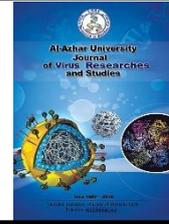




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### Comparative Study Between Fissurectomy and Lateral Sphincterotomy Versus Fissurectomy and Anal Dilatation in Management of Chronic anal Fissure

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#### Abstract

An anal fissure is a tear in the anoderm distal to the dentate line and can be acute or chronic. Acute fissures are those that have been present less than 2 to 3 months and heal with local management. Chronic anal fissures, due to scarring and poor blood flow, often require surgical intervention due to failed conservative management. Most commonly, anal fissures occur in the posterior midline; however, in up to 25% of women and 8% of men, a fissure can be located in the anterior midline. Comparative study to obtain the best method for treatment of chronic anal fissure by comparison outcome of lateral sphincterotomy and fissurectomy with sustained digital anal dilation. This study included 100 patients admitted in general surgery department of AL-Zahraa university hospital. Demographic data was recorded to all patients including age, sex. Position of fissure. Pre-operative symptoms and signs mainly pain, bleeding. constipation, discharge and pruritis ani Laboratory investigations was done for all patients mainly PT, PC.INR. The patients in this study divided into two groups. Group A: include 50 patients was managed by fissurectomy and lateral internal sphincterotomy Group B: include 50 patients was managed by fissurectomy and digital anal dilatation all patients were followed for 6 months to assess any complications. In this study, they were 60 (60%) females and 40 (40%) males with age ranged from 18 to 66 years with mean  $\pm$  SD of  $36.86 \pm 12.60$  years. post fissure found in 85%, ant fissure found in 15% Early follow up Group A: two patients (4%) complain of bleeding, 4 patients (8%) complain of infection, 4 patients (8%) delayed healing, 3 patients (6%) Incontinence to liquid and gases Group B: no patients complain of bleeding, 1 patient (2%) infection, no patients delayed healing, 2 patients (4%) Incontinence to liquid and gases Late follow up Group A; stenosis in one patient (1%), recurrence in one patient (1%) Group B; no patient complicated by stenosis was recorded; recurrence found in one patient (1%). Both anal dilatation (AD) and Lateral internal sphincterotomy (LIS) provides early pain relief and high ulcer healing rate. However, AD appears to be safer with regard to healing and infection.

**Keywords:** Fissurectomy; Lateral Sphincterotomy; Anal Dilatation; Chronic Anal Fissure

## 1. Introduction

An anal fissure is a tear in the endoderm distal to the dentate line and can be acute or chronic. Acute fissures are those that have been present less than 2 to 3 months and heal with local management. Chronic anal fissures, due to scarring and poor blood flow, often require surgical intervention due to failed conservative management. Most commonly, anal fissures occur in the posterior midline; however, in up to 25% of women and 8% of men, a fissure can be located in the anterior midline [1].

Acute anal fissures frequently respond well to conservative treatment with stool softeners and proper local hygiene. Most anal fissures heal spontaneously. However, a small proportion of acute fissures do not heal and become chronic fissures (traditionally defined as symptoms lasting more than six weeks in duration). Once patients have had symptoms for this period, they usually do not respond to conservative management and have traditionally needed to be treated by surgery, which includes either a partial division of the internal sphincter (sphincterotomy) or maximal manual dilatation of the anus. Surgical treatment for this condition has been associated with the post-operative complication of incontinence in up to 30% of patients. Therefore, a non-surgical method for the treatment of chronic anal fissures is highly desirable [2].

The standard task force of the American society of colon and rectal surgeons has recommended lateral sphincterotomy as the method of choice for the surgical treatment of chronic anal fissures [3].

## 2. Patients and Methods

This study was a randomized prospective done in general surgery department of AL-Zahraa university hospital on total number 100 patient in the period from February 2021 till October 2021 the patients were randomly assigned to:

Group A: include 50 patients was managed by lateral sphincterotomy and fissurectomy

Group B: include 50 patients was managed by fissurectomy and sustained anal dilation.

### 2.1 Inclusion criteria:

The inclusion criteria followed in this study was patients have CAF not respond to medical treatment more than 6 weeks.

### 2.2 Exclusion criteria:

The patients with the following criteria were excluded from this study: Recurrent case after surgical treatment, patients with inflammatory bowel disease, AIDS. tuberculosis, sexually transmitted diseases, pregnancy/ puerperium and patients with other association affecting anal canal (e.g., perianal fistula, hemorrhoid), or any systemic disease affected wound healing e.g.DM. Demographic data of all patients include age, sex, position of fissure either anterior or posterior was recorded pre-operative symptoms and signs mainly anal pain, bleeding. constipation, discharge and pruritis ani. All the included patients were informed about this study and the written inform consent was signed by all the patients.

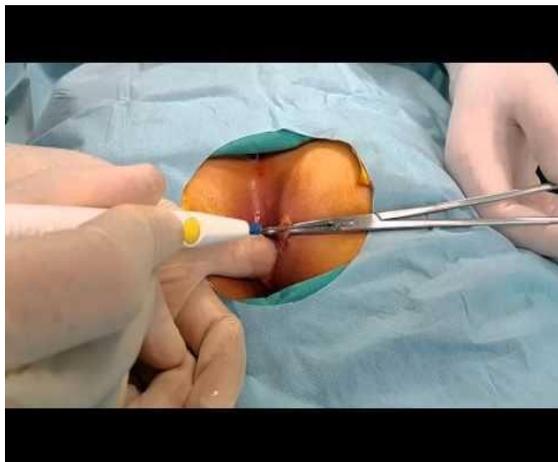
### 2.3 Technique:

In both groups surgical procedures were performed in a lithotomy position. The procedures were performed as a day case procedure under general or regional anesthesia and the anal canal was visualized with the help of proctoscope.

### 2.4 Group A:

Fissurectomy was done then A longitudinal incision of about 0.5 to1 cm was made, at the intersphincteric groove and an artery was used to separate the muscle from the mucosa. (Figure 1). The distal half of the internal anal sphincter, below dentate line, was divided under direct vision followed by application of pressure for 3 min, and a small dressing was applied at end of

procedure. Marcaine (0.25% 10 cc) was injected locally to relieve postoperative pain.



**Figure (1):** lateral internal sphincterotomy.

### 2.5 Group B:

Fully lubricated index finger of each hand was placed in the anal canal after one and other. Then exerting gentle but continuous outward pressure and with gradual relaxation of the internal sphincter, the second finger of each hand was also placed in the anal canal. The procedure was stopped when the internal anal sphincter was so much relaxed that the anal canal was accepting four fingers (two fingers of each hand) at a time without much force then fissurectomy was done. Marcaine (0.25% 10 cc) was injected locally to relieve postoperative pain Figure. 2.



**Figure (2):** Anal dilatation.

### 2.6 Post-operative care:

All patients were encouraged to resume oral feeding after 4 hours post-operatively, all patients were given oral 2nd generation cephalosporin and analgesia was given most of patients discharged on the same day of surgery

### 2.7 Follow up:

All patients were followed to 1 week, 2 weeks, 1 month, 3 months and 6 months post-operatively to assess any complications. Early follow up: to evaluate post-operative pain. Bleeding & infection & delay healing and Inconstancy. Late follow up: to evaluate recurrence and stenosis.

### 3. Results

In this study the female to male ratio was found 1.5:1 the majority of the population consisted of female, age range from 18\_66years mean of age  $36.86 \pm 12.60$  years 85%of patients have post anal fissure,15%have ant anal fissure and there's no statically significant difference between group A and group B regarding age, sex and position of fissure Table. 1. Preoperative finding (Table 2). Group A: major complain was painful defecation and constipation present in all patients (100%) while bleeding per rectum present in 45 patients (90%), discharge per rectum present in 22 patients (44%) and Prutitis ani present in 12 patients (24%) on examination Sentinal pile present in 27 patients (54%). Group B: major complain was painful defecation and constipation present in all patients (100%) while bleeding per rectum present in 44 patients (88%), discharge per rectum found in 23 patients (46%) and Prutitis ani found in 12 patients (24%) on examination Sentinal pile found in 27 patients (54%). There's no statically significant difference in the clinical presentation in both groups A and B Table. 2.

**Table (1):** Demographic data to group A & group B.

		Group A	Group B	Test value	P- value	Sig.
		No.= 50	No.= 50			
Age	Range	18 – 66	19 – 62	1.129•	0.262	NS
	Mean ± SD	38.28 ± 13.44	35.44 ± 11.65			
Sex	Females	26 (52.0%)	34 (68.0%)	2.667*	0.102	NS
	Males	24 (48.0%)	16 (32.0%)			
Position of fissure	Post	40 (80.0%)	45 (90.0%)			
	Ant	8 (16.0%)	7 (14.0%)			

**Table (2):** Demonstration of pre-operative finding in two groups.

	Group A	Group B	Test value*	P- value	Sig.
	No.= 50	No.= 50			
Painful defecation	50 (100.0%)	50 (100.0%)	–	–	–
Constipation	50 (100.0%)	50 (100.0%)	–	–	–
Bleeding per rectum	45 (90.0%)	44 (88.0%)	0.102	0.749	NS
Sentinal pile	27 (54.0%)	27 (54.0%)	0.000	1.000	NS
Discharge per rectum	22 (44.0%)	23 (46.0%)	0.040	0.841	NS
Prutitis ani	12 (24.0%)	12 (24.0%)	0.000	1.000	NS

**Table (3):** Relation between histopathological findings and US types for 11 complex cystic breast lesions.

Pain (VAS)		Group A	Group B	Test value‡	P-value	Sig.
		No. = 50	No. = 50			
Day 1	Range	3 – 8	2 – 7	-4.261	0.000	HS
	Mean ± SD	5.58 ± 1.40	4.22 ± 1.40			
Day 2	Range	0 – 4	0 – 4	-0.144	0.886	NS
	Mean ± SD	2.04 ± 1.05	2.02 ± 1.12			
Day 5	Range	0 – 1	0 – 1	-0.635	0.526	NS
	Mean ± SD	0.36 ± 0.48	0.30 ± 0.46			
1 months	Range	0 – 0	0 – 0	0.000	1.000	NS
	Mean ± SD	0.00 ± 0.00	0.00 ± 0.00			
6 months	Range	0 – 0	0 – 0	0.000	1.000	NS
	Mean ± SD	0.00 ± 0.00	0.00 ± 0.00			

Early follow up (Table 3) (Table 4) Group A: post-operative pain in day one present in all patients (100%). bleeding in two patients (4%). Infection in 4 patients (8%). delayed healing in 4 patients (8%) while Incontinence to liquid and gases found in 3 patients (6%). Group B: post-operative pain in day one found in 38 patients (76%). No patient presented by bleeding. infection in one patient (2%).no patient complicated by delayed healing (0%). while Incontinence to

liquid and gases found in 2 patients (4%). Post-operative pain at different point shows high significant difference in post-operative day one pain less in group B. however, there was no significant difference in the pain between two group when evaluated subsequently day 2, day5, 1month and 6-month (Table 3) bleeding show increase in group A. 2 patients (4%) observed bleeding in first 24 hr. post-operative which was clinically not bothering and subsided in

**Table (4):** Demonstration of early post-operative follow up.

	Group A	Group B	Test value*	P- value	Sig.
	No.= 50	No.= 50			
Post op pain day one	50 (100.0%)	38 (76.0%)	13.636	0.000	HS
Bleeding	2 (4.0%)	0 (0.0%)	2.083	0.076	NS
Infection	4 (8.0%)	1 (2.0%)	1.895	0.169	NS
Delayed healing	4 (8.0%)	0 (0.0%)	4.167	0.041	S
Incontinence	3 (6.0%)	2 (4.0%)	0.211	0.646	NS

**Table (5):** Demonstration of late post-operative follow up

	Lateral sphincterotomy	Lords' anal dilatation	Test value*	P- value	Sig.
	No.= 50	No.= 50			
Stenosis	1 (2.0%)	0 (0.0%)	1.010	0.315	NS
Satisfaction	46 (92.0%)	50 (100.0%)	4.167	0.041	S
Recurrence	1 (2.0%)	1 (2.0%)	0.000	1.000	NS

subsequent day by medication compared by no patients was observed bleeding in group B (Table 4). After two weeks complete healing observed in all patients in group B, whereas in Group A complete healing observed in 46 patients and incomplete in 4 patients .at the end of one-month complete healing occur in both group by continuous dressing with silver diazine & glyceryl trinitrate. the difference in wound healing is significant between both group (Table 4). No patients had complete Incontinence at any point of time whoever Incontinence to liquid and gases was observed in 3 patients who managed by LIS. And 2 patients who managed by LAD this complain last for one week no intervention was required to any patients and the condition was managed by medications (metronidazole) there's no statically significant difference between both groups (Table 4). Infection was found in 4 patients managed by LIS and 2 patients who managed by LAD. patients were continuing on 2<sup>nd</sup> generation cephalosporin and there's no statically difference between both groups (Table 4). Late follow up of the patients: (Table 5). Group A: stenosis found in one (2%) patients and recurrence in one

patient (2%) while satisfaction of patients (92%). Group B: no case recorded with stenosis while recurrence occur in one patient (2%). And all patients were satisfied (100%) stenosis and recurrence there's no statically significant difference between both groups (Table 5). one patient who managed by LIS with mild stenosis and was managed by anooplasty operation two patients with recurrent fissure and we arranged to repeat operation for them. While there's statically significant increase in satisfaction in group B 100% of patients compared with group A 92% (Table 5).

#### 4. Discussion

Basis of surgical treatment is founded on the cause of CAF suggested to be due to internal sphincter hypertonia. Both AD and LIS lead to reduction of resting anal pressure. Both the techniques have been found to result is quick pain relief and high ulcer healing rate. Hartikainen [4] reported satisfactory early relief of symptoms in 95% of patients with AD. In this study, they were 60 (60%) females and 40 (40%) males with age ranged from 18 to 66 years with

mean  $\pm$  SD of  $36.86 \pm 12.60$  years. In the present study, there was no statistically significant difference found between the two studied groups regarding age, sex and position of fissure with p-value 0.262, 0.108 and 0.854 respectively.

Pandit [6] reported that there was no significant age difference between the two groups as regard age and sex, Yucel [8] found no significant difference between gender and the age distributions of the patient and Pinsk [9] also showed that there were no significantly different between the groups as regard age and sex. Kiyak [5] showed that there were 68 (52.7%) female and 61 (47.3%) male patients. Mean age of patients was 37.5 years (range 16–61 years). Pandit [6] reported that fifty-four (57.5%) patients were male, and male to female ratio was 1.35:1 and reported that the mean age was  $34.8 \pm 8.35$  (range: 19-62) years. While Velani [3] reported that the male to female ratio was found to be 1.5:1. The majority of the population consisted of male and Abdul Razaque [7] found that eighty patients were male, and 65 were female with male to female ratio 1.23:1. In the present study, there was no statistically significant difference found between the two studied groups regarding pre-operative manifestation as pain, constipation, bleeding per rectum, Sentinel pile, Discharge per rectum and Prutitis ani. Pandit [6] reported that Pain was present in all the 94 (100%) patients and bleeding in 77 (81.9%) patients and Velani [3] showed that there were complains of bleeding per rectum, itching on presentation and pain. The most common complaint was of pain and was present in 97% of cases. The second most presenting complaint was of bleeding per rectum, it was found in 80% of the patients. Also, Yucel [8] found that the most common complaints observed in patients with anal fissure were pain, rectal bleeding, and constipation, occurring in 35 (87.5%) of the patients with perianal pain, 26 of the patients (65%) with rectal hemorrhage, and in 20 (50%) of the patients with constipation. Pandit [6] reported that the

difference between two groups was not significant as regard pain, bleeding and constipation.

In the present study, there was statistically significant increase in the pain score in lateral sphincterotomy than lord's anal dilatation at day 1 with p-value  $<0.001$  while no statistically significant difference found between both groups regarding pain at day 2, day 5, 1month.3 months and 6 months.

Pandit [6] reported that there was no statistically significant difference found between both groups regarding pain after 1 week and 1 month and Velani [3] showed that there was no significant difference in the pain score between the two groups when evaluated subsequently i.e., before discharge, 1 month, 3 month and 6 months respectively.

Also, Hareesh [10] found that there is a significant difference between the AD and LS group for postoperative pain vas score at 12 hours ( $p < 0.0001$ ), there is no significant difference between the AD and LS group for postoperative pain vas score at 24 hours ( $p = 0.131$ ) and there is no significant difference between the AD and LS group for postoperative pain vas score at 48 hours ( $p = 0.131$ ).

Furthermore, Hoffmann [11] found that about 93% patients were quite free of pain in 1 week of LIS.

Araujo [12] performed a prospective clinical trial with 190 patients in three groups comparing medical treatment (n: 128) vs. LIS (n: 62) and reported pain relief rates of 100% for LIS after eighth week (93% in two weeks and 100% at the end of the eighth week) and Kader [13] reported 100% pain relief following LIS. This came in contact with our study that showed that 100% pain relief following LS and AD within 1months. In our study, there was no statistically significant difference found between the two studied groups regarding infection, bleeding and incontinence while there was statistically significant increase in the healing rate in lords' anal dilatation than lateral sphincterotomy with ( $p$ -value  $<0.001$ ).in our study threes delay

healing in LIS but complete healing occurs with follow up while Pandit [6] reported that there was statistically significant difference found between both groups regarding incontinence while there was a rapid improvement ulcer healing in both the groups but the difference between the two groups was insignificant and Renzi [14] found that at 24-month follow-up, the incidence of incontinence, irrespective of severity, was 0 percent in the pneumatic balloon dilatation group and 16 percent in the lateral internal sphincterotomy group ( $P < 0.0001$ ). Velani [3] showed that a comparison between the number of patients having bleeding per rectum, post operatively. Seventy-four patients in LAD and 82 in LIS group observed bleeding in first 24 hours post operatively, which was clinically not bothering and subsided in subsequent days and were not found to be statistically significant.

In the present study, there was statistically significant increase in the satisfaction rate in Lords anal dilatation group than lateral sphincterotomy group with  $p$ -value = 0.041 while no statistically significant difference found between the two groups regarding rate of recurrence and stenosis

Hareesh [10] found that there is no statistically significant association between recurrence and type of surgery, Pandit [6] reported that there was statistically significant difference found between both groups regarding recurrence.

### 5. Limitations

There was no provision of anal manometer to monitor anal pressure., it is a single center study with limited catchment area. Further study should be planned with a larger series of patients, including the comparison with continuous pressures and ultrasonographic control.

### 6. Conclusion

Both AD and LIS provides early pain relief and improvement of symptoms. However, AD appears to be safer with regard to

healing, and the patient satisfaction is also higher compared to LIS. Larger scale randomized study with longer follow up should be conducted to better define the issue of healing and satisfaction.

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