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LATERAL INTERNAL SPHINCTEROTOMY IN CHRONIC ANAL FISSURES: A COMPARATIVE STUDY BETWEEN OPEN AND CLOSED TECHNIQUES

General Surgery

Majid Mushtaque M.S; FNB; FIAGES; FMAS; FCLS Surgeon Specialist, Department of Health and Family Welfare, Kashmir, J&K, India.

ABSTRACT

Background: Anal fissure is a common anorectal pathology causing of severe anal pain and significant morbidity in healthy population. It may be acute or chronic and treated medically and surgically.

Objective: To compare the results of open and closed technique of lateral internal sphincterotomy in chronic anal fissure.

Material & Methods: A prospective, randomized study comparing outcome of open and closed techniques of lateral internal sphincterotomy (LIS) was conducted between January 2014 and December 2018. A total of 240 patients were randomly assigned to each of two groups and the outcomes were statistically compared using chi square test.

Results: The mean age of the patients was 36.43 years with male to female ratio of 1:0.92. Most common presenting features were constipation (87.5%) and painful defecation (86.6%). Posterior fissures were seen in 92.5% of cases. The closed technique was significantly better than the open technique of LIS in terms of pain relief and bleeding on defecation in early post-operative period as well as incontinence. However, both techniques were equally effective in terms of infection rates, complete healing of fissures at 6 weeks and recurrence rates.

Conclusion: Both methods are effective in the treatment of chronic anal fissure. However, this study showed that closed lateral sphincterotomy is significantly better than open lateral internal sphincterotomy in terms of pain, bleeding and incontinence in early post-operative periods.

KEYWORDS

INTRODUCTION:

Anal fissures are longitudinal tears in the squamous epithelium of the anal canal distal to the dentate line, and in up to 90% of cases they are located on the posterior midline [1]. Anal fissures affect all age groups, with equal incidence across both the sexes. An anal fissure characteristically presents with pain, bright red bleeding, mucous discharge and constipation [2]. Injury to anal mucosa by hard stool appears to be initiating event in the development of anal fissure. Internal anal sphincter hypertonia is implicated in development of anal fissure [3]. Doppler laser flow studies have demonstrated poor anodermal blood flow at the fissure site [4]. Therefore, the aim of treatment strategies is to reduce the sphincter tone which in turn increases local vascularity, with either medical agents, such as glyceryl trinitrate (GTN), calcium channel blockers (CCB) and botulinum toxin, or surgical interventions, such as lateral internal sphincterotomy (LIS) [5]. Mucosal advancement flap anoplasty as a sphincter-sparing treatment option in patients suffering from chronic anal fissure has also been described [6]

Fissures are classified into an acute and a chronic form and into primary and secondary fissures based on their pathogenesis. Chronic fissures are defined by both or either chronology and morphology. The criteria are duration of symptoms for longer than 8 weeks, the presence of a sentinel pile, a skin tag or an ulcer with exposed internal sphincter fibers [7]. Despite the advent of new modalities in the conservative treatment of chronic fissures, they frequently need surgical treatment. This study aims to compare the outcome of open and closed techniques of lateral internal sphincterotomy in patients with chronic anal fissure.

MATERIAL AND METHODS:

The present study included a total of 240 patients who presented with a primary chronic anal fissure of more than 6 months duration, from May 2014 to Jan 2019. All patients had classical symptoms of a chronic anal fissure unresponsive to medical treatment or had recurrence of symptoms after initial short-term relief. Patients who were excluded from the study included those with chronic inflammatory bowel diseases, tuberculosis, HIV positive, pregnant, associated hemorrhoids, anorectal tumors and unfit for anesthesia. Detailed history including previous conservative and medical management was taken. Limited local examination was sufficient for diagnosis in almost all patients. Preoperative baseline investigations and anesthetic clearance was obtained. The patients were divided into two equal groups of 120 each by computer generated randomization. Group-A included all patients who underwent surgery by closed technique while group-B patients were treated with open technique of LIS. All patients were treated by a single surgeon using a uniform technique of sphincterotomy in each group. All patients received a preoperative dose of iv antibiotics and were operated under spinal anesthesia in the lithotomy position with legs supported by stirrups. The intensity of pain during defecation was assessed by using Visual Analogue Scale (VAS).

SURGICAL TECHNIQUES:

Group A- In closed method the tight distal internal sphincter was palpated as a tight band within the canal. The intersphinteric groove, which marks the distal end of the internal sphincter and was easily palpable and was marked. A stab blade scalpel (No.11) was introduced through the perianal skin at the left lateral aspect of the canal sandwiched parallel between the anoderm and the internal sphincter. When the tip reaches the dentate line, the blade was turned outwards, and the internal sphincter muscle divided with the blade. The blade was removed, and gentle pressure or a single catgut suture was applied to control bleeding.

Group B- Standard open technique included a 5-mm radial incision starting from one side of the anus at 3 or 9 O Clock positions into the perianal skin along the intersphinteric groove. The internal anal sphincter was then dissected, a segment withdrawn with a pair of mosquito forceps and divided with diathermy for a distance from its distal most end up to the dentate line, or for a length equal to that of the fissure. Wound was closed with 2-0 catgut.

In both the techniques, sentinel skin tags when present were also excised. Small anal pack soaked with 5%chlorhexidine and 2% Lignocaine jelly and a supporting T-bandage was used in all patients. Post-operatively, anal pack was removed and all patients were discharged within 16-24 hours. They were advised to take oral antibiotics and analgesics for a period of 5 days apart from Sitz baths 3-4 times a day, laxatives, high fiber diet and plenty of fluids which were continued for at least two weeks. All patients were followed up for a minimum period of 3 months, initially weekly for four weeks and then monthly for next two months. At each visit they were examined for symptomatic relief of pain (VAS), complete healing of fissure, side effect or complication of the treatment, if any. At the end of the study the data was collected and analyzed statistically. Chi-square test was used as a test of significance for data and a p-value of < 0.05 was considered for significance.

RESULTS:

Two hundred and forty patients with chronic anal fissure of more than 6 months duration were included in the study which was conducted at peripheral hospitals of Kashmir, between May 2014 to January 2019. One hundred and fifty-one (63.9%) were aged between 18-40 years [Table 1]. There were 125(52.08%) males and 115(47.91%) females

(M:F ratio 1:0.92). Position of the fissure was posterior in 92.5% and anterior in 7.5% of the patients.

More than one symptom was noticed in all the patients. The most common presentations were constipation and painful defecation in 210(87.5%) and 208(86.6%) patients respectively. Other symptoms included per rectal bleeding during or after defecation in 168(70%), peri anal swelling/ sentinel pile in 152(63.3%) and peri anal pruritis in 21(8.7%) patients.

Table 1: Age distribution of patients (n=240)

Age (years)	No. of patients	Percentage
18-30	60	25
31-40	91	37.9
41-50	56	22.3
51-60	33	13.7

Mean (Average) age = 36.43 years

The outcome of two different techniques of LIS is depicted in Table 2. Post-operatively, pain was complained for more than one week with VAS of 5-7 by nine and four patients who underwent open LIS and closed LIS respectively (p-value < 0.05). On follow up at 2nd week all patients in both groups were pain free. Significant difference between the two groups was noted in terms of bleeding with defecation in first two weeks (p-value <0.05). Transient incontinence for flatus and liquid stools up to 4 weeks was reported in 18(15%) patients of open LIS group and 12(10%) patients of closed LIS group (p-value < 0.05). No patient in our study reported permanent incontinence for faeces. Comparable results were noted in terms of infection rates, complete healing of fissures at 6 weeks and recurrence rates (p-value > 0.05).

Table 2: Open and closed lateral internal sphincterotomy (n=120 each).

OUTCOME	Open LIS. No. of patients (%age)	Closed LIS. No. of patients (%age)	p- value
Pain for more than 1 week	9 (7.5%)	4 (3.3%)	0.002
Bleeding with defecation < 2 weeks	9 (7.5%)	5 (4.1%)	0.01
Infection	2 (1.6%)	1 (0.8%)	0.5655
Incontinence < 4 weeks (Transient)	18 (15%)	12 (10%)	0.03
Complete healing of fissure in 6 weeks	102 (85%)	98 (81.6%)	0.8765
Recurrence	4 (3.3%)	6 (5%)	0.2312

DISCUSSION:

There are many modalities for the treatment of chronic anal fissures, but so far surgical LIS remains the gold standard. Treatment of anal fissures by sphincterotomy was first suggested in 1818 by Boyer [8]. Over the last six decades, a wide variety of surgical methods including anal dilation (Lords operation), fissurectomy, mucosal advancement flap, and lateral internal sphincterotomy have been described for management of chronic anal fissure [6,9-11]. Eisenhammer in 1951 first described performing LIS through the fissure itself [12] and later he modified this approach so that the incision and sphincterotomy were performed in either the left or right lateral position. Lateral internal sphincterotomy was further modified by Notaras who suggesting that it be performed via a blind stab incision referred to as closed sphincterotomy [13]. Our study compared the outcome of open and closed techniques of lateral internal sphincterotomy.

In the present study one hundred and fifty-one (63.9%) patients were aged between 18-40 years (Mean age 36.43 years). This is comparable to the mean age reported in other studies, which range from 30-45 years [14,15].

Males and females comprised of 52.08% and 47.91% of patients respectively with M:F ratio 1:0.92 in our study, which is in accordance with observations by Nahas et al [16], and Melange et al [17] who reported male preponderance with M:F ratios of 2.3:1 and 1.15:1 respectively.

The most common location for primary anal fissure is the posterior midline, as was seen in 92.5% of our cases. Only 10% of females and 1% of males have a fissure located in the anterior midline [18]. In patients who have lateral fissures, the clinician should consider an alternative etiology such as Crohn's disease, malignancy, tuberculosis, or HIV infection [19].

The presentations in our study included constipation, painful defecation, rectal bleeding and sentinel pile in 87.5%, 86.6%, 70% and 63.3% of the patients respectively. These findings are consistent with most of the previous studies, which have documented painful defecation, constipation, bleeding PR and sentinel pile as most common presentations and more than one symptom is present in most of the patients [18,20,21].

On comparison of outcome of two techniques of LIS, we found that both were equally effective in terms of complete healing of fissures at 6 weeks, recurrence, and infection rates. No case of permanent incontinence or soiling was noted in both groups and most of the patients underwent healing and resolution of their symptoms. However, post-operative pain at defecation lasting for more than one week, bleeding with defecation for less than 2 weeks and transient incontinence was noticed more in patients who underwent open technique of LIS which was statistically significant (p-value < 0.05). On follow up at 3 weeks all patients in both groups were pain free. Pernkoft et al and Kortbeek et al in their respective studies reported fewer postoperative complications with closed sphincterotomy [22,23]. Nelson [24] and Altomare et al [25] in their studies reported that both techniques are equally effective, while Gupta V et al [20] and Cohen A et al [26] concluded that closed sphincterotomy is the treatment of choice for CAF with a low rate of complications.

It is likely that open LIS are longer than closed LIS which may influence the increased incidence of post-operative pain and incontinence in former group [8], as noticed in our study also. It appears reasonable to divide the sphincter for the length of the fissure to improve these outcomes even if they are seen in early post-operative period and are temporary.

CONCLUSION:

The closed technique is significantly better than the open technique of LIS in terms of pain relief and bleeding on defecation in early post-operative period as well as incontinence. However, both techniques were equally effective in terms of infection rates, complete healing of fissures at 6 weeks and recurrence rates.

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