

How to Cite:

Kachavi, S. H., Mali, P. S., & Manjunath, M. B. (2022). Comparative study between closed vs open lateral internal sphincterotomy in treatment of chronic anal fissure. *International Journal of Health Sciences*, 6(S1), 6036–6042. <https://doi.org/10.53730/ijhs.v6nS1.6293>

Comparative study between closed vs open lateral internal sphincterotomy in treatment of chronic anal fissure

Sadiq Husain Kachavi, MBBS, MS

Assistant Professor Department of General Surgery, SDM College of Medical sciences and Hospital, SDM University, Dharwad Karnataka India

Praveen S Mali, MBBS, MS

Assistant Professor Department of General Surgery, SDM College of Medical sciences and Hospital, SDM University, Dharwad Karnataka India

Manjunath Meti B, MBBS, MS

Assistant Professor Department of General Surgery, SDM College of Medical sciences and Hospital, SDM University, Dharwad Karnataka India
Corresponding author: Manjunath Meti B

Abstract---Background: Anal fissure is a benign yet highly prevalent condition that can cause considerable pain and discomfort. It is a longitudinal Split or tear of the anal canal extending proximally from the anal verge towards the dentate line. Objectives: To compares the open and closed techniques of lateral internal sphincterotomy and study which method is better among open vs closed lateral sphincterotomy. Material & Methods: Patients admitted in Bowring and Lady Curzon hospital and Victoria hospital attached to Bangalore Medical College and Research Institute from November 2015 to May 2017 were studied (n=60). Thirty patients underwent closed and thirty underwent open lateral internal sphincterotomy out of 60 after informed written consent. Results: Post operative pain after 48, 60, 72 and 96 hours was less in closed group along with seroma, hematoma and abscess. Conclusion: we observed that closed lateral internal anal sphincterotomy is better than open technique.

Keywords---closed lateral internal sphincterotomy, open lateral internal sphincterotomy, Pain, Seroma, Hematoma, abscess.

Introduction

Anal fissures are common causes of morbidity in the surgical units. The severe pain during and after defecation greatly impacts on the quality of life of many

patients. Chronic anal fissures responds poorly to medical treatment and are therefore best managed using surgical methods. Lateral internal sphincterotomy is the gold standard in the treatment of chronic anal fissures. [1]Two methods are currently employed in lateral internal sphincterotomy: open or closed techniques. [2]Proponents of the closed method argue that this approach has fewer cases of reported incontinence to stool though incontinence to flatus is reported in both methods. [2] Proponents of the open method argue that this technique gives a direct visualization of the internal sphincter fibres and therefore controlled sphincter release made possible. In addition, it gives the surgical trainees a golden opportunity for learning and therefore they recommend it in Teaching Hospitals. This study aims to find out whether there is a difference in the early surgical outcome when one uses either closed or open internal sphincterotomy technique in accessing the internal anal sphincter muscle in treating chronic anal fissure.

Materials & Methods

This prospective comparative study was conducted among patients admitted in Bowring and Lady Curzon hospital and Victoria hospital attached to Bangalore Medical College and Research Institute from November 2015 to May 2017. Permission for the study was obtained from the College authorities prior to commencement. It is a hospital based study of 60 cases who are fulfilling the Inclusion/Exclusion criteria.

Inclusion Criteria

1. Patients 18 years and above
2. All the cases of anal fissure of more than 3 months duration.
3. Anal fissures with associated features of chronicity like sentinel pile, hypertrophied papillae, and exposure of internal sphincter fibers.
4. Anal fissures not cured by conservative management.

Exclusion Criteria

1. Patients less than 18 years
2. Fissures in pregnant women.
3. Anal fissures with Inflammatory Bowel Disease and Crohn's disease.
4. Patients with immunocompromised state.

Methodology

After admission, patients fulfilling the inclusion & exclusion criteria will be taken in to study after obtaining written informed consent and the data to be collected regarding clinical history, examination, diagnosis, investigations, details of previous operative procedure. Pre operatively antibiotics, consent and preparation along with enema is given. Post operative follow up will be done for immediate complications. Patients will be followed up once a week for 2 weeks and then every 2 weeks for another 6 weeks to monitor fissure healing, bleeding and pain. They were subsequently followed up monthly by telephone questionnaire or by examination for at least 6 months. If the patients developed any related complications, they will be called in for a consultation and evaluated. In this operation, the internal sphincter is divided away from the fissure itself.

The procedure can be carried out using an **open or a closed** method, under local, regional or general anaesthesia, and with the patient in the lithotomy or prone jackknife position. The distal internal sphincter is palpated at the intersphincteric groove. In the closed method small longitudinal incision is made over this, and the submucosal and intersphincteric planes are carefully developed to allow precise division of the internal sphincter with a knife or scissors to the level of the apex of the fissure; the wound is then closed with absorbable sutures. Alternatively, either plane can be entered using a scalpel (No. 11 blade), with the blade advanced parallel to the sphincter and then rotated such that the sharp edge faces the internal sphincter, which can then be divided along its distal third. Pressure should be applied to the wound for a few minutes to prevent haematoma formation. In the open technique, the anoderm overlying the distal internal sphincter is divided longitudinally to expose the sphincter, which is divided, and the wound is closed with absorbable sutures. Although the fissure needs no specific attention, problematic papillae and external tags can be excised concomitantly.

Statistical analysis

Data was entered into Microsoft excel and analyses were done using the Statistical Package for Social Sciences (SPSS) for Windows software (version 18.0; SPSS Inc, Chicago). The chi-square test and fisher's exact test (when appropriate) was used to show the associations between predictor and outcome variables. The level of significance was set at 0.05. The factors which were significant by chi-square test were selected. 95% confidence intervals were calculated for each variable.

Result

Sixty patients underwent lateral internal sphincterotomy at our hospital during the study period. 30 (50%) underwent closed lateral internal sphincterotomy (CLIS) while a similar number underwent open lateral internal sphincterotomy (OLIS). The median age at presentation was at 34 years. Table 1

Table 1
Age distribution in the study

AGE GROUPS(In years)	Number of patients (n=60)	%age of patients
15- 19 years	7	11.6%
20 – 24 years	5	8.3%
25- 29 years	8	13.3%
30-34 years	12	20%
35-39 years	10	17%
40-45 years	4	7%
45-49 years	5	8.3%
50-54 years.	5	8.3%
55-60 years	4	7%

The commonest symptom at presentations was anal pain during and after defaecation (100%), followed by anal skin tag (75%) and blood in stool (73%). This triad of symptoms constitutes a fairly accurate clinical assessment of chronic anal fissure before a patient is examined to confirm the same. Thus a high index of suspicion would spare the patient the excruciating pain experienced during digital rectal exam in the clinics which would then be confirmed in theatre when anaesthesia is given. Table 2

Table 2
Symptoms in the patients among both the study groups

SYMPTOMS	TOTAL	CLIS	OLIS	p VALUE	χ^2
ANAL PAIN	60	30(50%)	30(50%)	-	-
BLOOD NSTOOLS	44	24(54%)	20(46%)	0.242	
MUCOID ISCHARGE	30	14(47%)	16(53%)	0.605	
ANAL SKIN TAG	45	23(51%)	22(49%)	0.765	0.08
PERIANAL SWELLING	3	2 (67%)	1(33%)		

Most fissures were located at posterior anal mucosa (85%) with a small proportion being in the anterior and mucosa (11%). This can be explained both anatomically and physiologically. The posterior commissure of the anoderm is less perfused than other anodermal regions. The branches of the inferior rectal artery course perpendicularly through septa of the internal anal sphincter before reaching the anoderm. Thus, flow through these arterioles is threatened by elevated intramuscular pressure of the internal sphincter exceeding the intra-luminal pressure of arterioles. Therefore increased internal anal sphincter tone compromises perfusion of the posterior midline anoderm resulting in ischaemia that prevents small mechanical tears from healing which then progresses to clinically significant anal fissures

Overtime, the skin distal to the fissure becomes edematous and enlarged and may form a fibrous skin tag as seen in 75% of the patients in this study. Similarly, the anal papilla cephalad to the fissure can undergo parallel changes and become enlarged. These changes are attributed to chronic low grade infection. The edges and the base of the fissure becomes fibrotic and one is able to see the characteristic whitish fibres of the exposed internal sphincter in the base of the fissure at operation. Fissures occurring at both anterior and posterior sites were uncommon (3%) and were only encountered in female patients.

All patients were given spinal saddle block in theatre before surgery. Therefore in first 6 hours post operation, 95% reported no pain. This trend was seen upto 24 hours post theatre. In the subsequent 48 hours only a small proportion complained of annoying pain. In the visual pain score this type of pain has a score of 2. Lateral internal sphincterotomy worked well to relieve pain and therefore significantly improved the quality of life of the patients.

Pain was assessed at various timeliness after surgery in the open and closed groups in order to profile the pattern. This was done at 6 hours, 12 hours, 24 hours, 36 hours, 48 hours, 60 hours and 72 hours. At the early hours (24 hours), no significant variation in pain score was noted in the two groups. ($p=0.272$). At 60

hours, 72 hours and 96 hours there was significant variation of pain score noted among the two groups i.e. ; p value-0.045, 0.014, 0.0002 respectively. Overall, there is significant difference in the pain scores in the two groups being studied during later period (60, 72, 96 hours).

Table 3

Table 3
Post operative comparison of "No pain" at different hours

POST OPERATIVE PERIOD	NUMBER OF PATIENTS WITH "NO PAIN(VAS-0) (n=60)
6 hours	57(95%)
12 hours	50(83.3%)
24 hours	32(53%)
36 hours	16(26.6%)
48 hours	10(16.7%)
60 hours	14(23.3%)
72 hours	16(27%)
96 hours	33(55%)

Post operative bleeding was more in open group which was significant, exact t test value of 0.0419 along with hematoma formation (exact t test value- 0.02114) in the open group. Both were found to be significant. Seroma formed more in the open group, with p=0.085 which was not significant. At the end of the study period, only three patient in this group had flatus incontinence with exact t value being 1.

Bleeding was encountered in 14% of patients intra-operatively. This was easily managed by applying constant thumb pressure on surgical site for 5 minutes. Only in one patient was clamping and ligation of vessel necessary. Haematoma formed in 9% of patients and was not significant to require surgical evacuation. Majority of patients had no seroma formation (96%). Table 4

Table 4

Comparison of various surgical outcomes among both the groups

SURGICAL OUTCOMES	CLIS (n=30)	OLIS(n=30)
BLEEDING	2(7%)	9(30%)
HEMATOMA	2(7%)	10(33%)
SEROMA	2(7%)	7(40%)
ABCESS	1(3%)	2(7%)

In this study reported flatus incontinence is significantly reduced to 1% at six weeks follow up period. Peri-anal sepsis was uncommon (5%) and this can be explained by the aseptic approach used during surgery as well as use of prophylactic antibiotic (ceftriaxone plus sulbactam 1.5g) intra-operatively. In addition, all patients were trained on personal hygiene and correct use of warm sits baths both in hospital and at home.

Discussion

The median age at presentation was at 34 years which compares with other studies. [3] Orroyo A et al in a prospective randomized study of open versus closed lateral sphincterotomy, had reported flatus incontinence rates of 15%. [4] Overall, there is significant difference in the pain scores in the two groups being studied during later period (60, 72, 96 hours). This compares to what Ram E et al, Metcalfe A. M. et al reported in their series. On comparison of the complication rates of the open and closed sphincterotomy techniques, they found both methods to be effective in the treatment of fissures. [4, 5] No case of incontinence or soiling was noted and most of the patients underwent rapid healing and resolution of their symptoms in Pernkoft et al. [6]

Kortbeek et al ¹¹ there was no significant difference in acute complications between the subcutaneous(closed) (8.6 percent) and open (7.4 percent) groups Although the response rate to a pain questionnaire was <50 percent, the data suggest a lower level of postoperative pain in the subcutaneous group. [7]Fissure healing was similar between the subcutaneous (96.6 percent) and open (94.4 percent) groups. The conclusion was that closed lateral internal sphincterotomy for chronic fissure-in-ano is effective and may result in significantly less postoperative discomfort, shorter postoperative lengths of stay, and a comparable rate of complications compared with the open technique. Also reported that closed sphincterotomy is effective in the treatment of CAFs with fewer postoperative complications. [7]

Arroyo et al¹³ also reported that closed lateral sphincterotomy is effective in the management of CAF, with fewer postoperative complications. [8] Altomare et al reported that both techniques are equally effective. [9] In a long-term study, Garcia-Aguilar et al concluded that closed lateral sphincterotomy is preferable to open lateral sphincterotomy as it carries a similar rate of cure with less impairment of control.[10] Nelson concluded that both techniques are equally effective. Cohen and Dehn are in favor of closed lateral sphincterotomy. [11] Kortbeek et al ¹¹ and Shafiq and Nadeem concluded in their respective studies that closed sphincterotomy for CAF is effective and may result in significantly less postoperative discomfort, a shorter postoperative length of stay in hospital, and a comparable rate of complications with open sphincterotomy. [7, 12]

Conclusion

The open and closed sphincterotomy techniques are not significantly different in terms of the occurrence of postoperative complications such as incontinence or soiling, recurrence, and healing rates in patients with CAF. Postoperative pain, seroma, hematoma and local abscess were less in the closed sphincterotomy technique than in the open sphincterotomy technique. Healing was better with a shorter mean duration of stay in the closed sphincterotomy group than in the open sphincterotomy group, along with a reduced overall cost burden. There was statistically significant difference between the mean pain score on the visual analog scale at 48hours, 60 hours, 72 hours and 96 hours after the operation. Closed sphincterotomy is the treatment of choice for CAF and it can be performed effectively and safely with a low rate of complications and a reduced cost burden

for the patient. Finally to conclude “Closed lateral internal sphincterotomy is better compared to open lateral internal anal sphincterotomy.”

Acknowledgment

I would like to express my profound gratitude to all the participants for their co-operation and for their immense faith they reposed in me

References

1. Lunniss P and Nugent K. The anus and anal canal. In: Williams NS, Bulstrode CJK, O'Connell PR, eds. Bailey & Love's Short Practice of Surgery. 26th ed. London : Arnold; 2012:1249
2. Kortbeek JB, Langevin JM, Khoo RE, Heine JA. Chronic fissure in-ano: a randomized study comparing open and subcutaneous lateral internal sphincterotomy. Dis Colon Rectum. 1992 ; 35: 835-837.
3. Giordano P, Gravante G. Simple cutaneous advancement flap anoplasty for resistant chronic anal fissure: a prospective study. World J Surg. 2009; 33: 1058-1063.
4. Ram E et al. Internal Anal Sphincter Function Following Lateral Internal Sphincterotomy for Anal Fissure ; A Long-term Manometric Study, Annals of surgery, August, 2005; 242(2) : 208-211
5. Metcalf A M. [The Surgical Clinics of North America](#) , 2002, 82(6):1291-1297
6. Pernkoff BJ, Eisenstat TE, Oliver GC et al. Reappraisal of partial lateral internal sphincterotomy. Dis Colon Rectum. 1994; 37: 1291-1295.
7. Kortbeek JB, Langevin JM, Khoo RE, Heine JA. Chronic fissure in-ano: a randomized study comparing open and subcutaneous lateral internal sphincterotomy. Dis Colon Rectum. 1992 ; 35: 835-837.
8. Arroyo A, Perez F, Serrano P et al. Open versus closed lateral sphincterotomy performed as an outpatient procedure under local anesthesia for chronic anal fissure: prospective randomized study of clinical and manometric longterm results. J Am Coll Surg. 2004; 199: 361-367.
9. Altomare DF, Rinaldi M, Troilo VL et al. Closed ambulatory lateral internal sphincterotomy for chronic anal fissures. Tech Coloproctol. 2005; 9(3):248-249.
10. Garcia-Aguilar J, Belmonte C, Wong WD et al. Open vs closed sphincterotomy for chronic anal fissure: long term results. Dis Colon Rectum. 1996; 39: 440-443.
11. Nelson H, Anus. In: Beauchamp R D, Evers B, Mattox K eds. Sabiston Textbook of Surgery. 19th ed.: Elseviers; 2012:1392
12. Shafiq U, Nadeem M. Closed versus open lateral internal sphincterotomy in chronic anal fissure: a comparative study of postoperative complications and results. Pakistan J Med Res. 2004; 43:1-4.