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ORIGINAL ARTICLE

Comparative Study of Open versus Closed Lateral Sphincterotomy for the Management of Anal Fissure

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ABSTRACT

Background:Anal fissure is a common ailment. Most fissures heal spontaneously but some go into chronicityand surgery must be resorted to for these obstinate cases. Lateral internal sphincterotomy, which entails partial division of the internal anal sphincter is currently the treatment of choice for such cases. This procedure can be performed through different techniques.

Objective: To see whether a closed approach to lateral internal sphincterotomy is better than the open one regardingefficacy and lower complication rate.

Methodology: This prospective study was carried out at Outpatient Department of Surgery, Avicenna Hospital Lahore from 1st October 2022 to 30th September 2023. A total of 64 patients, selected and they s were divided into two groups by purposive consecutive sampling.

Results: Both techniques were equally effective in relieving symptoms and speeding up the healing process. The post-operative recovery was pain free, shorter, and less complicated with closed sphincterotomy.

Conclusion:The closed technique may be a bettertreatment choice for chronic anal fissure because of better postoperative recovery.

Keywords: Anal fissure, Chronic fissure, lateral sphincterotomy, Internal sphincterotomy, Closed sphincterotomy

INTRODUCTION

An anal fissure is a longitudinal tear in the anoderm of the distal anal canal, extending from the anal verge, towards, but never up to or beyond the dentate line.[1-3] The exact etiology of anal fissures is debatable.[4] There is a common association with constipation and passage of hard stool. Fissures are also seen following irritation of the anal canal, resulting from diarrheal episodes. Majority of acute fissures heal spontaneously. At times however, they fail to heal, or repeated episodes lead to persistent inflammation, fibrosis and chronicity.[2-6]

A chronic anal fissure (CAF) is a linear ulcer, that lasts 08 weeks or more without healing.[2,3] The sphincter goes into spasm and delays healing by impeding the blood supply to the region resulting in ischemic pain. In addition, the exposure to fecal matter accounts for the delays in the healing of fissures.[1-6,]Hence a vicious cycle of pain and non-healing is established.

A chronic anal fissure (CAF), on examination is distinguished by the presence of features such as a fibrotic base, sentinel skin tag at the lower end and hypertrophied anal papilla at the upper end.[7]

Anal Fissure is more common in females than males and can be seen either in the anterior or the posterior midline just distal to the dentate line.[7] Multiple fissures or laterally placed fissures are usually associated with systemic conditions, like Crohn's disease or tuberculosis.

The usual presentation is severe pain at the initiation of defecation that may last for several hours afterwards. The pain is tearing or burning in nature and may be associated with passageof bright red blood by some patients.[2,3,8] The bleeding is not profuse in most cases and may be no more than a few drops, a streak on the stool or a stain on the toilet paper. Patients may also complain of itching in the perianal area. Constipation is a common feature in these patients.

Most of the acute fissures can be treated conservatively with dietary modifications, bulking agents, stool softeners, analgesics, local anesthetic creams, local smooth muscle relaxants/antispasmodic applications like glyceryl trinitrate[,9,10,]orbotulinum toxin[9] and sitz baths.[3,7,8,11]

Chronic fissures however are more difficult to treat conservatively.[1,3,10] Of the several surgical procedures being practiced to deal with chronic fissures lateral internal sphincterotomy has become widely accepted as the treatment of choice for a chronic anal fissure.[11,12]The procedure divides the lower third to half of the hypertonic internal sphincter, thereby reducing anal pressure and breaking the pain cycle. The blood flow to region is restored, allowing the fissure to heal.[2-6]Lateral sphincterotomy can be performed using different techniques like, an open or a closed method with or without further modifications.[13] The purpose of this study was to compare the efficacy and postoperative recovery of the open sphincterotomy where the division of the internal sphincter is performed under direct vision and the closed technique as research regarding this is lacking in our local population of lateral internal anal sphincterotomy in which tactile sensation of the finger placed in the anal canal serves as the guide for adequate division of the lower anal sphincter.

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PATIENTS AND METHODS

This prospective study was conducted at Avicenna Medical College & Hospital, Lahore 1st October 2022 to 30th September 2023. If the buttocks are gently parted, the presence of an anal fissure can usually be detected as an ulcer of variable depth with the skin tag and an anal papilla. A total of 64 patients with a chronic anal fissure from an out-patient clinic and emergency department were included in this study. A detailed history and physical examination of all the patients was obtained by the operating surgeons. After being diagnosed as a case of chronic anal fissure, they were counseled about treatment and admitted. A pre-operative workup including baseline investigations was carried out. In all patients above 40 years of age, an ECG and chest x-ray were also performed.

After informed consent of the patients they were divided into two groups, A and B, by consecutive sampling.Each group included 32 patients. The patients in Group A were treated with closed internal anal sphincterotomy, while those in group B underwent an open lateral internal anal sphincterotomy. Both procedures were conducted in the operation theater in a lithotomy position under general or spinal anesthesia. Postoperative monitoring and management of both groups was same.

Patients were followed for 12 months after surgery, through monthly OPD visits to assess the results and the complications of these procedures (pain, bleeding or hematoma, infection or abscess formation, incontinence and recurrence).Data was entered on aproforma.

Several descriptions were used for analysis of data presentation by tables, graphs and bar charts. Statistical

significance was calculated by using the chi-square test after ensuring that data fulfilled test criteria. Also, the evaluation of data was done by using mean (average), standard deviation and a standard test to compare the mean of both groups. A p value <0.001 is significant.

RESULTS

The peak incidence age of patients with a chronic anal fissure was in the age group 31-50 (69%) in group A, while there was a lower incidence in group 51-70 (6%) [Table 1]. In Group A 66% were male and 34% were female, with the male-to-female ratio being 1.90:1. Whereas in Group B 41% of patients were male and 59% were female, with the male-to-female ratio being 1.46:1 in this group (Table 2).

The incidence of presenting symptoms was found to be quite uniform. Majority of the patients, 50% complained of pain during and after defecation, either alone or associated with bleeding per rectum, especially in the form of a streak over the stool. 40.6% patients suffered from some degree of anal pain alone. 9.4% patients presented with perianal swelling that on examination, was found to be a sentinel pile (Table 3).

The duration of hospital stay for patients in each group was tabulated. For group A (closed method) patients the hospital stay was 1 to 3 days for 28 patients (87.5%) and 4 to 6 days for 4 patients (12.5%). In group B (open method) the hospital stay was 1 to 3 days for 25 patients (78.1%), 4 to 6 days for 2 patients (6.2%) while 5 patients (15.7%) stayed for more than a week (Table 4).

Table 1: Age distribution of patients (n=64)

Age (years)	Group A (n=32)		Group B (n=32)	
	No.	%	No.	%
20-30	8	25.0	11	34.0
31–50	22	69.0	19	60.0
51-70	2	6.0	2	6.0
Mean±SD	36.59±9.11		35.66±11.28	

Group A = Closed lateral internal anal sphincterotomy
Group B = Open internal anal sphincterotomy

Table 2: Gender distribution of patients (n=64)

Gender	Group A		Group B	
	No.	%	No.	%
Male	21	66.0	13	41.0
Female	11	34.0	19	59.0
M to F ratio	1.90:1		1.46:1	

Table 3: Frequency of various modes of presentations (n=64)

Mode of presentation	No.	%
Painful defecation	32	50.0
Bleeding per rectum	26	40.6
Sentinel Pile	6	9.4

Table 4: Duration of hospital stay (n=64)

Duration in days	Group A		Group B	
	No.	%	No.	%
1-3	28	87.5	25	78.1
4-6	4	12.5	2	6.2
>7	-	-	5	15.7

Table 5: Frequency of various complications (n=64)

Postoperative Complication	Group A		Group B	
	No.	%	No.	%
Postoperative Pain	2	6.25	4	12.50
Bleeding	-	-	2	6.25
Incontinence	2	0	2	6.25
Wound Infection	1	3.12	2	6.25
Recurrence	1	3.12	1	3.12

The results of postoperative complications , 2 (6.25%) patients from group A (closed method), while 4 (12.50%) from group B (open method) complained of pain that required analgesics in addition to the regular post op regime. Two (6.25%) patients from group B complained of postoperative bleeding, while no one from group A (0%) did so. Postoperative infection was recorded in 1 (3.12 %) patient in group A and 2(6.25 %) patients in group B. Incontinence for flatus was in 2 (6.25%) patients in group B and 2 (6.25%) patients in group A. Recurrence occurs in 1 (3.12%) patients in group A and 1 (3.12%) patients in group B (Table 5).

DISCUSSION

Chronic anal fissure can be quite refractory to conservative or medical treatment. Consequently, several surgical techniques have been tried in the past. Digital dilatation of the anal sphincter has been one of the most common and effective surgical modalities in the past, but is now nearly abandoned due to the uncontrolled nature of sphincter disruption that it induces.[14] Over time lateral anal sphincterotomy, initially mentioned by Boyer in 1818 and then introduced and popularized by Eisenhammer in 1951 has emerged as the most precise, controlled and safest treatment modality for the treatment of this condition.[15,16] Posterior sphincterotomy, fissurectomy.[17-19] Controlled pneumatic balloon dilatation[20] use of an advancement flap[21], rotational flap[22] and C.anoplasty[23] are other procedures being practiced, some with more promising results than others.[24,25]

The age bracket most affected by anal fissure, were people in their mid-thirties (33 to 38 years). However, the youngest of patients was only 20 and the eldest was 70 years of age. This is quite comparable to most other studies, reporting affected patients to be between ages of 30 to 45 years. [24-27]

Our study has shown a male preponderance of sufferers, with a male to female ratio of 1.4:1. Some other local and regional studies have reported a nearly similar distribution. Vivek et al[24], have reported a male to female ratio of 1.47:1. Anandaravi et al[26] and Nahas et al[28] reported a larger difference in the distribution between sexes with a male to female ratio of 2.1:1 and 2.3:1 respectively.[12,26] Shafiq and Nadeem[29] recorded a still higher difference of 5.1:1 while a much smaller difference in the male to female ratio.i.e.1.5:1 was documented after a study by Melange et al.[19]

With a view to symptomatology we found that the commonest complaint that our patients presented with was severe pain (90%) that was triggered by defecation and then lasted for at least one to several hours, making movement and sitting very difficult. 50% of these patients suffered pain alone while 40% also complained of associated bleeding, which either streaked the stool or followed defecation in the form of a trickle of drops. Anandaravi et al[26] have recorded an incidence painful defecation in 62% of their patients and associated bleeding in 35% of them, Vivek et al[24] have recorded pain in 68% and pain with bleeding in 36% while Mousavi et al[18] have documented a lower incidence of associated bleeding. There were some patients (10%) who presented with a perianal swelling. sentinel pile alone, as pain was not the most bothersome of their complaints.

More than 90% of fissures were located posteriorly in the midline. Amongst the male patients 98% had a posteriorly located fissure and only 1%, of the lesions were located either anteriorly or laterally. Female patients however had a higher incidence (11%) of anteriorly located anal fissures. Majority of the studies on the subject also indicate a high percentage of posteriorly located fissures. Vivek et al[24] report an 89% incidence of posteriorly located fissures and only 8% of all fissures presenting in the anterior midline i.e. 12 o clock position. Anandaravi et al[26] have recorded 90% posterior and 10% anteriorly placed fissures.

Comparison of efficacy of both techniques has shown that open and closed techniques are equally efficacious regarding relief of symptoms and in promoting rapid healing of fissures. However closed sphincterotomy technique was followed by a smoother recovery period. The hospital stay for the closed technique group was 1 to3 days in 87.5% patient and up to 6 days in only 4 patients. No one had to stay for longer than a week. In the open technique group 78.12% patients stayed in the hospital for 1 to3

days and up to 15.62% had a hospital stay of more than a week. Anadaravi et al[26] have reported a higher percentage, i.e. 96% of their closed technique patients were discharged within 1-3 postoperative days while 90% of their open group patients were discharged by day 3 and about 10% had to stay longer. Vivek et al.[24]

We have recorded mean duration of stay of 2.38 days and 3.38 days for the closed and open sphincterotomy groups respectively. Shafiq & Nadeem[29] and Kortbeek et al[30] have also reported a shorter hospital stay for the closed sphincterotomy group.

Postoperative pain and other complications are the main determinants of hospital stay in most studies including ours. 06.25% of patients from our closed technique group and 12.5% from the open technique group complained of postoperative pain in the first 48 hours that required analgesics in addition to the regular postoperative regime.[24,26,29-31]

On comparing the rate of complications between closed and open technique in this study, we found that in addition to postoperative pain, patients complained of postoperative bleeding, incontinence for flatus, wound infection and recurrence of the condition. Two patients (6.25%) of the open technique group against none from the closed group complained of significant postoperative bleeding. Two patients (12.5%) from each group complained of incontinence for flatus, but none complained of fecal incontinence. Wound infection complicated the recovery of one from the closed technique and three patients from open technique group and required additional course of antibiotics and sitz baths for 5 days. Recurrence occurred in one patient from each group (3.15%). Vivek et al[24] have reported a lower rate of complications with both groups with no particular incidence of bleeding or incontinence, however they do report non-healing of fissure in 3 cases from the open technique group. Kortbeek et al[30] have recorded a higher rate of complications in patients who underwent open sphincterotomy compared to closed technique. Khoo[30], Cohen and Dehn[31], Garcia-Grezno et al[32] Altomare et al[33], Wiley et al[34], Arroyo et al[35] and others[36,37] have all concluded that both techniques; open and closed lateral sphincterotomy are equally effective in treatment of anal fissures. However, most surgeons have favored the use of closed technique due to fewer postoperative complications, a more comfortable recovery period and shorter hospital stay. Anandaravi.[26] Asefa & Awedew in their systematic review and meta-analysis of randomized control trials on the subject have concluded similarly.[38]

CONCLUSION

Both open and closed techniques of lateral internal sphincterotomy achieve a precise partial division of internal sphincter and consequent healing of the fissure effectively. Closed sphincterotomy however is followed by significantly less discomfort on the postoperative period, shorter hospital stays and fewer complications like postoperative bleeding and delayed healing.

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