



## Comparitive Study of Lateral Internal Sphincterotomy (Open Technique), Lateral Internal Sphincterotomy (Closed Technique), and Anal Dilatation For Fissure in ANO

\* Dr Prashant Pandurang Jadhav

Assistant Professor At LTMC & LTMG Hospital, Sion. \* Corresponding Author

Dr Ranjeet Kamble

Assistant Professor LTMC & LTMG Hospital, Sion

Dr. Nilesh Bhaskar More

Sr Reg, LTMC & LTMG Sion Hospital, Sion

Dr Satish Dharap

Prof/HOD, LTMC & LTMG Sion Hospital , Mumbai, Maharashtra, India.

### ABSTRACT

**Objectives :** To compare the different surgical techniques used for surgical treatment of fissure in ano, with respect to feasibility of the procedure under local anesthesia, severity of pain during procedure , post operative symptom relief ,recurrence rates and return to normal activity.

**Methodology:** This study was planned as a prospective randomized controlled study comparing lateral sphincterotomy by closed and open technique performed under local anesthesia with the "standard technique" of anal dilatation done under general anesthesia.

**Results :**Post operatively 21 patients (70%) of the open internal sphincterotomy had moderate pain as compared to 18 patients (60%) of closed sphincterotomy after 4 hours. At day 3 the incidence of moderate pain was decreased to 20 patients (66.7%) among anal dilatation, 12 patients (40%), and 13 patients (43.33%) each in open and closed internal sphincterotomy group respectively and pain was almost subsided by the end of day 7 .Post operative symptom relief of painful defecation was seen in almost all the patients in each group The mean time period for return to normal activity was 2.8 days in anal dilatation group, 2.1 days in open sphincterotomy and 2.26 days in closed sphincterotomy .Five patients (16.66%) in anal dilatation had recurrence at the end of 6 months, while open sphincterotomy group had 2 patients (6.66%) and closed sphincterotomy group had 4 patients (13.33%) .

**Conclusion:** Anal sphincterotomy (both open and closed technique) are safe and effective techniques for surgical treatment of anal fissure. It is feasible to perform the procedure under local anesthesia with supplemental intravenous analgesia and sedation.

**KEYWORDS :** Sphincterotomy; dilatation; fissure-in-ano

### INTRODUCTION

Anal Fissure or fissure-in-ano is a linear or oval shaped tear distal to the dentate line which often shows considerable reluctance to heal. The clinical presentation is intense anal pain made worse by defecation accompanied by passage of small amounts of blood. The suffering is out of proportion to the size of the lesion. It may be so severe that patients may avoid defecation for days together until it becomes inevitable. This leads to hardening of the stools, which further tear the anoderm during defecation.

Up to 70% of acute fissure resolve spontaneously [1,2]. Others heal with conservative treatment like laxatives along with local anesthetic jelly or the use of topical nitric oxide donors, such as glycerin trinitrate, nitroglycerine or alternatively with calcium channel blockers such as topical diltiazem. Left untreated some acute fissures recur over months or years. Once a chronic fissure develops, the chances of spontaneous resolution fall to 20-30% [1,2].

Acute or chronic anal fissures with spasm or severe symptoms are treated by method of anal dilatation or simple anal sphincter stretching. It is a simple procedure that requires short but deep intravenous anesthesia. This operation has the advantage that it is technically simple, can be easily performed even by a novice, and leaves no open wound. However minor disturbances of anal control and high incidence of persistent or recurrent fissure are known to occur in some patients undergoing anal dilatation. Also since this procedure can only be performed under general anesthesia using good muscle relaxant, hence not possible in high risk cases.[3]

With the continuing search for improved efficacy and betterment patient care, definite trend is developing towards innovative simple treatments for anal fissure. In this attempt a few alternative procedures including pneumatic balloon dilatation, fissurectomy, fissurectomy with split skin grafting, posterior internal sphincterotomy have been introduced with the aim of minimizing pain, bleeding and post-operative complications.[4]

Internal sphincterotomy appears to be a logical method of treatment of anal fissure since the condition is associated with an overactive anal internal sphincter. The operation of sphincterotomy is confined to the division of internal sphincter and hence should alleviate the symptoms without comprising continence. It can be standard mid posterior or lateral subcutaneous internal sphincterotomy. Procedure can be performed under either general or local anesthesia and by an open or closed technique. The open technique involves a small incision over the intersphincteric groove and direct division of the internal sphincter. The closed technique consists of careful division of internal sphincter using a small scalpel inserted into the intersphincteric groove. [5]

Hence this study was planned to compare three surgical techniques for fissure in ano viz. relatively newer open and closed techniques of internal sphincterotomy done under local anesthesia and traditional "standard" technique of anal dilatation done under general anesthesia.

### METHODOLOGY

This study was planned as a prospective randomized controlled study comparing lateral sphincterotomy by closed and open technique performed under local anesthesia with the "standard technique" of anal dilatation done under general anesthesia.

**Setting:** Tertiary care medical college, hospital.

**Design:** Open Label, Prospective, Interventional, Randomized Controlled Study.

**Patient population:** 90 patients

**Inclusion criteria:** All adult (more than 18 years) new patients with acute or chronic anal fissure with severe spasm and / or symptoms were included in this study.

**Exclusion criteria:** Excluded from this study were

1. Patients with associated anorectal problems like secondary infection, fistula in ano or hemorrhoids
2. Suspected Crohn's disease
3. Patients unfit for general anesthesia
4. Pregnant and lactating women
5. Immunocompromised hosts

**Enrollment:** It was planned to enroll in all 90 patients in the study with random allocation of 30 patients

Group 1: Open lateral sphincterotomy under local anesthesia

Group 2: Closed lateral sphincterotomy under local anesthesia

Group 3: Anal dilatation under general relaxant anaesthesia

The approval of the Institutional Ethics Committee was obtained. After satisfying inclusion and exclusion criteria, written informed consent was obtained. Details of the history and examination findings were recorded on special data sheets. All patients undergoing anal dilatation under general anesthesia were admitted as day care till they recovered from anesthesia. As lateral sphincterotomy was done under local anesthesia the patients were managed on out-patient basis.

**RESULTS** The study was carried out in a tertiary care medical college hospital from January 2011 to September 2012. In all 90 patients were included and were randomly allocated into one of the three groups so that each group had 30 patients. There were 74 men and 16 women. Age ranged from 23 to 56 years.

**STATISTICAL ANALYSIS**

Data was analyzed using SPSS version. Comparison of variables representing categorical data was performed using chi square Test. Student's t test was used to compare the means. P value of less than 0.05 was considered significant

**TABLE 3 :COMPARISON OF POST OPERATIVE PAIN**

Severity	Anal dilatation (N=30)			Open (N=30)			Closed (N=30)		
	4 hrs No (%)	day 3 No (%)	day 7 No (%)	4 hrs No (%)	day 3 No (%)	day 7 No (%)	4 hrs No (%)	day 3 No (%)	day 7 No (%)
Mild	- (-)	10 (33.3)	30 (100.0)	09 (30.0)	18 (60.0)	29 (96.7)	12 (40.0)	17 (56.7)	30 (100.0)
Moderate	- (-)	20 (66.7)	- (-)	*21 (70.0)	12 (40.0)	01 (03.3)	18 (60.0)	13 (43.3)	- (-)
Severe	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)

By Chi Square test \*P < 0.05 Significant

At 4 hours post, 21 (70%) of the cases among Open group had moderate pain which was more as compared to other groups and the difference was statistically significant. On day three, overall 45 patients reported had mild pain whereas 35 patients complained of moderate pain as assessed by VAS scale. By day seven, almost all patients (89 of 90) were significantly relieved of pain and reported that pain was only very mild by then.

**POST OPERATIVE RELIEF OF PAINFUL DEFAECATION**

Patients were assessed for relief of symptom pertaining to painful defecation at one week as shown below in table 19. Almost all, 88 out of 90 patients (97.7%) were relieved of painful defecation, which was the main presenting symptom. All 30 patients (100.0%) in Open group had post operative symptom relief of painful defecation which was similar to 29 patients (96.7%) in Anal dilatation and Closed group and the difference was not statistically significant

**RETURN TO NORMAL ACTIVITY**

The mean time to return to normal activity among the three groups were calculated. Mean time to return to normal activity among anal

**OBSERVATION TABLES**

**TABLE 1: AGE AND GENDER DISTRIBUTION OF STUDY CASES**

Age group (in yrs)	No. of Patients	Male		Female	
		No	%	No	%
21 – 30	07	04	57.1	03	42.9
31 – 40	41	34	82.9	07	17.1
41 – 50	31	25	80.6	06	19.4
≥ 51	11	11	100.0	-	-
<b>Total</b>	<b>90</b>	<b>74</b>	<b>82.2</b>	<b>16</b>	<b>17.8</b>

Thus the incidence of anal fissure was maximum in the age group of 31 -40 years

**TABLE 2: PRESENTING SYMPTOMS**

	Anal Dilatation	Open	Closed	Total Number (%)
Painful defecation	30	30	30	90 (100%)
Bleeding per rectum	27	26	29	82 (91.11%)
Constipation	20	22	21	63 (70%)
Spasm	26	27	28	81 (90%)
Swelling	12	10	11	33 (36.66%)
Itching	9	11	8	28 (31.11%)

The location of anal fissure was anterior in 11 patients (12.22%) and posterior in the remaining 79 patients (87.77%). Eighteen patients (20%) had acute anal fissure, whereas 72 patients (80%) had chronic anal fissure.

dilatation group was 2.8 days as compared 2.1 days in open and 2.26 in closed sphincterotomy group. It was compared using student's t test and the difference is not statistically significant.

**TABLE 4 : COMPARISON OF RECURRENCE RATES**

Assess-ment	Anal dilatation (N=30)		Open (N=30)		Closed (N=30)	
	3 mnth No. %	6 mnth No. %	3 mnth No. %	6 mnth No. %	3 mnth No. %	6 mnth No. %
Yes	03 10.0	05 16.6	02 6.66	02 6.66	4 13.33	04 13.33
No	27 90.0	25 83.33	28 93.3	28 93.33	26 86.77	26 86.77

By Chi - Square Test P > 0.05 Not Significant

In all 11 patients (12.2%) had recurrence in this study as shown in table 4. As per data, 3 patients (10.0%) among anal dilatation and 2 patients (6.66%) among Open group had recurrence at 3 month as compared to 4 patients (13.3%) among Closed group but the differ-

ence was not statistically significant. At 6 month, 5 patients (16.6%) in anal dilatation group had recurrence which were more as compared to 2 patients(6.6%) among open sphincterotomy group and 4 patients(13.3%) among Closed group but the difference is not statistically significant

**DISCUSSION** Anal fissure is an extremely common condition. Although it can occur at any age but the age of presentation in this study was from 23 years to 56 years with peak incidence between third and fourth decades constituting almost 45.55% of the total patients. Overall mean age of presentation was 37.82 years. This is comparable to the study carried out by Gough and Lewis, 1983; McDonald et al 1983; Pernikoff et al., 1994.[6,7,8]

Out of the total 90 patients enrolled, the incidence of fissure in ano among males was 82.2% as compared to 17.8% in females. The incidence of anal fissure was observed to be more in males as compared to females in this study. This was much different than reported by Shubh et al (1978) [9], Lock and Thompson (1977) [10], wherein the incidence of anal fissure in males was 58% as compared to 48% in females. This difference may be because of exclusion of pregnant and lactating women in this study. Pregnancy is known to predispose to anal fissure due to constipation as a result of hormonal changes and mechanical pressure.

Painful defecation was the most common symptom of anal fissure, present in all 90 cases. Also seen was anal spasm 81 patients (90%) followed by bleeding per rectum seen in 82 patients (91.11%) and constipation in 63 cases (70%). This was similar to the results seen in Birmingham series, Arabi et al, 1977 [11], Weaver et al, 1987 [12], wherein painful defecation was reported in 97% cases and anal spasm in 84%.

The site for anal fissure can usually be determined by the inspection and operative findings. Preoperative proctoscopy is rarely possible in patients with spasm and pain. Most lie posteriorly. In our experience, of all cases, in 78 cases (87.77 %) the location of the fissure was posterior and only 12 cases (12.33 %) had anterior fissure. Data collected from the clinical trial conducted by McDonald et al [7]; Gough and Lewis(1983) [6] also had high incidence of posterior fissure 92% as compared to anterior fissure.

Surgical treatments for fissure in ano were mostly reserved for patients who did not respond well to the conservative treatment in the acute phase. Of the total patients 72 cases (80%) had chronic fissure in ano similar to the observation in the study carried out by Lock and Thomson, 1977 [13]

In this study comparison was made between open sphincterotomy group and closed sphincterotomy group in view of feasibility of performing the said procedures under local anesthesia. None of the procedures, both open and closed internal sphincterotomy done under local anesthesia were pain free, but there was no incidence of the procedure being abandoned due to severe pain. Local anesthesia alone was sufficient in 36 patients, 16 patients (53.3%) of open sphincterotomy group and 20 patients (66.7%) of closed sphincterotomy group, where as in remaining of the patients local anesthesia had to be supplemented by intravenous analgesia and/ or sedation. It was in comparison with the study by Marzie Lak, et al [14] which showed that Lateral Internal Sphincterotomy under local anesthesia is a less painful technique in office surgery.

In study conducted by Shafiq Ulla, Muhammad Nadeem, Nishtar hospital Multan(2004) [15], it was recommended that closed technique should be adopted by experienced surgeons and persons, who are not so much experienced or trained, should adopt open technique for treatment of chronic anal fissure. Trainee should be initially trained by open technique then be shifted to closed technique.

Patients were assessed for relief of symptom pertaining to painful defecation at one week Almost all, 88 out of 90 patients (97.7%) were relieved of painful defecation, which was the main presenting symptom. All 30 patient (100.0%) of the cases in Open group had post operative symptom relief of painful defecation which was similar to 29( 96.7%) cases in Anal dilatation and Closed group. In study conducted by Kamran Rahim et al., no significant differences were found

between open and closed lateral internal sphincterotomy in terms of symptomatic relief and post operative complications in patients of chronic anal fissure.[15]

The patients were followed up post operatively for evaluation of pain. Our data states that 21 patients (70.0%) of the cases among Open group had moderate pain at 4 hrs which was more as compared to other groups. By day 7, almost all of the cases each among anal dilatation and closed group had mild pain which were same as compared to 96.7% cases in Open group. The results were comparable with the study carried out by Marby et al,1979 [16] and Keighley et al, 1981[17]. Thus it can be stated that the procedures carried out under local anesthesia both open lateral sphincterotomy and closed sphincterotomy were associated with some sort of post operative pain which was bearable but by the end of one week almost the patients were pain free or was with minimal pain which was comparable with anal dilatation group also all the patients were symptom free by the end of one week.

B.Collopy et al [18] have made a retrospective comparison of the outcome of treatment of fissure in ano by a lateral sphincterotomy and anal dilatation. The results favor the lateral sphincterotomy group with respect to less recurrence of pain and problems of incontinence than those in anal dilatation group..In Leong et al [19] study, lateral internal sphincterotomy was the preferred method of treatment in chronic anal fissure with respect to pain, incontinence and patients satisfaction.

In our study, 5 patients (16.66 %) in anal dilatation group had recurrence by the end of 6 months as compared to 2 patients (6.66 %) in open lateral sphincterotomy and 4 cases (13.33 %) in closed sphincterotomy group. The recurrence rate following anal dilatation was noted to be as high as 16 % (Watts et al, 1964) [20]. Some other studies have found a higher recurrence rate following anal dilatation than sphincterotomy (Collopy and Ryan, 1979; Jensen et al, 1984 ) [21]. Studies on lateral sphincterotomy under local anesthesia have reported a recurrence rate of 5- 8 % (Millar, 1971; Notarus, 1971; Oh, 1978) [22] which is comparable to the results of the present study. The paper by Jensen S.L et al in 1964 reporting a comparison between lateral sphincterotomy and anal dilatation under local anesthesia showed that 28.15 % of fissures recurred after stretching as compared to 3.3% after sphincterotomy. The paper also suggests that local anesthesia has some advantage as the sphincter can be better defined when compared to general anesthesia in which case the sphincter relaxes making it more difficult to feel the sphincter and therefore surgery when done under general anaesthesia may produce a more extensive division of fibers.

In M.Marby et al [16] in their study, anal dilatation and lateral internal sphincterotomy was compared with respect to early post operative complications, recurrence and return to normal activity and was found that anal dilatation gives a better result as compared to lateral internal sphincterotomy for treatment of anal fissure and successful treatment is associated with reduction in anal pressure Almost all the patients in each group were symptom free and returned to their normal activity on an average of 2-3 days. Although patients undergoing lateral anal sphincterotomy has earlier return to work as compared to anal dilatation .

**CONCLUSION:-** Fissure in ano is a common ano-rectal problem which causes significant disability to the patients. Patients with spasm not responding to conservative treatment are offered surgical intervention either anal dilatation or anal sphincterotomy. Lateral sphincterotomy by open or closed method appears to be an effective method for treatment of fissure in ano and it is feasible to perform the said procedure under local anesthesia; however it should be routinely supplemented with some form of intravenous analgesia and sedation to make the patient more comfortable during surgery. It can be performed in high risk patients without the need of pre operative preparation and investigations, on outpatient department basis, alleviating the need for hospital stay, with satisfactory post operative symptom relief, less complication rates as compared to anal dilatation and early return to normal activity. Anal sphincterotomy had the less incontinence and lower recurrence as compared to anal dilatation; however the difference was not statistically significant.

In conclusion anal sphincterotomy (both open and closed technique) are safe and effective techniques for surgical treatment of anal fissure. It is feasible to perform the procedure under local anesthesia with supplemental intravenous analgesia and sedation.

## REFERENCES

1. Disease of Colon, Steve Weaner, Neil Stollman, 2007 4:693-696
2. Anal Fissure. Jonas and J.H. Scholefield Department of Surgery, University Hospital, Nottingham, 6:61-65
3. Ewing MR (July 1954). "The white line of Hilton". *Proc R Soc Med.* 47 (7): 525-30.
4. Lund JN, Scholefield JH. Etiology and treatment of anal fissures. *B J Surg.* 1996 Oct;83(10):1335-1344.
5. Lund and Scholefield JH (1996b) internal sphincter spasm in anal fissure: cause or effect? *Int J Colorectal Dis* 11:151-152
6. Gough MJ and Lewis A(1983) The conservative treatment of fissure in ano. *Br J Surg* 70: 175-176
7. MacDonald P, Nicholls RJ (1983) The anal dilator in the conservative management of acute anal fissure. *Br J Surg* 70:25-26
8. Pernikoff BJ, Eisenstat TE, Rubin RJ, et al. Reappraisal of partial lateral internal sphincterotomy. *Dis Colon Rectum.* 1994;37:1291-1295
9. Shubh HA et al (1978) conservative treatment of anal fissure : an unselected and retrospective and continuous study. *Dis Colon Rectum* 21: 582-583
10. Lock MR, Thomson JPS. Fissure in ano: The initial management and prognosis. *Br J Surg.* 1977;64(5):355-358
11. Arabi Y, et al (1977) Anal pressure in hemorrhoids and anal fissure. *Am J Surg* 134:608-610
12. Weaver RM, Ambrose NS, Alexander-Williams J, et al.(1987) Manual dilatation of the anus vs. lateral subcutaneous sphincterotomy in the treatment of chronic fissure-in-ano. Results of a prospective, randomized, clinical trial. *Dis Colon Rectum* 30:420-423.
13. Marzie Lak, et al, Lateral internal sphincterotomy under local anesthesia: A Randomised clinical trail. *Medical Journal of the Volume 20 Islamic Republic of Iran* Number 1 Spring 1385 May 2006
14. Shafiq ullah, Muhammad Nadeem (2004) Closed versus open lateral internal sphincterotomy in chronic anal fissure: a comparative study of postoperative complications & results *Pakistan J. Med. Res.* Vol. 43 No.1, 2004
15. Kamran Rahim (2001) treatment of anal fissure *Pak Med J* 59:23-27
16. Marby M, Alexander-Williams J, Buchmann P, et al.(1979) A randomized controlled trial to compare anal dilatation with lateral subcutaneous sphincterotomy for anal fissure. *Dis Colon Rectum* 22:308-311.
17. Keighley MRB, Creca F et al, Treatment of anal fissure by lateral subcutaneous sphincterotomy should be under general anesthesia. *Br J Surg* 68:400-401
18. Collopy MB and Ryan P (1979) Comparison of lateral subcutaneous sphincterotomy with anal dilator in treatment of fissure. *Med J Aust B:* 461-462
19. Leong AFPK and Seow-Choen (1995) Lateral sphincterotomy compared with anal advancement flap for chronic anal fissure. *Dis Colon Rectum* 31:368-371
20. Watts J McK, Bennette RC (1964) Stretching of anal canal sphincters in treatment of fissure in ano. *Br Med J* 2:342-343
21. S L Jensen, F Lund, O V Nielsen, G Tange (1984) Lateral subcutaneous sphincterotomy versus anal dilatation in the treatment of fissure in ano in outpatients: a prospective randomized trail *British medical journal (Clinical research ed.)* 10/1984; 289(6444):528-30.
22. Notaras MJ (1969) Lateral subcutaneous sphincterotomy for anal fissure—a new technique. *Proc R Soc Med* 62:713.