

## **Bilateral Segmental Internal Anal Sphincterotomy Outcomes for Chronic Anal Fissure Treatment**

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### *Abstract*

*Background: Chronic anal fissures are harder to treat and surgery may be the best option. The goal of surgery is to help the anal sphincter muscles relax which reduces pain and spasms, allowing the fissure to heal. The aim of the present study was to assess the Improving outcome of patients of chronic anal fissure. Patients and methods: This clinical trial study was conducted in General Surgery Department, Faculty of Medicine, Zagazig University on 18 chronic anal fissure cases. All patients were subjected to full history taking, proper local examination and baseline investigations. Anorectal manometry was performed for all patients preoperatively. Then, bilateral segmental internal sphincterotomy was done for all patients. Results: In our study, age was  $37.77 \pm 6.44$  with minimum of 24 and maximum of 50 years. Regard sex distribution, males and females were matched (50/50 percentage). Majority were posterior (66.7%) then anterior (22.2%) and finally both (11.1%). Operation time was  $17.77 \pm 3.62$  with minimum of 12 and maximum of 25 minutes. After internal sphincterotomy, complete healing was  $5.16 \pm 1.09$  with minimum of 4 and maximum of 7 weeks. VAS significantly decreased from pre to 1<sup>st</sup> 24 hours till the end of follow up. Incontinence score significantly decreased from preoperatively to 1<sup>st</sup> week till the end of follow up. Conclusion: bilateral segmental internal sphincterotomy is a novel, safe, and effective way of treating chronic anal fissure, and it is not associated with any risk of anal incontinence.*

*Keywords: Anal Sphincterotomy, Anal Fissure, VAS, Anal Incontinence*

### **INTRODUCTION**

Anal fissure is a painful linear mucosal tear situated in distal anal canal extending from just below dentate line to the anal verge. It affects all age groups but is most commonly seen in young and healthy adults with an equal incidence across both sexes. An anal fissure characteristically presents with pain, bright red bleeding per rectum, mucous discharge and constipation (1).

Anal fissures occur predominantly in midline with 90% being located posteriorly and 10% anteriorly. Injury to anal mucosa by hard stool appears to be initiating event in the development of anal fissure (2).

Fissures are classified into an acute and a chronic form and into primary and secondary fissures based on their pathogenesis. Chronic anal fissures (CAF) are defined by both or either chronology and morphology. The criteria are duration of symptoms for longer than 8 weeks, and digital rectal examination typically reveals a fissure with indurated margins, fibrosis in base, with or without exposure of horizontal fibers of internal anal sphincter and the presence of a sentinel pile, a skin tag or an ulcer with exposed internal sphincter fibers (3).

There is evidence that anal fissure is associated with spasm of internal anal sphincter (except in postpartum patients) and reduction in blood flow that leads to delayed or non-healing of the ulcer (4).

Hence, 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, calcium channel blockers and botulinum toxin, or surgical interventions, such as lateral internal sphincterotomy (LIS) (3).

Internal sphincter is formed by circular muscle fibers and dividing it at one point of the circle opens up, relaxes and decreases the tone of the internal sphincter, which is the rationale for doing unilateral LIS in chronic anal fissures. Dividing the internal sphincter at two places may actually relax the sphincter more effectively and help in faster healing and recovery. However, the risk of incontinence may increase. There are very few studies available which have evaluated the role of bilateral internal sphincterotomy or bilateral botulinum toxin injections for treatment in CAF (5). To avoid these side effect segmental lateral internal sphincterotomy was used for treatment of chronic anal fissure (6)

To gain the benefits of both bilateral internal sphincterotomy and segmental internal sphincterotomy techniques, bilateral segmental internal sphincterotomy (a new technique) was used for treatment of chronic anal fissure in this study. Therefore, this study aimed to assess the Improving outcome of patients of chronic anal fissure.

#### **PATIENTS AND METHODS**

This prospective comparative clinical study was carried out on 18 chronic anal fissure cases. This clinical trial study was conducted in General Surgery Department, Faculty of Medicine, Zagazig University.

**Inclusion criteria:**

Age above 18 years. Patients with a primary chronic anal fissure of more than 6-week duration with classical symptoms of a chronic anal fissure. A chronic anal fissure was defined by duration of symptoms longer than 3 months, presence of induration at fissure edges, sentinel pile, hypertrophied anal papillae, and circular muscle fibers at the base of the cutaneous defect. Patients unresponsive to medical treatment. Patients with recurrence of symptoms after initial short-term relief.

**Exclusion criteria:**

Patients with chronic inflammatory bowel diseases, tuberculosis, positive HIV, pregnancy, associated hemorrhoids, syphilis or anorectal tumors. Patients with previous anorectal surgery. Patients unfit for anesthesia or surgery. Patient refusal.

All patients were subjected to the following: Full history taking. Including demographic data (age, sex, symptoms with their duration and position of fissures). Proper limited local examination, symptoms with their duration and position of fissures, baseline investigations and anesthetic clearance were obtained.

**Operative Assessment:**

All the patients received a single dose of IV antibiotics (ceftriaxone 1 gm) and early morning enema, and were operated under spinal anesthesia the patient in the supine lithotomy position, using an Eisenhammer speculum in the anal canal.

Bilateral segmental internal sphincterotomy was done at 3 o'clock positions. Standard open technique included a 5-mm radial incision at 3 o'clock position into the perianal skin along the intersphincteric groove. Sentinel skin tags when present were also excised. Good haemostasis is achieved by using diathermy. The wounds were left open to heal with secondary intention. A hemostatic pack of gauze was left in the anal canal.

Operative time was recorded. All patients were discharged on 1st postoperative day and were advised to take oral antibiotics and analgesics for a period of 5 days apart from Site baths 3-4 times a day, laxatives, high fiber diet and plenty of fluids which were continued for at least two weeks.

**Follow up:**

Patients were followed up for a minimum period of 6 months, initially weekly for two weeks and then biweekly for 3 months, then every two months for rest of the study time. At 1st postoperative day and subsequently at each visit, they were examined for symptomatic relief of pain using Visual Analogue Scale (VAS of 0-10), complete healing of fissure, and associated symptoms and signs. Postoperatively, resting anal pressure evaluation was repeated.

**Statistical analysis:**

Data collected and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean  $\pm$  SD. Differences between quantitative independent multiple by ANOVA or Kruskal Wallis,. P value was set at  $<0.05$  for significant results &  $<0.001$  for high significant result.

**RESULTS**

The present study showed that, age was distributed as  $37.77 \pm 6.44$  with minimum 24 and maximum 50 years, regard sex distribution male and female were matched 50/50 percentage (**Table 1**).

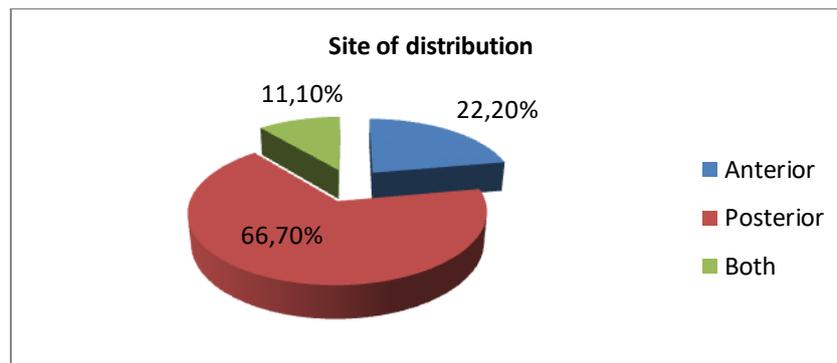
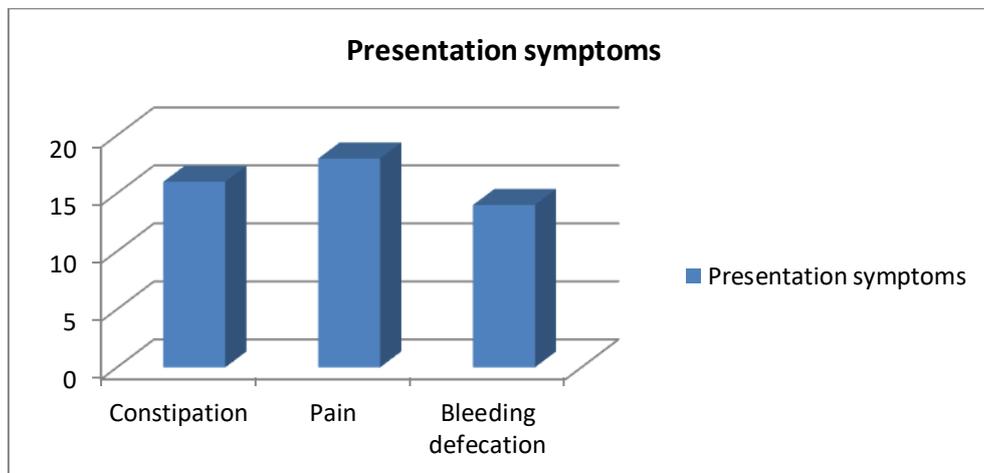
Majority of site distribution were posterior with 66.7% then anterior 22.2% and finally both with 11.1% (**Figure 1**). Regarding presenting symptoms of the studied patients, 88.9% had constipation, 100.0% had pain and 77.8% had bleeding defecation (**Figure 2**).

Operation time was distributed as  $17.77 \pm 3.62$  with minimum 12 and maximum 45 minutes (**Table 2**). Complete healing was distributed as  $5.16 \pm 1.09$  with minimum 4 and maximum 8 weeks (**Table 3**).

VAS significantly decreased from pre to 1st 24 hours till the end of follow up (**Figure 3**). Incontinence score significantly decreased from pre to 1<sup>st</sup> week till the end of follow up (**Figure 4**).

**Table1: Age and sex distribution among studied group**

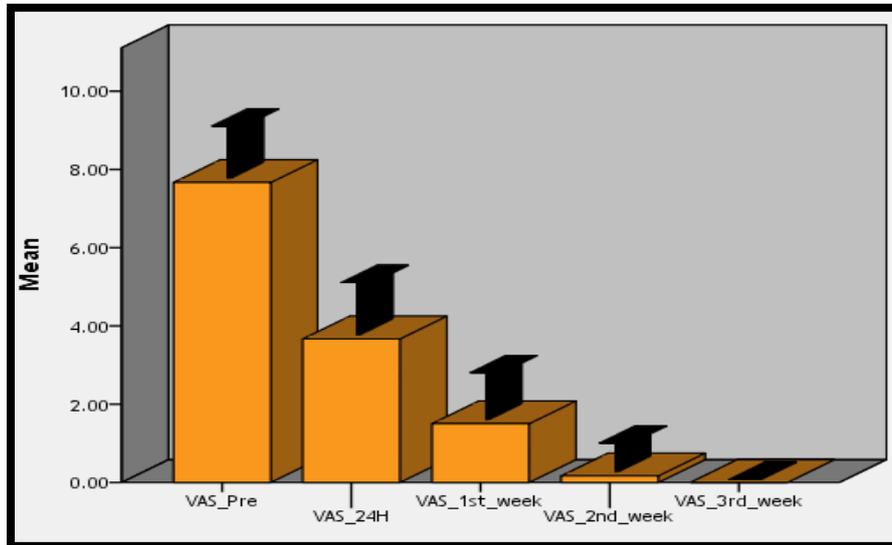
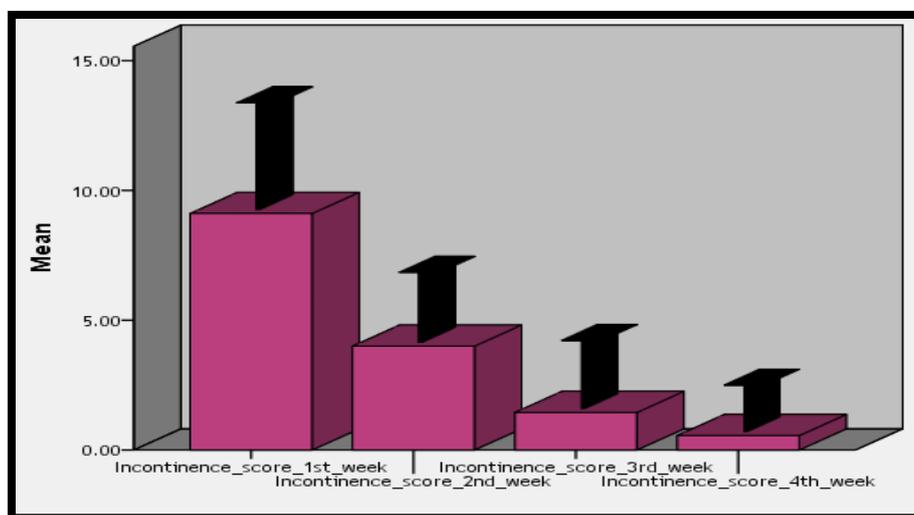
		Age/ years	
<b>Mean± SD</b>		<b>37.77±6.44</b>	
<b>Median (Range)</b>		<b>37.5 (24-50)</b>	
		<b>N</b>	<b>%</b>
<b>Sex</b>	<b>Male</b>	<b>9</b>	<b>50.0</b>
	<b>Female</b>	<b>9</b>	<b>50.0</b>
	<b>Total</b>	<b>18</b>	<b>100.0</b>

**Figure (1): Site distribution among studied group****Figure (2): Symptoms distribution among studied group****Table 2: Operation time distribution among studied group**

	Operation time
<b>Mean± SD</b>	<b>24.06±8.7</b>
<b>Median (Range)</b>	<b>18.0 (12-45)</b>

**Table 3: time of complete healing distribution among studied group**

Complete healing/ Weeks	
Mean± SD	5.16±1.09
Median (Range)	5.0 (4-8)

**Figure (4): VAS for pain assessment at different times of follow up distribution among studied group.****Figure (5): Incontinence score at different times of follow up distribution among studied group.****DISCUSSION:**

The present study was conducted on 18 patients with chronic anal fissure who admitted to General Surgery Department, Faculty of Medicine, Zagazig University performance of obilateral segmental internal sphincterotomy. This clinical trials was

aimed to evaluate feasibility of bilateral segmental internal anal sphincterotomy in treatment of chronic anal fissure.

In our study, age was  $37.77 \pm 6.44$  with minimum of 24 and maximum of 50 years. Regard sex distribution, males and females were matched equally. **Lasheen et al. (6)** used segmental lateral internal sphincterotomy for treatment of chronic anal fissure and found high percentage of male to female (6.1:1) due to the fact that most of the female patients avoid presenting to male surgeons for treatment due to shyness or modesty. They reported that anal fissure is common in middle age and at posterior midline of anus. Also, **Mushtaque et al. (1)** compared bilateral to unilateral lateral internal sphincterotomy. Both BLIS and ULIS groups had comparable demographic characteristics. Females marginally over numbered males (M:F=1:1.2).

In our study, majority were posterior (66.7%) then anterior (22.2%) and finally both (11.1%). **Bansal et al. (2)** evaluated the effectiveness of lateral internal sphincterotomy (LIS) in the treatment of 25 patients with chronic anal fissure and found that all patients had fissure in posterior midline.

In our study, 88.9% had constipation, 100.0% had pain and 77.8% had bleeding defecation. **Lasheen et al. (6)** showed that The main presenting symptom in this group of patients was pain, which occurred during defecation and hours afterwards. Pain was significantly reduced in all patients in the first postoperative hours while symptoms such as bleeding and irritation were reduced in most patients in the next day. During follow-up, one patient complained of minor bleeding during the first 3 days (2%) and one patient (2%) developed perianal abscess at 2 weeks postoperative, which was incised and drained under general anesthesia.

Operation time was  $17.77 \pm 3.62$  with minimum of 12 and maximum of 25 minutes. **Mushtaque et al. (1)** found that mean operative time for bilateral LIS was longer than unilateral LIS (15.84 vs. 11.03 minutes) which was statistically significant.

After internal sphincterotomy, complete healing was  $5.16 \pm 1.09$  with minimum of 4 and maximum of 7 weeks, although **Oettle (7)** reported complete healing in 2 weeks but his sample included only 12 patients. **Lasheen et al. (6)** showed complete healing within 4 weeks (ranging from 2 to 5 weeks).

**Mushtaque et al. (1)** found that none of the patient had complete healing at the end of 2nd week. However, at the end of 4th week 42 (65.6%) patients in BLIS group had completely healed fissures. On further follow up at the end of 6th week, complete healing was noted in a total of 62 (96.87%) of patients in BLIS group. All the patients had completely healed fissures at the end of 8th week.

Visual analogue scale (VAS) is used to assess the intensity of pain post-operatively **(8)**. In the present study, VAS significantly decreased from pre to 1<sup>st</sup> 24 hours till the end of follow up. **Mushtaque et al. (1)** found that in group of BLIS, mean pain score on VAS was 21 at 24 hours after surgery. On subsequent follow ups at the end of 1st and 2nd weeks the mean pain scores were 10 and Zero respectively. For group of ULIS, the mean pain score at 24 hours was 54. On subsequent follow ups at the end of 1st and 2nd weeks, mean pain scores were 17 and 3 respectively. All the patients in both groups were completely pain free at the end of 3rd week. The decrease in mean pain score in group of BLIS as compared to group of ULIS at 24 hours and at the end of 1st week were statistically significant.

Incontinence score significantly decreased from preoperatively to 1<sup>st</sup> week till the end of follow up.

Hence, our results are in agreement with **Lasheen et al. (6)** concluded that segmental lateral internal sphincterotomy is a safe, easy, and effective procedure and not associated with risk of incontinence for the treatment of chronic anal fissure. Also, **Bansal et al. (2)** found that lateral internal sphincterotomy remains effective and may be considered as the treatment of choice in chronic anal fissure when the procedure is performed by an experienced and skilled surgeon.

## CONCLUSION:

We can conclude that bilateral segmental internal sphincterotomy is a novel, safe, and effective way of treating chronic anal fissure, and it is not associated with any risk of anal incontinence. Further studies are requiring for on the long run evaluation of efficacy and complications of bilateral segmental internal sphincterotomy.

**No Conflict of interest.**

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