was seen in a study by Yahya W N, et al., with mean duration of surgery being 14.60 minutes for laser technique and 29.53 minutes for open technique.³⁰ The mean operative time was 15.94 minutes in laser group compared to 26.76 minutes seen in open group as reported by Maloku H, et al., which was similar to our study findings.³² Mean operative time

for laser technique was 15.9 minutes while it was 25.9 minutes for open surgical technique as reported by Nagdy MA, et al.³³

In our study the mean duration of hospital stay was significantly lesser with a mean of 1.98 days among laser group compared to open group with a mean of 4.65 days. Similar findings were seen in a study by Shabahang et al., which reported mean duration of hospital stay being 1.50 days for laser group and 1.70 days for surgery group, but the difference was not statistically significant compared to our study findings.²⁷ Mean hospital stay was 0.7 days among patients who underwent laser technique while it was 1.1 days among patients who underwent open surgical method as seen in Nagdy M A, et al.³³ In our study post-operative pain was lesser among patients who underwent laser haemorrhoidoplasty compared to open haemorrhoidectomy. Similar findings were seen in Naderan M et al., which stated that post-operative pain was not significantly different between the two groups at 6 hours after surgery, while the post-operative pain was significantly lower in laser group at 12 hours and 24 hours after surgery compared to Milligan-Morgan technique.⁵

The pain difference post-operatively between the laser and surgery group was not statistically different with median pain score being 2 for laser group and 3 for surgery group, as stated by Shanahang H, et al.²⁷ Post-operative pain was significantly higher in open group compared to laser group as seen in Yahya W N, et al.³⁰ Early post-operative pain was dominantly lower in laser group compared to open group as seen in a study by Maloku H, et al.³² Early post-operative pain was more among open group with mean VAS score of 6.9 compared to laser group with mean VAS score of 4.5 as seen in Nagdy MA, et al.³³

In our study post-operative bleeding was lesser among patients who underwent laser haemorrhoidoplasty compared to open haemorrhoidectomy. Similar findings were seen in a study by Naderan M, et al., which stated that intra-operative and post-operative bleeding was significantly higher in group who underwent Milligan-Morgan haemorrhoidectomy compared to laser technique.⁵ Lim S Y, et al., in their study found that 23.7% of the patients who underwent laser technique experienced post-operative bleeding.²⁵ The open group was significantly associated with more post-operative bleeding compared to laser group as seen in a study by Yahya W N, et al.³⁰ No patient in laser group complained of post-operative bleeding while four patients had post-operative bleeding in open group as reported in a study by Nagdy MA, et al.³³

In our study post-operative constipation was seen more among the patients who underwent open haemorrhoidectomy compared to patients who underwent laser haemorrhoidoplasty. In our study post-operative wound infection and urinary retention was seen in similar trends in both the groups with no much difference. Naderan M, et al had similar findings in their study with no patients experiencing post-operative local infection in either group.⁵

In our study it was seen that patients who underwent laser haemorrhoidoplasty returned to work earlier with a mean of 3.175 days compared to open haemorrhoidectomy where the patients returned to work after 5.875 mean days. Similar findings were seen in a study conducted by Nardi De, et al., where all the patients who underwent laser technique resumed to normal daily activities within 3 days.⁶ Similar findings was seen in a study by Faes S, et al which showed that median incapacity to work post-operatively was only two days.²⁶ All the patients recovered within one week in laser group where as majority of the patients took more than one week for recovery in open group as seen in a study by Nagdy MA, et al.³³

In our study recurrence was seen among two patients who had underwent open haemorrhoidectomy while no patient complained of recurrence post laser technique. Four patients reported recurrence undergoing laser technique as found in Nardi De, et al., whose findings were contradictory to our findings.⁶ Faes S, et al., showed that a 60-day follow-up of patients who had underwent laser technique had complications of perianal vein thrombosis, perianal eczema, minor local bleeding and anal fissure, which were not seen in our study.²⁶

CONCLUSION

Laser haemorrhoidoplasty seemed to be better technique compared to open haemorrhoidectomy considering duration of surgery, required hospital stay, post-operative pain, post-operative return to work and incidence of constipation, bleeding and other complications. Laser

technique had better outcome compared to open technique.

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