



## **Comparison of Fissurectomy and Lateral Internal Sphincterotomy in the Surgical Management of Chronic Anal Fissure**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** The anal fissure is a small split in the distal anoderm, and it most commonly occurs in the posterior midline of anal canal. Anal fissure causes severe sharp pain on defecation, occasionally accompanied by streak of blood on outside of stool or blood on toilet tissue. Fissures are classified as acute or chronic, acute fissure usually heal spontaneously within six weeks. Fissurectomy had been used as separate technique in the treatment of chronic anal fissure with favorable result. Parallel inside sphincterotomy produces an enduring fall of anal resting pressure, that reestablish mucosal perfusion bringing about recuperating, yet genuine drive component is obscure, and the instrument that travel from intense to constant gap stay dark. This study is design to assess the outcome between two groups, than better modality of the two could be chosen.

**Objective:** To compare fissurectomy and lateral internal sphincterotomy in the management of chronic anal fissure.

**Patient and Methods:** The Randomized controlled trial was conducted during 18-02-2015 to 17-

08-2015 at Department of surgery, Liaquat University of Medical & Health Sciences, Hyderabad. A total of 218 patients with chronic anal fissure were included in this study. Patients were randomly divided into two groups. Patients in Group A were underwent fissurectomy and patients group B was underwent lateral internal sphincterotomy. Surgery was performed and patients were followed for 8 weeks on regular basis and satisfactory out comes was noted. Information along with demographics was entered in the proforma.

**Results:** Rate of satisfactory outcome was significantly high in group B as compare to group A [92.66% vs. 76.15%; p=0.001].

**Conclusion:** Subcutaneous sidelong internal sphincterotomy is a significant surgery for patients with persistent anal fissure. It is compelling and safe, offers fast help of torment, and advances early gap mending without being gone to by any significant complexities.

*Keywords: Chronic anal fissure; fissurectomy; lateral internal sphincterotomy.*

## 1. INTRODUCTION

The anal fissure is a little split in the distal anoderm, and it most normally happens in the back midline of anal canal. Anal fissure causes extreme sharp torment on poop, once in a while joined by dash of blood on outside of stool or blood on tissue [1]. Pain may endure for a long time after poo that is a lot upsetting to patients. The agony of fissure causes proportionate deteriorating of nature of life [2]. Fissures are named intense or constant, intense gap normally mend suddenly inside about a month and a half. On the other hand ongoing fissure continue any longer, and don't recuperate without intercession. The constant fissure are more extensive and profound than intense crevices. The edges of ongoing fissure are frequently indurated and there might be a skin tag distally and a hypertrophied papilla proximally [3,4]. In 90% of patients ordinary fissure happen in back midline and staying 10% in front midline [5] Abnormal fissure can happen anyplace in canal and these re related with different illnesses (Crohn's sickness, HIV contamination, malignancy, syphilis, and Tuberculosis). Front fissure happen all the more usually in females [5]. Incontinence to flatus and fecal ruining are upsetting inconveniences of careful procedures. Careful methods that save the anal sphincters ought to lessen the chance of post operative fecal incontinence.

Fissurectomy had been used as separate technique in the treatment of chronic anal fissure with favourable result [6]. Sidelong inside sphincterotomy produces an enduring fall of anus resting pressure, [7] that reestablish mucosal perfusion bringing about recuperating, yet real drive system is obscure, and the component that travel from intense to constant fissure stay dark.

Mousavi in his study reported that all patients in the two gatherings were sans torment and without seeping inside multi week. In the two gatherings, urinary maintenance was noted in one patient. Incontinence to flatus was noted in the fissurectomy (F) bunch in two (6.2%) patients, yet no incontinence was noted in the horizontal inside sphincterotomy (LIS) bunch. There was one patient (3.1%) with crevice repeat in the F bunch however none in the LIS bunch. No quiet in either bunch was distressed with butt-centric stenosis or perianal contaminations. All injuries mended inside about two months. 29 patients (96.6%) in the LIS gathering and 28 (87.5%) in the F bunch announced acceptable outcomes with their procedure [7].

The rationale of the study is that data is scarce on this topic and no study has been done in recent past therefore the present is designed to assess the outcome between two groups, than better modality of the two could be chosen.

## 2. PATIENTS AND METHODS

The six months Randomized controlled trial was conducted from 18-02-2015 to 17-08-2015 at the Department of surgery, Liaquat University of Medical & Health Sciences, Hyderabad with an objective as to compare fissurectomy and lateral internal sphincterotomy in the management of chronic anal fissure. The Chronic anal fissure was defined as presence of anl tear on examination with the complain of severe anal pain (VAS >7) during or after defecation described as burning or cutting sensation with or without passage of bright red colour bleeding through anus while the comparison was done in terms of satisfactory outcome which considered as the Presence of all of the following was deemed as satisfactory outcome.

- No Pain (VAS score 0-3) & no history of Bleeding within a week
- Absence of Incontinence to flatus (was evaluated on history)
- Absence of anal stenosis (history of no painful bowel movement post procedure)
- Absence of anal infection: Absence of all of the following:
  - pain (VAS score  $\geq 4$ )
  - redness
  - discharge
  - tenderness
- Healing of wound (presence of granulomatous tissue on examination) within 8 weeks

The Hypothesis was the fissurectomy is less superior to the lateral internal sphincterotomy in the management of chronic anal fissure while Total sample size required is 218 that is 109 patients in each group by Non probability consecutive sampling. The inclusion criteria were,

- Patients aged 20 to 50 years
- Chronic anal fissure diagnosed as defined earlier
- chronic anal fissure refractory to medical treatment for at least 3 months
- Either gender

The exclusion criteria were,

- Non consenting patients
- Comorbid conditions like diabetes mellitus (HbA1c  $>7$ ), malnutrition (BMI less than  $18.5\text{kg/m}^2$ ), chronic heart disease (on treatment with documented history)
- multiple and secondary fissures
- Patients with accompanied hemorrhoids on examination

The patients attending outpatient clinic meeting the inclusion criteria was enrolled in the study. The purpose procedure, risk and benefits of the study were explained before taking informed consent. Two groups were made by lottery method. Patients in Group A was underwent fissurectomy while patients in group B underwent lateral internal sphincterotomy. Surgery was performed by consultant having more than 5 years post fellowship experience under spinal or epidural block. Patients were followed for 8 weeks on regular basis and satisfactory

outcomes were labeled as per operational definition in the two groups. This information along with demographics was entered in the proforma attached as annexure.

With the patient anesthetized, the intersphincter groove is palpable at the anal verge. A 1-2 cm circumferential incision is made at the anal verge over the free edge of internal sphincter. The free edge then grasped drawn into the wound and its distal portion is divided while in closed method the blade is introduced between the internal sphincter and the anoderm. It is then rotated to face out and pressed against the distal portion of the anal sphincter. Alternatively the scalpel is introduced into inter anal sphincter plane and then incised. The scalpel is withdrawn and on the digital palpation the tight band of the distal internal sphincter can be felt to release. There is often associated sentinel skin tag at the outer end of the fissure and sometimes the fibroepithelial polyp at the inner end and should be excised while the wound left open. The healing was assessed by pain free and dry wound.

All the required data was collected on proforma and entered on SPSS version 20 software for analysis. Mean  $\pm$  SD was calculated for age, duration of complaint, weight and height of the patient and BMI. Frequency and percentages was calculated for gender, satisfactory outcome, educational status, economic status and obesity. The two groups were compared with respect to satisfactory outcome, chi square test was applied keeping significance level at 0.05. Effect modifiers was controlled through stratification of age, gender, educational status, economic status and obesity to assess effect of these on outcome and Chi square test was applied post stratification.

### 3. RESULTS

Average age, weight, height and BMI with groups is shown in Table 1. There were 67.4% (147/218) male and 32.6% (71/218) female. Gender status of the patients with respect to treatment is presented in Fig. 1.

Outcome in term of no pain, no bleeding, absence of incontinence of flatus, absence of anal stenosis, absence of anal infection and wound healing at the end of six month were significantly high in group B as compare to group A as shown in Table 2. Overall rate of satisfactory outcome was significantly high in

group B as compare to group A [92.66% vs. 76.15%; p=0.001] as shown in Table 3.

Stratification analysis was performed with respect to age groups and observed that satisfactory outcome was significantly high in group B as compare to group A for ≤30 years of age patients and 41 to 50 years of age patients as presented in Table 4. In male cases we observed high rate of satisfactory outcome in group B than A while in female cases, significant difference was not observed as shown in Table 5. All the patients were recovered while no any major persistent complication has been observed in study population.

#### 4. DISCUSSION

Anal fissure is a little tear in anoderm reaching out from anal skirt to dentate line. At present accurate etiology is unsure, anal mucosal ischemia auxiliary to sphincter hypertonia might be one potential reason, it is acknowledged that is answerable for helpless recuperating and repeat of fissure [8]. Persistent fissure results from the movement of an intense fissure which has neglected to recuperate over six weeks following its turn of events. The typical victim is a generally fit person. The crevice commonly has aggravated and indurated edges with a base which has either scar tissue or the lower edge of the inner sphincter. A guarding sentinel heap is regularly found at its lower edge. The standard course of occasions in the pathogenesis of fissure incorporates nearby injury brought about

by the entry of hard enormous stools and internal sphincter fit brought about by the ingenuity of these instigating occasions, which thus bring about diminished perfusion of the anal wall divider and a higher anal pressure even very still. When the resultant crevice neglects to mend throughout some stretch of time, it advances into chronicity [9,10].

A total of 218 patients with chronic anal fissure were included in this study. Most of the patients were between 31 to 50 years of age. There were 67.4% male and 32.6 % female. Regarding similar gender predominance Majid Aziz et al. [11] reported that Out of 60 patients 68.33% were males and 31.66% females. Male to female ratio was 2.15:1; with age range from 15-70 year. Mean for age was 39.52 + 14.55 year. Muhammad Zubair et al [12] also reported the same predominance of male gender they reported that Out of fifty patients, 62% were males and 38% were females. In our study, male patients were moderately more than females. Dominant parts of the patients were in their third and fourth many years of life. There was a blend of patients having a place with all financial layers of the populace and having a place with various occupations. We performed surgeries under spinal or general sedation. The vast majority of the distributed investigations have correspondingly utilized general sedation; Rathera SA et al [13] in a progression of 340 patients of intense and persistent fissure performed lateral internal sphincterotomy under local anaesthesia.

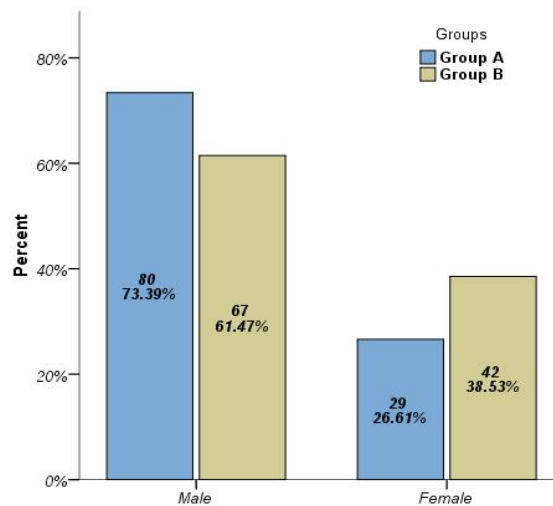


Fig. 1. Gender distribution of the patients with respect to groups n=218

**Table 1. Comparison of demographic characteristics between groups**

Variables	Group A n=109	Group B n=109
Age (Years)	40.27±6.47	39.52±7.11
Weight (kg)	66.82±11.06	68.17±11.34
Height (cm)	154.96±4.71	154.37±6.17
BMI (kg/m <sup>2</sup> )	27.80±4.30	28.59±4.46
Duration of Complain (Months)	2.6±1.12	2.8±1.6

**Table 2. Comparison of outcome at the end of six months between groups n=218**

Outcome at the end of six months	Group A n=109	Group B n=109	P-Value
Pain	24(22%)	6(5.5%)	0.0005
Yes	85(78%)	103(94.5%)	
No			
Bleeding	12(11%)	2(1.8%)	0.006
Yes	97(89%)	107(98.2%)	
No			
Incontinence to flatus	20(18.3%)	0(0%)	0.0005
Present	89(81.7%)	109(100%)	
Absent			
Anal stenosis	16(14.7%)	6(5.5%)	0.025
Present	93(85.3%)	103(94.5%)	
Absent			
Anal infection	24(22%)	4(3.7%)	0.0005
Present	85(78%)	105(96.3%)	
Absent			
Healing of wound	85(78%)	103(94.5%)	0.0005
Yes	24(22%)	6(5.5%)	
No			

**Table 3. Comparison of satisfactory outcome between groups n= 218**

Satisfactory outcome	Group A n=109	Group B n=109	P-Value
Yes	83(76.15%)	101(92.66%)	0.001
No	26(23.85%)	08(7.34%)	

*Chi-Square test applied***Table 4. Comparison of satisfactory outcome between groups with respect to age groups**

Age Groups (Years)	Satisfactory outcome	Group A	Group B	P-Value
≤ 30 Years	Yes	4(66.7%)	10(100%)	0.05
	No	2(33.3%)	0(0%)	
	Total	6	10	
31 to40 Years	Yes	38(76%)	49(89.1%)	0.07
	No	12(24%)	6(10.9%)	
	Total	50	55	
41 to 50 Years	Yes	41(77.4%)	42(95.5%)	0.018
	No	12(81.3%)	2(4.5%)	
	Total	32	44	

*Chi-Square Test*

**Table 5. Comparison of satisfactory outcome between groups with respect to gender**

Gender	Satisfactory outcome	Group A	Group B	P-Value
Male	Yes	58(72.5%)	63(94%)	0.001
	No	22(27.5%)	4(6%)	
	Total	80	10	
Female	Yes	25(86.2%)	38(90.5%)	0.57
	No	4(13.8%)	4(9.5%)	
	Total	29	42	

*Chi-Square Test*

In our study total of 218 patients were randomly divided into two groups. Patients in Group A were underwent fissurectomy and patients group B was underwent lateral internal sphincterotomy. Principle part of our study is that, it manages a solitary technique with no blend with different modalities, similar to botulinum poison infusion, effective nitrate, calcium channel blocker. Sidelong inside sphincterotomy produces an enduring fall of anal resting pressure [14], that reestablish mucosal perfusion bringing about mending, however real drive system is obscure, and the procedure that travel from intense to persistent fissure remain obscure. We observed the outcome in term of no pain, no bleeding, absence of incontinence of flatus, absence anal stenosis, absence of anal infection and wound healing at the end of six month. We found that satisfactory outcome was significantly high in group B ( lateral internal sphincterotomy group as compare to fissurectomy group A .Overall rate of satisfactory outcome was significantly high in group B as compare to group A [92.66% vs. 76.15%; p=0.001] This study noticed speedy suggestive help of torment following a medical procedure. Mending of fissure was likewise quick. Our discoveries adjust to those of Mishra R et al. [15] who announced early alleviation of pain and better recuperating rates in patients treated with parallel interior sphincterotomy. Lateral internal sphincterotomy has been demonstrated to bring to the table a more tough therapy for constant fissure contrasted and different other administration alternatives. It likewise doesn't bargain long haul fecal continence [16]. Mousavi SR et al. [7] in a progression of 62 patients have demonstrated sidelong interior sphincterotomy to be better than fissurectomy in treating ongoing anal fissure. Montes BB et al. [14] explored the impacts of horizontal inside sphincterotomy on personal satisfaction in patients with persistent fissure utilizing the gastrointestinal personal satisfaction list and the fecal incontinence personal satisfaction scale. Discovered fundamentally

improved gastrointestinal personal satisfaction following sidelong interior sphincterotomy, paying little mind to the careful difficulties or postoperative self-restraint. Daniel O, and associates in their investigation of various clinical and careful alternatives of therapy of constant butt-centric gap, tracked down that Internal butt-centric sphincterotomy is a viable activity with a high pace of goal of indications, however at the cost of an expanded danger of transitory or perpetual incontinence [17]. Granero and associates in their investigation of of "Ideal lateral internal sphincterotomy" show 100% fix rate when a total horizontal interior sphincterotomy is performed. With expansion in tallness of sphincterotomy, the fix rate increments along with the frequency and seriousness of and severity of incontinence [18].

## 5. CONCLUSION

Subcutaneous parallel inside sphincterotomy is a significant surgery for patients with ongoing anal fissure. It is powerful and safe, offers fast alleviation of defecatory torment, and advances early gap recuperating without being gone to by any significant complications. Lateral internal anal sphincterotomy, is the treatment of choice while treating chronic anal fissures because of its simplicity, better healing rates, better patient satisfaction, minimal morbidity and low complication rates.

## CONSENT AND ETHICAL APPROVAL

Approval from ethical review committee was sought prior to conduct of the study. Patients' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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