



COMPARATIVE STUDY OF LASER LATERAL INTERNAL ANAL SPHINCTEROTOMY VERSUS OPEN LATERAL INTERNAL ANAL SPHINCTEROTOMY

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ABSTRACT

Background: In surgical Practice Fissure-in-Ano is commonest and most painful anorectal benign conditions found among the patients. The Ischemia of anal lining caused due to elevated sphincter pressures are responsible for pain & failure to heal. Despite availabilities of several conservative treatment options, surgical treatment in the form of Lateral Internal Spincterotomy (LIS) remains the gold standard of treatment for chronic anal fissure. In this study we compare Laser lateral internal anal sphincterotomy with Open lateral internal anal Sphincterotomy focusing more on better postoperative pain relief and lesser complications. **Aim:** Comparative Study of Laser lateral internal Sphincterotomy versus open lateral internal anal sphincterotomy in the treatment of anal Fissures. **Materials And Methods:** The study was conducted on 50 cases of Laser lateral internal anal sphincterotomy compared with 50 cases of Open lateral internal anal sphincterotomy in Madhav Surgical Hospital, Rajkot between September 2021 to February 2023. **Results:** In our study in Group A 8% were fall in 16-20 years, 50% in 21-30 years, 16% in 31-40 years, 16 % in 41-50 years and 10% in 51-60% years and in Group B 4% in 16-20 years, 32% in 21-30 years, 36% in 31-40 years, 18% 41-50%, 10% in 51-60 and 4% in >60. In Group A mean postoperative VAS pain score in 6 hours 5.10 ± 0.326 , 12 hours 4.30 ± 0.768 , 20 hours 3.72 ± 0.777 , 36 hours 2.75 ± 1.378 and 48 hours 2.3 ± 1.417 . In Group B mean postoperative VAS pain score in 6 hours 5.2 ± 0.451 , 12 hours 2.7 ± 1.742 , 24 hours 1.76 ± 1.452 , 36 hours 0.58 ± 0.970 and 48 hours 0.28 ± 0.670 . Group A 46% presented with Perianal swelling, 42% Prutis Ani and 24% flatus incontinence. In Group B 0% presented with amount of blood loss, 18% Perianal swelling, 6% infection, 18% flatus incontinence. The mean postoperative pain score was significantly less in Group B at 12 to 48 hours. **Conclusion:** Laser lateral Internal Spincterotomy is much better than open Lateral Internal Spincterotomy with respect to less postoperative pain and less postoperative complications in the treatment of anal fissure.

KEYWORDS : Benign Anorectal conditions , Fissure-in-ano, Lateral internal anal sphincterotomy, Diode laser surgery.

INTRODUCTION

Anal fissure is a common benign anorectal disease affects all age group & both sexes. It is defined as a linear tear along the long axis of lower anal canal anoderm extending from dentate line to the anal verge. These are caused by a large forceful bowel movement. Acute anal Fissures are secondary to anoderma trauma due to either constipation with hard stool or frequency from diarrhea. It presents with recurring anal pain and bleeding leading to chronic anal fissures. The Ischemia of anal lining caused due to elevated sphincter pressures are responsible for pain & failure to heal. An anal fissure can typically be diagnosed based on history alone. Patients having moderate to severe burning anal pain with bowel movements with variable amounts of bleeding. The bleeding is described as blood on the toilet paper with wiping. The pain commonly persists for 30 minutes to 1 hours following a bowel movement. The internal anal sphincter frequently spasms, leading to significant pain. If this persists, this muscle becomes hypertrophied leading to nonhealing anal fissures. Usually in children, these are self-limiting disease, whereas in adults in chronic phase these can require surgical intervention.^[1-4]

The majority of ana lfissures(90%)are found in the posterior midline.Fissures in the anterior midline are in 25% of females and 8% of males. Laterally placed anal Fissures may suspect for other disease processes like inflammatory bowel disease, HIV, Syphilis or granulomatous diseases.

There are several medical therapies including Lifestyle modifications, Hotseitz bath, Laxatives and topica lnitroglycerin that aids in spontaneous closure early in the disease process. Chronic fissures are persistent long lasting for more than 6 weeks. Surgical therapies include botulinumtoxin injections, Fissurectomy, advancement flaps,

and lateral interna lana l sphincterotomy. Surgica l intervention is typically indicated with chronic fissures or for fissures that are not responding to medical therapy.Lateral internal anal sphincterotomy provides prompt symptomatic relief and has greater than 95% cure rate at 3 weeks post-procedure. Currently ,it is considered the gold standard surgical lntervention.

Anatomy

The anal canal can be described in 2 ways, the functional (surgical) or anatomical anal canal. The surgical anal canal is about cm long and extends from the analverge to the anorectal ring or puborectalis sling. The anatomic anal canal is approximately 2 cm long and starts at the analverge extending to the dentateline.

Theanal canal consists of 2muscular structures,which are responsiblefor anal continence. The first of these structures is the internal analsphincter, which is the inner layer of the muscular complex and is composed of smooth muscle. The internal analsphincter is approximately 2.5to4cm long and 2to3mm thick. Since the internal anal sphincter is an involuntarymuscle, it is consistently contracted to prevent inadvertent loss of stool. During a bowel movement, the internal anal sphincter muscle relaxes allowing in the expulsion of stool. The second muscular structure is the external anal sphincter, which is the outer muscular layer and is composed of striated muscle.The external anal sphincter is a muscular tube around the anal canal,which merges proximately with the puborectalis and the levator ani muscles.It is the voluntary muscle used during bowel movements.

Lateral internal anal sphincterotomy is indicated in patients who are refractory to medical management. Typically,patients

undergo medical management for 3 months. If it has failed, surgery is recommended. Surgical candidates must have good fecal continence prior to the procedure to reduce the risk of postoperative fecal incontinence

AIMS AND OBJECTIVES

Aim:

Comparative Study of laser lateral internal anal sphincterotomy versus open lateral internal anal sphincterotomy in the treatment of anal fissures.

OBJECTIVES

- To compare the postoperative pain among patient undergoing laser lateral internal sphincterotomy versus open lateral internal sphincterotomy.
- To compare the postoperative bleeding among patient undergoing laser lateral internal sphincterotomy versus open lateral internal sphincterotomy
- To compare the risk of developing incontinence to flatus and/or stool in patients undergoing internal Sphincterotomy in the two groups

MATERIALS AND METHODS

The study was conducted on 50 cases of Laser internal sphincterotomy compare with 50 cases of Open internal sphincterotomy in Madhav Surgical Hospital, Rajkot between September 2021 to February 2023.

All patients of Fissure in Ano were admitted as day care procedure to Surgery department, Madhav Surgical Hospital, Rajkot between September 2021 to February 2023.

Inclusion Criteria

- Adult Patient with primary chronic anal fissure

Exclusion Criteria

- Patient who had recurrent anal fissure.
- Patients with fissures secondary to other diseases like HIV, Syphilis, IBD, tuberculosis, .
- Any co-morbid condition (diabetes Mellitus, colorectal or anal canal Malignancies)

Randomization

Random allocation of age and sex matched patients (sample size=50) presenting with symptoms suggestive of, follow up case of internal sphincterotomy will be done into two groups. The two groups will be as follows
Group A: Open Latereal internal anal sphincterotomy (n=50)

Group B : Laser Lateral internal anal sphincterotomy (n=50)

METHOD OF COLLECTION OF DATA

Study Design: Prospective study

Statistical Analysis

The data was summarized as mean values with standard deviations (SD). P value less than 0.05 will be considered significant.

Pre-operative Preparation Included:

Routine Preoperative Blood investigations were done. Patients will be given General anaesthesia. Lithotomy position is given on the operating table. Skin preparation with povidine-iodine followed by drappings. Palpation of the tight distal internal sphincter & intersphincteric groove was performed with finger.

Laser LIS technique

Procedure was performed under General anaesthesia, In lithotomy position, insertion of a bivalve type of anal plastic speculum is done, the tight distal internal sphincter is palpated as a tight band. Intersphincteric groove is palpated. Submucosal saline infiltration is done at 4 O'clock position. An incision of approximate size 0.5mm made over

intersphincteric groove at 4^o clock position with laser beam and internal sphincter is hooked with right angled forceps and is cut using **Diode dual laser** of wave length 1470nm+980nm and energy of 8 to 10 W/sec/mm in Continuous wave (CW) operating mode. Full thickness of internal sphincter is divided with laser by Lateral to medial approach and checked for haemostasis. Care is taken not to injure external sphincter & mucosa. Additionally the chronic fibrosed scaris also excised or debrided with laser along with excision of skin tag. This prevents any long term discomfort and enables quicker recovery. This procedure was almost bloodless and the surgeon has good control over the operation site.

Laser specifications for internal sphincterotomy-

- Laser type-Diode dual laser
- Wavelength-1470nm+980nm
- Energy-8-10w/sec/mm
- Operation mode-Continuous Wave (CW)

Open LIS Technique

In open method, In the lithotomy position, insertion of a bivalve type of anal speculum to place the internal sphincter on a slight stretch to assist in its identification. A radial incision is made laterally at the lower border of internal sphincter into the **intersphincter groove**. The distal internal sphincter dissected & grasped with Allis forceps and bluntly freed. The lower one third to one half is divided with scissors/ Monopolar cautery.

Post Operative Pain

Accurate pain assessment was a prerequisite for successful pain management as well as for study. The American Pain Society emphasizes the importance of obtaining the patients self-report of pain as the gold standard of pain assessment. There are various pain scores to measure post-operative pain.

Visual Analogue Scale (VAS)

Operationally a VAS is usually a horizontal line, 100 mm in length, anchored by word descriptors attached. The patient's marks of the line the point that they feel represents their perception of their current state. The VAS score is determined by measuring in millimeters from the left hand end of the line to the point that the patients marks.

RESULTS

Table 1: Distribution Of Age (in years)

Age (in years)	Group A (Open L.I.S.) [N=50]		Group B (Laser L.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
16-20 years	4	08.00%	2	04.00%
21-30 years	25	50.00%	16	32.00%
31-40 years	08	16.00%	18	36.00%
41-50 years	08	16.00%	9	18.00%
51-60 years	05	10.00%	3	06.00%
>60 years	0	00.00%	2	04.00%

In our study in Group A 8% were in 16-20 years, 50% in 21-30 years, 16% in 31-40 years, 16% in 41-50 years and 10% 51-60 years and Group B 4% in 16-20 years, 32% in 21-30 years, 36% in 31-40 years, 18% 41-50%, 10% in 51-60 and 4% in >60.

Table 2: Distribution Of Meanage

Mean age (in years)	Group A (Open L.I.S.) [N=50]	Group B (Laser L.I.S.) [N=50]	P value
	Mean ± SD	Mean ± SD	
Mean ± SD	31.70 ± 9.025	39.02 ± 13.580	0.002 (S)

The meanage of patient in Group A were 31.70 ± 9.025 and in Group B were 39.02 ± 13.580.

Age mentioned in the results section, the meanage of patients differed significantly (p=0.002) between the Group A and Group B.; thus it seems that matching the Group A and Group

B was not performed accurately. This was probably because of the importance placed on inclusion criteria including indications for surgery and the willingness of patient to undergo laser internal sphincterotomy.

Table3: Distribution Of Sex

Sex	Group A (Open L.I.S.) [N=50]		GroupB (LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Male	32	64.00%	28	56.00%
Female	18	56.00%	22	44.00%

In our study in GroupA (Open) male were 64% and female were 36% and in GroupB Male 36% and female 44%.

Table4: Distribution Of Fissure Location

Fissure location	Group A (Open L.I.S.) [N=50]		GroupB(LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Posterior	42	84.00%	44	88.00%
Anterior	08	16.00%	06	12.00%
Other	00	0.00%	0	0.00%

In our study in GroupA 84% were posterior, 16% anterior location in GroupB 88% were in posterior and 12% in anterior location.

Table5: Distribution Of Clinical Presentation

Symptoms	Group A (Open L.I.S.) [N=50]		GroupB(LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Pain during defecation	50	100%	50	100%
Haematochezia/ Blood in stool	30	60.00%	38	76.00%
Perianal swelling/ Perianal swelling	15	30.00%	20	40.00%
Mucoid discharge	13	26.00%	11	22.00%
Anal pain	50	100%	50	100%
Anal skin tag	50	100%	50	100%

In our study in Group A 100% patients presented with pain during defecation, 60% Haematochezia, 30% perianal swelling, 26% mucoid discharge, 100% anal pain and 100% anal skin tag and GroupB 100% patients presented with pain during defecation, 76% Haematochezia, 40% perianal swelling, 22% mucoid discharge, 100% anal pain and 100% anal skin tag.

Table6: Distribution Of Mean Postoperative Pain Score (VAS)

Postoperative pain score (VAS)	Group A (Open L.I.S.) [N=50]		Group B (Laser L.I.S.) [N=50]		P value
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
6 hours	5.10 ± 0.326	5.2 ± 0.451	0.30 (NS)		
12 hours	4.30 ± 0.768	2.7 ± 1.742	0.01 (S)		
24 hours	3.72 ± 0.777	1.76 ± 1.452	0.01 (S)		
36 hours	2.75 ± 1.378	0.58 ± 0.970	0.01 (S)		
48 hours	2.3 ± 1.417	0.28 ± 0.670	0.01 (S)		

In our study in GroupA mean post operative VAS pain score in 6 hours 5.10 ± 0.326, 12 hours 4.30 ± 0.768, 24 hours 3.72 ± 0.777, 36 hours

2.75 ± 1.379 and 48 hours 2.3 ± 1.417. In GroupB mean post operative VAS pain score in 6 hours 5.2 ± 0.451, 12 hours 2.7 ± 1.742, 24 hours

1.76 ± 1.452, 36 hours 0.58 ± 0.970 and 48 hours 0.28 ± 0.670. The mean post operative score was significantly less in GroupB at 12 to 48 hours.

Table7: Distribution Of Post Operative Complications

Parameters	Group A (Open L.I.S.) [N=50]		GroupB(LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Amount of blood loss/Bleeding	1	2.00%	0	0.00%
Haematoma/Perianal Swelling	23	46.00%	9	18.00%
Infection	0	0.00%	2	4.00%
Pruritus Ani	21	42.00%	0	0.00%
Flatus incontinence	12	24.00%	9	18.00%
Stool incontinence	0	0.00%	0	0.00%
Recurrence	0	0.00%	0	0.00%

In our study in Group A 46% presented with Perianal swelling, 42% Pruritus Ani and 24% flatus incontinence. In Group B 0% presented with amount of blood loss, 18% Perianal swelling, Flatus incontinence in 18%.

Table9: Distribution Of Follow Up At surgical clinic In 2 Weeks

Follow Up At surgical Clinic In 2 weeks	Group A (Open L.I.S.) [N=50]		GroupB(LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Pain	25	50.00%	15	30.00%
Bleeding	6	12.00%	0	0.00%
Perineal abscess	0	0.00%	0	0.00%
Infection	2	4.00%	0	0.00%

In our study in GroupA 50% patients presented with pain, 12% presented with bleeding per rectal and 4% presented with infection at follow up in 2 weeks.

Table10: Distribution Of Follow Up At Surgical Clinic In 6 Weeks

Follow up at surgical clinic in 6 weeks	Group A (Open L.I.S.) [N=50]		GroupB(LaserL.I.S.) [N=50]	
	Number	Percentage	Number	Percentage
Flatus Incontinence	18	36.00%	7	14.00%
Fistula	0	0.00%	0	0.00%
Recurrence	0	0.00%	0	0.00%

In our study in GroupA 36% patients presented with Flatus incontinence and GroupB 14.00% patients at 6 weeks of follow up.

DISCUSSION

Anal fissure is a frequent cause of pain, pruritus and bleeding per rectum and cause considerable patient discomfort and disability. Recently developed anal fissures can be treated with number of pharmacological sphincter relaxants & other conservative measures. But surgical treatment is frequently needed especially for chronic & longstanding fissures.

Age

In our study in GroupA 8% were in 16-20 years, 50% in 21-30 years, 16% in 31-40 years, 16% in 41-50 years and 10% 51-60 years and Group B 4% in 16-20 years, 32% in 21-30 years, 36% in 31-40 years, 18% 41-50, 10% in 51-60 and 4% in > 60.

The mean age of patient in GroupA were 31.78 ± 9.027 and in Group B were 39.04 ± 13.583.

Age mentioned in the results section, the mean age of patients

differed significantly ($p=0.002$) between the Group A and Group B.; thus it seems that matching the Group A and Group B was not performed accurately. This was probably because of the importance placed on inclusion criteria including indications for surgery and the willingness of patient to undergo laser lateral internal sphincterotomy.

Study by Vivek Gupta *et al.* (2014)^[61] "Open versus closed lateral internal anal sphincterotomy in the management of chronic anal fissures: A prospective randomized study" showed in the age of patients who underwent open and closed sphincterotomies were 39.38 and 40.88 years and 12.96 and 11.80 years, respectively.

In study by Shahin H Fatehet *et al.* (2016)^[71] "Outcome of laser therapy in patients with anal Fissure" showed the mean age of the population in 35 patients was 41.2 ± 9.23 years in the study Group A and 33.3 ± 9.23 years in the control group.

Our study is comparable to above studies with respect to age of presentation.

Sex:

In our study in Group A (Open) male were 64% and female were 36% and in Group B Male 56% and female 44%.

In study by Shahin H Fatehet *et al.* (2016)^[71] "Outcome of laser therapy in patients with anal fissure" showed male 5.3% and female 94.7% (case) and male 22% and female 78% (control). Study by Vivek Gupta *et al.* (2014)^[61] "Open versus closed lateral internal anal sphincterotomy in the management of chronic anal.

fissures:

A prospective and randomized study¹ showed in closed female 44.1% and male 55.9% and in open female 36.8% and male 63.2%.

Fissure Location

In our study in Group A 84% were posterior, 16% anterior location in Group B 88% were in posterior and 12% in anterior location.

Study by Vivek Gupta *et al.* (2014)^[61] "Open versus closed lateral internal anal sphincterotomy in the management of chronic anal

fissures:

A prospective randomized study¹ showed in Fifty-six (82.4%) patients in the closed sphincterotomy Group A and 65 (95.6%) patients in the open sphincterotomy group presented with a posterior midline anal fissure. Nine (13.2%) patients in the closed sphincterotomy Group A and two (2.9%) patients in the open sphincterotomy group presented with an anterior midline anal fissure, i.e. at the 12 o'clock position. Fissure were seen at multiple positions in two (2.90%) patients in the closed sphincterotomy group.

Study by S. R. Mousavi *et al.* (2009)^[81] "A Comparison Between the Results of Fissurectomy and Lateral Internal Sphincterotomy in the Surgical Management of Chronic Anal Fissure" showed in location of fissure was posterior in 56 (90.3%) and anterior in six (9.7%) patients.

Our study also supports the above studies that most common location of fissure was posterior.

Clinical Presentation

In our study in Group A 100% patients presented with pain during defecation, 60% Haematochezia, 30% perineal swelling, 26% mucoid discharge, 100% anal pain and 100% anal skin tag and Group B 100% patients presented with pain

during defecation, 76% Haematochezia, 40% perineal swelling, 22% mucoid discharge, 100% anal pain and 98% anal skin tag. Our study in study by Akeel A Kataet *et al.* (2010)^[51] "Closed open lateral internal sphincterotomy in treatment of chronic anal fissure; a comparative study of post operative complications and outcome" showed in the chief complaint of most of patient was pain on defecation. Out of 100 patients, 54 patients (54%) complained of pain during and after defecation it associated with bleeding per rectum especially in the form of a streak over the stool. Thirty five of patients (35%) had the chief complaint of bleeding per rectum, the bleeding was usually of small amount and occurred at the time of defecation, 6 patients (6%) also presented with perianal swelling. On examination, this was sentinel pile. Only 5 patients (5%) presented with pruritis ani due to discharge

Study by Vivek Gupta *et al.* (2014)^[61] "Open versus closed lateral internal anal sphincterotomy in the management of chronic anal

fissures: A prospective and randomized study¹ showed in Patients presented most often with pain during defecation, followed by associated bleeding from the rectum.

Our study supports that most common symptoms is pain during defecation forwarded by haematochezia. In our study majority of patients presented with anal skin tag.

Post Operative Complication

In our study in Group A 46% presented with Perianal swelling, 42% Pruritis Ani and 40% flatus incontinence. In Group B 0% presented with amount of blood loss, 18% Perianal swelling, 4% infection, flatus incontinence 24% & 18% respectively.

Study by S. R. Mousavi *et al.* (2009)^[81] "A Comparison Between the Results of Fissurectomy and Lateral Internal Sphincterotomy in the Surgical Management of Chronic Anal Fissure" showed in both groups, urinary retention was noted in one patient, which was transient. Incontinence of flatus was seen in the F group in two (6.2%) patients, but no incontinence was noted in the LIS group. There was one patient (3.1%) with Fissure recurrence in the F Group After 20 months, but none with the F group. No patient in either group suffered from anal stenosis or perianal infections. Given the total complications, in patients who underwent LIS, only one case was affected with complications (3.3%), but in the F group, four patients (12.5%) sustained injury due to complications.

In study by Akeel A Kataet *et al.* (2010)^[51] "Closed open lateral internal sphincterotomy in treatment of chronic anal fissure; a comparative study of post operative complications and outcome" showed in post operatively only few patients showed complications. Five patients (10%) complain of pain in closed method while 3 patients (6%) in Open method. Bleeding was in 2 patients (4%) in closed method, 4 patients (8%) in Open method. Infection was in 3 patients (6%) in each methods. No faecal incontinence only flatus incontinence in closed method i.e. 10 patients (20%) while 14 patients (28%) in Open method. Recurrence was in 4 patients (8%) in Closed method and 4 patients (8%) in Open method.

Our study supports above studies that most common postoperative complications except postoperative pain was perianal swelling and Flatus incontinence. Which were present in Group A but was minimal in Group B.

Post Operative Pain Score

In our study in Group A mean postoperative VA Pain score in 6 hours 5.12 ± 0.328 , 12 hours 4.32 ± 0.768 , 24 hours 3.74 ± 0.777 , 36 hours 2.76 ± 1.379 and 48 hours 2.3 ± 1.418 . In Group B mean postoperative VA Pain score in 6 hours 5.2 ± 0.452 , 12 hours 2.7 ± 1.741 , 24 hours 1.76 ± 1.451 , 36 hours 0.58 ± 0.971 and 48 hours 0.28 ± 0.671 . The mean post operative score was

significantly less in Group B at 12 to 48 hours.

In study by Shahin H Fatehet *al.* (2016)^[7] "Outcome of laser therapy inpatients with anal fissure" showed in Mean improvement in pain at months 1 and 3 after surgery or laser therapy did not differ significantly between the groups, but in month 6 was significantly higher in the control group. Significant differences in the mean response to pain for the three periods of assessment in the groups were evaluated using repeated measures analysis and a generalized linear model and a significant interaction was observed ($P < 0.001$). Study by Vivek Gupta *et al.* (2014)^[8] "Open versus closed lateral internal anal sphincterotomy in the management of chronic anal fissure".

Figures: A prospective randomized study "showed in the means core on the visual analog scale for the measurement of pain 12 hours after the operation was 5.62 ± 0.81 in the closed sphincterotomy Group A and 6.13 ± 0.75 in the open sphincterotomy group ($p < 0.001$). The mean score on the visual analog scale 24 hours after the operation was 2.10 ± 0.35 in the closed sphincterotomy Group A and 2.35 ± 0.59 in the open sphincterotomy group ($p < 0.003$).

Our study is comparable to above studies that postoperative pain is significantly less in Group B in postoperative 12 hour, 24 hour, 36 hour and 48 hour [p value = 0.01].

Followup At Surgical Clinic At 2 Weeks And 6 Weeks

In our study in Group A 50% patients presented with pain, 12% presented with bleeding per rectal and 4% presented with infection at follow up in 2 weeks. 36% presented within continence in 6 weeks of follow up. In Group B 30% presented with pain at 2 weeks of follow up and 14% presented within continence at 6 weeks of follow up.

In study by Turan A caret *al.* (2018)^[8] "Treatment of chronic anal fissure: Is open lateral internal sphincterotomy (LIS) a safe and adequate option?" showed in the early postoperative period, rectal bleeding was a common problem in 182 patients (34.1%). In addition, three patients had perianal abscess and two patients who used anticoagulants (i.e., clopidogrel or acetylsalicylic acid) had perianal hematoma. These patients relieved after drainage of the abscess and hematoma. In long-term follow-up, recurrence occurred in 15 patients (3.6%) (12 males, three females) and eight patients (1.9%) developed incontinence (four with gas, four with soiling and seven females, one male). The recurrence rate was higher in anterior fissures (67%). Of the patients with recurrence, nine of the males had done and two of the males had two prior surgeries. All females within continence had prior vaginal deliveries and the male within continence had prior anorectal surgery. The complaints of all patients with gas incontinence and a patient with fluid incontinence (male) regressed on the postoperative fourth month, whereas three patients (all females) had permanent fluid incontinence.

CONCLUSION

- Lateral internal sphincterotomy is gold standard procedure for patients with anal fissure.
- Majority of patients were in age group 21-30 years in both open and laser lateral internal sphincterotomy
- Majority of patients presented with posterior fissure in both open and laser lateral internal sphincterotomy
- Postoperative pain relief and patient comfort is more in laser lateral internal sphincterotomy.
- Earlier and fast healing of fissure noted in laser lateral internal sphincterotomy, as Laser energy having less penetration & so least trauma to the tissues.
- Operative complication after Laser lateral internal sphincterotomy was less as compared to open internal sphincterotomy.

- Laser lateral internal sphincterotomy surgical method was found to be a successful, convenient, easy and quick way of treating anal fissure. The benefits of laser therapy include effective resolution of all clinical symptoms, decreased recovery time and minimal risks and side-effects.
- The laser lateral internal sphincterotomy technique is painless and patients are more likely to accept and be satisfied with treatment; however, there are some limitations to this procedure.
- Laser lateral Internal Sphincterotomy is better than open Lateral Internal Sphincterotomy with respect to less postoperative pain and also less postoperative complications in the treatment of anal fissure.
- As laser lateral internal sphincterotomy is advanced surgical technique, so surgeons need to be trained for proper & judicious application of laser energy & to get good outcome in laser lateral internal sphincterotomy technique.

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