Comparison between Open Lateral Sphincterotomy and Posterior Midline Sphincterotomy with Fissurectomy in Treatment of Chronic Anal Fissure

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Original Research Article

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ABSTRACT

Objective: To compare the outcomes between two methods of treating chronic anal fissure; open lateral internal sphincterotomy (LIS) with fissurectomy versus posterior midline sphincterotomy (PIS) with fissurectomy, in terms of post-operative complications.

Study design: Randomized control trial.

Place and duration: Department of Surgery PAF Hospital, Islamabad, Pakistan from 10th April 2022 to 9th April 2023 in one year duration.

Methodology: Patients presented at outpatient department of hospital, diagnosed as chronic anal fissure were enrolled in study and divided into two groups for treatment. Group A was treated with open lateral sphincterotomy with fissurectomy and group B was treated with posterior midline sphincterotomy with fissurectomy. SPSS version 23 was used for data analysis.

Results: In LIS Group, the most common post-operative complication was infection 34.8% and most common complication in PIS Group was also infection 77.8%. The differences were statistically significant for infection (p=0.000), bleeding (p=0.008) and bruising (p=0.000).

Conclusion: No differences were observed between lateral internal sphinecterotomy and posterior midline spincterotomy in terms of healing rates, symptomatic pain relief and the side effect occurrence after surgeries.

Keywords: Chronic anal fissure; Lateral internal sphincterotomy; Posterior internal sphincterotomy with Fissurectomy

1. INTRODUCTION

An anal fissure is defined as a linear tear occurring between the anal verge and the dentate line (1). When the exact cause of the fissure is unknown, it is categorized as a primary fissure (2). The primary contributing factors typically include hypotonicity of the internal sphincter and the passage of hard stool. Patients commonly present with minor bright red bleeding or pain in the anal region (3). A recent laceration lasting for approximately eight weeks is diagnosed as an acute fissure (4). Chronic fissures, on the other hand, persist for longer durations and may exhibit characteristics such as a rectal tag at the distal aspect, hypertrophied anal papilla, and exposed muscle fibers (5).

In 90% of cases, an acute fissure is typically found along the posterior midline, although it can occasionally occur along the anterior midline (6). Its incidence is approximately 25% in females and 8% in males. Simultaneous fissures in both anterior and posterior positions are rare, accounting for only 3% of cases. Fissures located outside the midline are termed atypical and require more attention and evaluation (7). Atypical fissures may sometimes be associated with other conditions such as immunodeficiency syndrome and Crohn's disease (8).

Different treatment modalities are recommended in such conditions. Surgical intervention, particularly internal sphincterotomy, is well-known for its effectiveness, especially when performed laterally (9). Internal sphincterotomy can be carried out using both open and closed techniques. The posterior internal sphincterotomy, initially performed by Eisenhammer in 1951, involves an incision through the fissure from the posterior midline (10). This procedure aims to divide the hypertonic portion of the anal sphincter muscle, facilitating the healing of the fissure. Posterior anal sphincterotomy can be conducted through the same incision line as lateral internal sphincterotomy (10).

2. METHODOLOGY

Study was conducted at surgery department of PAF Hospital, Islamabad, Pakistan from 10th April 2022 to 9th April 2023 in one year duration. Ethical permission was obtained from the hospital ethical board. Informed written consent was obtained from patients. Non-probability convenient sampling technique was used. Patients admitted for surgical management of chronic anal fissure were included in the study. Chronicity was labeled as pain from the last two months and presence of sentinel piles on physical examination. Patients with secondary or multiple tissue involvement and those with comorbid disease like hemorrhoids were excluded from study.

The surgical procedure was conducted under spinal block anesthesia. Patients were positioned in lithotomy style, and conventional diathermy was utilized during the surgery. They were discharged once the absence of urinary retention was confirmed. Postoperative antibiotics, consisting of 500mg ciprofloxacin and 500mg metronidazole, were administered for one week. Follow-up appointments were scheduled at the outpatient clinic for the 1st, 2nd, and 4th weeks of post-surgery. Patients were divided into two groups, labeled as Group A and Group B.

Patients in group A underwent surgery using the open lateral internal sphincterotomy (LIS) technique with fissurectomy. An incision was made from the left side into the perianal skin of the anal canal. Dissection of the lateral side of the internal sphincter was performed, and the segment was withdrawn. The fissure, along with any sentinel piles, was excised. Pressure was applied to the operated area for five minutes, and a lubricated gauze with petrolatum gel was placed over the wound. Additionally, a perianal pad was placed over the incision site.

Patients in group B underwent treatment with posterior internal sphincterotomy. The fissure was excised along with any sectional tags using electrocautery, and then the segment was withdrawn. Both sides were divided using electrocautery, and the wound was closed using vicryl 3/0 sutures. A perianal pad was applied following the procedure.

SPSS version 23 was used for data analysis. Mean and SD were calculated for numerical variables. Frequency and percentages were calculated for categorical data. Student t-test and chi square test were applied to see the association among variables. P value less than or equal to 0.05 was considered as significant.

3. RESULTS

A total of 130 patients, encompassing both genders, were enrolled in this study with 67 (51.5%) males and 63 (48.5%) females. The mean age of the patients was 36.98±4.21 years. Pain & bleeding was noted in n=29 (22.3%) patients. Pain & constipation was noted in n=16 (12.3%) patients. While pain with bleeding and constipation was observed in n=100 (76.9%) patients. In n=97 (74.6%) patients the fissure was in at 6 O'clock, in n=8 (6.2%) patients had fissure at both 6 and 12 O' clock, while in n=25 (19.2%) patients had fissure located in at 12 O'clock only. (Table. I).

Table1: Demographic Characteristics and Presentation of Symptoms

Variable	Presence
Age (year)	36.98±4.21
Gender	
Male	n=67 (51.5%)
Female	n=63 (48.5%)
Pain & bleeding	n=29 (22.3%)
Pain & constipation	n=16 (12.3%)
pain with bleeding and constipation	n=100 (76.9%)
Site of fissure	
6 O'clock	n=97 (74.6%)
12 O'clock	n=8 (6.2%)
6 + 12 O'clock	n=25 (19.2%)

Source: Author's own.

Postoperative complications were observed in n=33 (25.4%) patients, accounting for 25.4%. Among them, 23 patients (17.7%) were monoparous, 54 patients (41.5%) were multiparous, and 53 patients (40.8%) were nulliparous. Most patients, n=90 (69.2%), had a normal weight. Upon analysis, there was no significant association found between postoperative complications and parity (p=0.314) or weight distribution (p=0.290), as indicated in Table 2.

Table 2: Association of Post-operative Complication with Parity and Weight

Parity	Post-operative complication		Total	p-value
	Yes	No		
Monoparous	**4**	**19**	**23**	**0.314**
Multiparous	**12**	**42**	**54**	
Nulliparous	**17**	**36**	**53**	
Total	**33**	**97**	**130**	
Weight				**0.290**
Underweight	**1**	**5**	**6**	
Normal weight	**20**	**70**	**90**	
Overweight	**6**	**18**	**24**	
Obese	**6**	**4**	**10**	
Total	**33**	**97**	**130**	

Source: Author's own.

Table 3: Comparison of Post-operative Complication of both the Groups

Group	Infection	Bleeding	Bruising	Incontinence
Group LIS n=23 (17.7%)	n=8 (34.8%)	n=5 (21.7%)	n=3 (13.01%)	n=1 (5%)
Group PIS n=18 (13.8%)	n=14 (77.8%)	n=1 (5%)	n=0 (0%)	n=0 (0%)
P-value	0.000	0.008	0.000	0.352

Source: Author's own.

In LIS Group there were n=23 (17.7%) patients whereas in PIS Group there were n=18 (13.8%) patients. In LIS Group, the most common post-operative complication was infection i.e. n=8 (34.8%). While the most common complication in PIS Group was also infection, n=17 (77.8%). Statistical analysis revealed significant differences in infection (p=0.000), bleeding (p=0.008), and bruising (p=0.000) between the two groups, as shown in Table 3.

4. DISCUSSION

Anal fissure is a significant medical condition characterized by discomfort during bowel movements and rectal bleeding, predominantly observed in middle-aged individuals. Our study revealed a higher incidence of anal fissure in females compared to males, consistent with findings from studies conducted by Anandaravi and Ramaswanni et al. (11), which reported a female-to-male ratio of 2:1. In females, the most common cause of anal fissure is childbirth trauma, as evidenced by research conducted by Anaraki et al. (12) in 2010. Similarly, a study by Memon et al. (13) in 2010 also reported childbirth trauma as the leading cause of anal fissure in females.

Oh C et al. (14) conducted a study on this subject and found that 78% of cases had anal fissures located at the posterior midline region, while fissures in females were commonly observed at the anterior region. Ismaeil et al. (15) reported that bruising and post operative bleeding is common LIS group which may be attributed to the fact that in the PIS group, the wound was sutured with vicryl 3/0.

Bapat et al. (16) conducted a study and concluded that recurrence rate in both groups is similar after follow up of more than two years. Both techniques are equally effective. Another similar study was conducted by Shrivastava et al. (17) in 2007 and reported that there was no difference in either group regarding recurrence rate.

A study was conducted by Vaithianathan et al. (18) in 2015 and evaluated the patients for preoperative and postoperative pain relief in patients who

underwent lateral internal sphinecterotomy. He reported minimal pain at the end of the sixth week after surgery. Similarly, a study by Emile et al. (19) reported a continuous fecal incontinence in patients treated with LIS. A small number of patients were not satisfied with this treatment modality.

In a study by Popat et al. (20), a recurrence rate of 2% was reported with lateral internal sphincterotomy (LIS), making it the recommended treatment of choice in cases where multiple options are available. Similarly, a study conducted by Correia et al. (21) in India (Goa) reported a recurrence rate of 6.25%. These studies, much like our own, observed that anal fissures tend to occur most commonly in young female patients and are often associated with pain.

5. CONCLUSION

Our results indicate that there are no significant differences between lateral internal sphincterotomy and posterior midline sphincterotomy in terms of healing rates, symptomatic pain relief, and the occurrence of side effects following surgery.

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