

Original article:

A Comparative Study In The Treatment Of Anal Fissure: Closed Vs Open Lateral Internal Anal Sphincterotomy

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ABSTRACT:

Introduction: A comparative study in the treatment of anal fissure to compare the results of open and closed technique of lateral internal sphincterotomy (LIS) and to find the efficacy, postoperative complications and to decide the better procedure of the two.

Background: LIS is considered the gold standard of treatment for anal fissures. LIS can be done by open or closed techniques and both the techniques are practiced widely as per the choice and experience of the operating surgeon.

Material and method: Patients with complaints of pain and bleeding during or after defecation, constipation, perianal swelling and pruritis were included in the study. The study was carried out in 50 patients and were allocated to two groups (A and B) of 25 patients each on the basis of randomization done with the help of computer software. Group A patients were subjected to open technique and Group B patients were subjected to closed technique of LIS.

Observations: Majority of the patients were in the age group of 21-50 years with 16 male and 34 female patients. Postoperatively patients were assessed for pain, peri anal infections, healing of fissure, incontinence and bleeding per rectum while defecation at 1, 2, 3, 4, and 6 weeks. The results obtained were evaluated statistically and analyzed.

Results: Open technique of LIS is good for trainee surgeons while closed technique of LIS is fast and simple in experienced hands.

KEYWORDS: Fissure in ano, lateral internal sphincterotomy.

Introduction:

Anal fissure is a benign yet highly prevalent condition that can cause considerable pain and discomfort^{1}. It is a longitudinal split in the anoderm that may extend from the mucocutaneous junction to the dentate line. It may occur at any age but is usually a disease of young adults. Anal fissure are more common at the posterior commissure and affects both sexes equally however an anterior commissure fissure is common in women. When anal fissure occurs at an unusual location especially lateral, possibility of crohn's disease, STD's, tuberculosis and squamous cell carcinoma must be ruled out.

The symptoms of anal fissure are so characteristic as to be nearly diagnostic. Patient complains of severe intense pain initiated by passage of stools, which lasts for a variable period of time after defecation. In addition they complain of anal bleeding which appear as a bright streak on the sides of stool. Pain and irritation results in spasm of the internal anal sphincter muscle which then fails to relax during defecation thus further aggravating the condition. Anal fissure can be acute or chronic. Fissure failing to heal within six weeks despite dietary

measures are designated as chronic. Chronic anal fissure is characterized by skin tag and hypertrophied anal papilla..

MATERIALS AND METHODS:

The present study, "A Comparative study in the treatment of anal fissure: Closed vs Open lateral internal sphincterotomy" was conducted in the department of general surgery, Acharya Shri Chander College Of Medical Sciences and Hospital, Sidhra, jammu.

Patients with features of fissure in ano such as pain during or after defecation; bleeding per rectum may or may not be present were included in this study.

After explaining the study, a written and informed consent was taken from every patient.

The patients were randomly allocated to one of the two groups in which lateral internal sphincterotomy as the treatment of anal fissure was done by either open or closed method.

Group A: lateral internal sphincterotomy by open method.

Group B: lateral internal sphincterotomy by closed method.

Open technique:- preparation of skin in lithotomy position. Radial incision made laterally at the lower border of the internal sphincter into the inter-sphincteric groove at 3 O clock position. Then the distal internal sphincter was grasped with allis forceps and bluntly freed. The lower third or half of the fibers were divided. Pressure dressing was done later.

Closed technique:- Surgical blade 11 was introduced through the perianal skin at the left lateral aspect of the canal sandwiched parallel between the anoderm and internal sphincter. When tip of blade reached the dentate line, blade was turned outwards to divide the sphincter, a 'give away' sensation was felt when fibers were divided. Blade was removed and gentle pressure applied for 5 minutes to control bleeding. Skin tag, if any, was then excised.

Post-operatively antibiotics, sitz bath, stool softners and analgesics were advised in both the groups.

Patients were followed up at 1, 2, 3, 4 and 6 weeks.

During each visit enquiries were made regarding pain during or after defecation, bleeding per rectum during defecation, perianal infection, incontinence to stool or flatus (by modified Wexner score for grading incontinence), healing of fissure and any other complication. After the study, all the data was analyzed statistically using specific statistical tests. Significance was defined as $p < 0.05$. All the information and results thus obtained lead to conclusion of the study.

OBSERVATION:

Table 1 : Age distribution (years)

Age years	No. of patients (%)	
	Group A (Open) (n =25)	Group B (Closed) (n =25)
≤ 20	1 (4.0)	1 (4.0)
21-30	4 (16.0)	3 (12.0)
31-40	9 (36.0)	8 (32.0)
41-50	7 (28.0)	7 (28.0)
51-60	1 (4.0)	3 (12.0)
>60	3 (8.0)	3 (12.0)
p-value	0.354	
Remarks	NS	

Table 2: Sex distribution

Sex	No. of patients (%)	
	Group A (Open) (n =25)	Group B (Closed) (n =25)
Male	9 (36.0)	7 (28.0)
Female	16 (64.0)	18 (72.0)
p-value	0.233	
Remarks	NS	

Table 3: Presenting complaint

Presenting complaint	No. of patients (%)				p-value	Remarks
	Group A (Open) (n =25)		Group B (Closed) (n =25)			
	Yes	No	Yes	No		
Pain	25 (100.00)	0 (0.00)	25 (100.00)	0 (0.00)	-	-
Bleeding	14 (56.0)	11 (44.0)	16 (64.0)	9 (36.0)	0.251	NS
Constipation	17 (68.0)	8 (32.0)	19 (76.0)	6 (24.0)	0.213	NS
Perianal Swelling	6 (24.0)	19 (76.0)	7 (28.0)	18 (72.0)	0.521	NS
Pruritus	3 (12.0)	22 (88.0)	4 (16.0)	21 (84.0)	0.414	NS

Table 4: Local examination

Sex	No. of patients (%)					
	Group A (Open) (n =25)			Group B (Closed) (n =25)		
	+	++	-	+	++	-
Sentinel Tag	12 (48.0)	-	13 (52.0)	13 (52.0)	-	12 (48.0)
Visible Crack or Fissure	25 (100.0)	-	0 (0.0)	25 (100.0)	-	0 (0.0)
Sphincteric Spasm	23 (92 .0)	2 (8.0)	0 (0.0)	22 (88.0)	3 (12.0)	0 (0.0)
Induration	11 (44.0)	-	14 (56.0)	12 (48.0)	-	13 (52.0)
Abscess	0 (0.0)	-	25(100.0)	0	-	25 (100.0)
Hemorrhoids	6 (24.0)	-	19 (76.0)	4 (16.0)	-	21 (84.0)

Table 5: Position of Fissure

Position of fissure	No. of patients (%)	
	Group A (Open) (n =25)	Group B (Closed) (n =25)
Posterior	22 (88.0)	21 (84.0)
Posterior + Lateral	1 (4.0)	2 (8.0)
Anterior	2 (8.0)	2 (8.0)
p-value	0.492	
Remarks	NS	

Most of the fissures were located posteriorly, 22 (88%) patients in group A and in 21 (84%) patients in group B. Anterior fissure were seen in 2 (8%) patients in each group. Both posterior and lateral fissure were seen in 1 patient in group A and in 2 patients in group B respectively .

In the preoperative assessment of pain in Group A and Group B 20 patients in Group A and 22 patients in Group B had moderate pain while as pain was severe in 6 patients in Group A and 3 patients in Group B. the mean VAS score was similar in both the groups: 8.48 ± 0.78 the difference between 2 groups being non-significant.

Post- operatively ecchymosis was present in 2 patients (8%) in group A and in 3 patients in group B. Postoperatively bleeding was seen in 3 patients (12%) in group A, of which 2 were minor which stopped after pressure dressing and only 1 required suture ligation of a vessel on 1st post on day. In group B minor bleeding was present in 1 patient. Hematoma was seen in only 2 patients in group B and was absent in group A.

In group A, 3 patients developed retention of urine out of which 2 were male and 1 was female. In group B 1 patient (female) developed retention of urine .

In the immediate postoperative period 19 patients in Group A and 22 patients in Group B had severe pain. While as 6 patients in Group A and 3 patients in Group B had moderate pain. The difference between the VAS score was significant.

In both the groups there was no incontinence to feces in the 1st week however incontinence to flatus as seen in 2 cases of open sphincterotomy and none in group B showing statistical significant differences (p value = 0.001)

At 1 week, bleeding while defecating was present in 7 cases in group A (OLIS) and was present in 8 patients in group B, the difference being statistically insignificant (p value = 0.543) .

At 1 week, 13 patients in group A had complete healing of the fissure while as it was seen in 8 patients in group B respectively (Table 13), fissure healing was partial in 11 patients in open and 16 patients in group B, fissure had not healed in 1 patient in both the groups. Healing of fissure was better in group A than group B which was statistically significant (p value = 0.011).

At 1 week follow up post surgery, 1 patient (4%) of group A had wound infection while as in group B there was none. It was statistically significant (p value = 0.050).

At 2nd week the mean VAS score was 2.68 ± 1.44 in Group A and 2.04 ± 1.51 in Group B. The p-value 0.023 which was statistically significant .

At 2nd week follow up 1 patient in group A had incontinence to flatus while as in group B it was absent showing statistical significant difference (p value = 0.050) .At 2 week follow up 88% of the fissure had healed completely in group A while as it was 80% in group B. Fissure had healed partially in 8% in group A and 16 % in group B respectively. In 4% of patients fissure had not healed in either of the groups. The difference in healing at 2nd week post operatively between group A and group B was statistically insignificant .

At 2nd week follow up 1 post surgery, 1 patient (4%) of group A had wound infection while as in group B there was none. It was statistically significant (p value = 0.050) .

At 2nd week, Bleeding while defecating was present in 4 patients in open sphincterotomy (group A) while as it was present in 6 patients in group B, showing no statistical significant difference (p value = 0.163) .

At 3rd week 96% of Group B were painless as compare to 92% in Group A difference being statistically insignificant .

At 3rd week follow-up 96% of fissure had healed in group A and 92% group B respectively. In 1 patient in group B wound had not healed. The difference in wound healing in both the groups was statistically insignificant .

At 3rd week follow-up bleeding while defecation was present in 1 patient (4%) in group A while as it was seen in 2 patients (8%) in group B. The difference was statistically insignificant (p value = 0.231) .

At 6th week, complete healing of the fissure had occurred in both group A as well as group B .

Incontinence was absent at 6th week in both group A as well as group B .

Bleeding while defecation was absent 6th week in both group A as well as group B .

Peri anal infection was absent at 6th week in both the groups .

DISCUSSION:

In our study at 1 week follow-up, 2 patients in open sphincterotomy reported minor incontinence to flatus only with Modified Wexner score of 1. In closed sphincterotomy incontinence to either flatus or feces was absent. The difference was statistically significant (p-value = 0.001). The incontinence to flatus was also present at 2 weeks post open sphincterotomy but improved and was absent in the subsequent follow-ups. The incontinence to flatus was minor and was temporary. There was no incontinence to stool in either of the groups in our present study. In a study conducted by Harshad Shankarlal Patel, incontinence to flatus was 8.3% in closed method and 3.4% in open method with an overall rate of 5.7%. This was temporary and

controlled within 1 week. Incontinence to stool was 3.4% in open method which was temporary and controlled within 2 weeks while none in closed method with overall rate of 1.9%. In a study conducted by Vivek Gupta (2014), postoperative incontinence or soiling was absent in both the groups. Study done by Shafiqullah *et al.*, had shown incontinence rate of 32% in open method and 24% in closed method which is quiet high compared to present study. 'Study of "tailored" lateral sphincterotomy by selecting the height of sphincter to be divided' done by David RG Littlejohn *et al.* had shown that incidence of imperfect control of flatus of 1.4%, minor staining of 0.35% and urgency of 0.7%. This shows that incontinence rate can be decreased by reducing the cutting depth of internal sphincter

In our present study at 1 week, 13 (52%) patients, of open sphincterotomy group had complete healing or fissure while as in 11 patients (44%) there was partial healing and 1 (4%) patient had non healed fissure. In closed sphincterotomy group complete healing was seen in 8 patients (32%), partial healing in 16 patients and non healing in (4%) patient. There was statistically significant difference in healing between two groups at 1 week (p value = 0.011). Healing of fissure improved in both the groups at 2 week, in 88% patients of open group complete healing was seen as compared to 80 % in closed group with 4% non healing seen in both the groups. At 4 week, 100 % healing of fissure was noted in open sphincterotomy group compared to 96% in closed group respectively , showing slight statistical difference (p value 0.050). Healing in the closed group was also 100% at 6 weeks with no recurrences noted in either of the group. There was significant statistical difference in fissure healing between the two groups at 1 week and 4week, with rapid healing in open sphincterotomy group. There was no difference noted in fissure healing between the two groups at 6 weeks. Sajid MS *et al.*, in their meta-analytical study had noted that there was no significant difference in fissure healing between the two groups.

Post operative infection was seen in only 1 (4%) patient of open sphincterotomy group at 1 week which was treated by giving oral antibiotics. It was absent in the subsequent follow-ups. Infection of the wound was not noted in the closed group at any time during subsequent follow-ups. In a study conducted by Harshad Shankarlal Patel (2013), wound infection rate was 10.3% in open method and 4.2% in closed method. Wound infection rate in closed method was lower than open method. Overall wound infection rate was 7.5% which was quiet in high but all responded well with antibodies while one patient was lost for follow-up. Study done by Shafiq ullah *et al.*, had shown wound infection rate of 4% in each closed and open method. Study done by Sanjay D Patel *et al.* had shown wound infection rate of 2% in open method.

In our present study Peri-anal sepsis was uncommon (4%) and this can be explained by the aseptic approach used during surgery as well as use of prophylactic antibiotic (Cefoperazone plus sulbactam 1.5g) intra-operatively. In addition, all patients were trained on personal hygiene and correct use of warm sits bath both in hospital and at home. Several studies reported that there were no significant differences in pain scores or in incontinence rate between open and closed latera internal anal sphincterotomy (Mc Callion K *et al.* 2001, Nelson R *et al.* 2002, Wiley M *et al.* 2004, Arroy A *et al.* 2004), although more "open sphincterotomy" patients experienced minor discomfort at 1 week (Wiley M *et al.* 2004). On the other hand, it has been suggested that open sphincterotomies are longer than closed ones, explaining why they seem to have a higher risk of incontinence than the closed technique (Nelson R *et al.* 1999). Morbidity and recurrence, also, were similar in both techniques, even under local anaesthesia, which can be used effectively as an alternative to general anaesthesia and also has several socioeconomic advantages

(high degree of satisfaction, comfort to the patient, cost effective as opposed to increased financial burden due to general or regional anaesthesia and rapid solution of the problem) (Al Raymoony AE *et al.* 2001).

CONCLUSION:

The closed technique can easily be done under local anaesthesia reducing the cost of general or spinal anaesthesia.

Long term follow up of patients is required to profile cases of recurrence of anal fissure in either group. This was not assessed in this study as the follow up period was limited to six weeks after surgery.

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