Full Length versus Partial Length Lateral Internal Sphincterotomy for the Treatment of Chronic Anal Fissure

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Background and aim: Surgical treatment with lateral internal sphincterotomy (LIS) remains the principal treatment for chronic resistant cases with high degree of success despite persistence or recurrence of anal fissures. The incidence of these unfavorable outcomes has been reported to be related mostly to the height of the sphincterotomy. The aim of this study was to evaluate the effectiveness and safety of full length LIS compared to partial length LIS.

Patients and methods: Between May 2008 and June 2014, we surgically treated 80 patients with chronic anal fissure. Group A had partial length LIS and group B had full length LIS. All the patients were continent preoperative and postoperative data were recorded regarding pain, bleeding, infection, recurrence and postoperative incontinence.

Results: None of our patients in both groups had permanent incontinence to flatus or stools. Temporary incontinence to stool and flatus occurred in 9 patients with full length LIS group and only in 3 patients in the partial length LIS.

Conclusion: Full length LIS is a safe effective procedure for the treatment of resistant chronic anal fissure.

Key words: Anal fissure, lateral internal sphincterotomy, fissurectomy, incontinence, full length lateral internal sphincterotomy.

Introduction

Anal fissure is one of the most common proctologic disorders which appear on distal part of anal canal causing severe pain and bleeding during and after defecation.[1] Although it may affect people of all ages, mainly young and middle aged patients suffer from the disease, which is distributed to both genders in the same ratio.[2] Solid stools and high anal sphincter pressures have usually been accepted reasons for etiology.[3]

Treatment options are varying from local medical applications to surgical sphincterotomy. The object in anal fissure treatment is to dissolve or at least to reduce the spasm in anal sphincter.[4] Surgical treatment remains to be the principal treatment for chronic resistant cases.[5]

Initial experience with the posterior sphincterotomy was unsatisfactory; the main weakness of this procedure was a significant rate of recurrences and anal incontinence and a long period required for the wound to heal.[6]

Many of these drawbacks were overcome by the adoption of subcutaneous lateral internal sphincterotomy (LIS).[7,8] This procedure achieves a high degree of success despite persistence or recurrence of anal fissures.[9-12] The incidence of these unfavorable outcomes has been reported to be related mostly to the height of the sphincterotomy, thus raising the question of the ideal length of the sphincteral section.[13,14]

In this study, we describe the technique and results of full length lateral internal sphincterotomy (LIS) combined with fissurectomy compared to partial length lateral internal sphincterotomy with fissurectomy.

Patients and methods

A prospective randomized study was conducted at Ain Shams University students hospital and Dar El Shefa hospital – Ministry of Health in Egypt between May 2008 and June 2014. All patients were asked to provide written consent prior to enrollment, after explanation of the associated risks and benefits and description of the study protocol.

We treated 80 patients for chronic anal fissure who were nonresponders to medical therapy (glyceryl trinitrate 0.2% paste twice a day for 3 weeks) by LIS combined with fissurectomy. No patient showed deficit of continence preoperatively. Patients were divided into group A included 40 patient who underwent partial length LIS corresponding to the length of fissure, and group B included 40 patients who underwent full length LIS.

The following data were recorded for each patient: age, sex, site of the fissure, mode of presentation and preoperative continence to stool and flatus.
Patients were followed up postoperative in

outpatient clinic for six months and the following data were recorded: postoperative continence to flatus and stools, patient satisfaction according to the extent of relieve of symptoms and minor and major complications. Postoperative continence to flatus and stools was assessed using Wexner continence grading scale. **(Table 1).**

Table 1: Wexner continence grading scale[15]

	Frequency				
Type of incontinence	**Never**	**Rarely**	**Sometimes**	**Usually**	**Always**
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears Pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

Never, 0; rarely, <1/month; sometimes, <1/week, >1/month;
usually, <1/day, >1/week; always, >1/day. 0, perfect; 20, complete incontinence.

A chronic anal fissure was defined as a lesion that presented with indurated edges, sentinel pile, hypertrophied anal papillae, and the presence of circular muscle fibers at the base of the cutaneous defect.

Patients were excluded if they had any previous pelvic or perineal surgeries or if they have any degree of preoperative incontinence.

Surgery:
All patients were operated on by the same surgeon under spinal anesthesia, in lithotomy position with a tape retracting the gluteal region laterally. The perineal region was prepared with a disinfectant solution (Betadine) and draped in the usual fashion.

Digital per rectal examination was initiated to exclude any other ano-rectal pathology, then proctoscopy was done to visualize the fissure and the inter-sphincteric space was entered through a 1 cm long transverse radial incision in 3 o'clock position. The full length and thickness of the internal anal sphincter was identified through a mosquito forceps when left index finger was placed in anal canal.
Hypertrophied anal papillae and sentinel pile were routinely removed with the fissure.

In group A partial length of internal sphincter was transected corresponding to the length of the fissure.

In group B Full length of internal sphincter was transected.

Hemostasis was achieved with a gauze pad and electrocautery and the incision was left open. All patients were given soft foods at postoperative sixth hour. They were later discharged with recommendation for regular betadine wash after defecation with prescription for regular oral analgesic (NSAIDs e.g, Cataflam 50mg twice daily for three days), osmotic laxative agent e.g. Lactulose three times daily for a week and instructions to consume a high-fiber diet.

First follow-up was conducted on the postoperative seventh day, second was in the fourth week, and then continued monthly. Mean follow-up period was six months.

Results
Among eighty patients having a chronic anal fissure, 57.5% were female and 42.5% were male, with the male to female ratio being 1: 1.35 **(Table 1)**. Their age ranged from 20-50 years; with a mean age of 36.34±7.16 in group A and mean age of 34.25±6.76 in group B. The peak incidence age of patients with a chronic anal fissure was recorded in the age group from 20 to 30 years (43.7%), while there was a lower incidence in the age in group 41 to 50 years (16%) **(Table 2).** 75% of our patients suffered preoperatively from chronic constipation.

Table 2: Sex distribution

Sex	**Group 1 Partial length LIS (n=40)**	**Group 2 Full length LIS (n=40)**	**Total (n=80)**	**Percentage**	**P-value**
Male	15	19	34	42.5%	0.956
Female	20	26	46	57.5%	
Ratio	1 : 1.33	1 : 1.37	1 : 1.35		

Table 3: Age distribution

Age	Group1 Partial length LIS (n=40)	Group2 Full length LIS (n=40)	Total (n=80)	Percentage	P-value
20-30	16	19	35	43.7%	
31-40	18	11	29	36.3%	0.415
41-50	9	7	16	20%	
Mean±SD	36.34±7.16	34.25±6.76	35.3±6.96		0.183

The fissure was on the posterior midline in 63 patients, anterior in 5 and both anterior and posterior in 12 patients **(Table 3).**

66.25% of our patients presented with anal pain and bleeding during and after defecation and 22.5% complained from anal pain only, 8.75% of patients complained from anal swelling (Sentinel pile) and 2.5% complained from pruritus ani **(Table 4).**

Table 4: Site of fissure

Site	Group1 Partial length LIS (n=40)	Group2 Full length LIS (n=40)	Total (n=80)	Percentage	P value
Posterior	38	25	63	78.75%	
Anterior	2	3	5	6.25%	0.703
Both	5	7	12	15%	

Table 4: Mode of presentation

Symptom	Group1 Partial length LIS (n=40)	Group2 Full length LIS (n=40)	Total No. of patients	Percentage	P value
Pain only	8 (20.0%)	10 (25.0%)	18	22.5%	0.592
Pain and bleeding	25 (62.5%)	28 (70.0%)	53	66.25%	0.478
Swelling (sentinel pile)	2 (5%)	5 (12.5%)	7	8.75%	0.235
Pruritus ani	0 (0.0%)	2 (5.0%)	2	2.5%	0.152

The results of postoperative complications in our study were as following **(Table 5)**: The incidence of complications was 55% in group A while only 30% in group B (P Value < 0.05). Ten patients (25%) in group A complained from prolonged postoperative pain while two patients (5%) from group B complained from prolonged postoperative pain (P Value <0.05). Pain was reported as a complication if the patient needed to take analgesics more than three days postoperative in the oral, intravenous or intramuscular form.

Bleeding was reported in four patients (10%) from group A while no patients were reported in group B (P Value < 0.05).

Two patients (5%) in group A had infection while one patient (2.5%) had infection in group B (P Value >0.05).

Temporary incontinence to flatus and stools were recorded in group A with incidence of 5% and 2.5% respectively while it was recorded higher in group B with 15% and 7.5% respectively (P Value > 0.05). Wexner score for these patients ranged from 7 to 4 during 1, 4 and 8 weeks postoperative. None of our patients in both groups had permanent incontinence to flatus or stools. The recurrence was in the form of appearance of anal fissure at the same site of the old fissure or at different site and it was 7.5% (3 patients) in group A and 0% in group B (P Value > 0.05). None of our patients in this study showed failure of fissure healing after 3 months during their follow up visits.

Table 5: Postoperative complications

Complications	Group A		Group B		P Value
	No. of patients	Percentage	No. of patients	Percentage	
Pain	10	25.0%	2	5%	0.012
Bleeding	4	10.0%	0	0%	0.040
Infection	2	5.0%	1	2.5%	0.556
Temporary incontinence to flatus (not more than 3 months)	2	5.0%	6	15%	0.136
Temporary incontinence to stool (not more than 3 months)	1	2.5%	3	7.5%	0.304
Permanent incontinence to flatus	0	0.0%	0	0%	NA
Permanent incontinence to stool	0	0.0%	0	0%	NA
Recurrence	3	7.5%	0	0%	0.077
Total	22	55.0%	12	30%	0.023

NA: Not applicable

Discussion

An occasional sudden expulsive hard fecal mass in chronic constipated patients has long been considered as the main cause of anal fissure.[16]

We reported 75% of our patients to have chronic constipation; Tocchi et al reported only 40% of their patients having chronic constipation while the rest had normal bowel habit or even diarrhea.[17]

In this study 57.5% of patients were females and the peak incidence of age was in the third decade (43.7%) with mean of 35.3±6.96. In a study done by Hamid H, Sarhan, only 22% were females and the peak incidence of age was in the fourth decade of life (55%).[18]

The most common site for anal fissure is the posterior midline,[19] 78.75% of our patients had anal fissure located posteriorly while 21.25% had it anteriorly and both anteriorly and posteriorly.

Among surgeons, there is still a debate about how much of the internal sphincter that should be divided.[20] Division of short segment of the internal sphincter make the patient more prone to complications such as: Prolonged postoperative pain, bleeding and persistence or recurrence of the anal fissure.

The present study showed lower complications rate in the full length LIS group than in the partial length LIS group with 30% and 55% respectively. The full length division of internal sphincter enhances early healing, and consequent intramuscular linear fibrosis prevents permanent incontinence.[17]

In this study, postoperative pain and bleeding reduced significantly with full length LIS than in patients with partial length LIS. In a study done by Pujahari, pain was significantly reduced by doing bilateral LIS with pain score of 12 out of 100 compared to 57 in unilateral LIS on average dose of NSAIDs.[21]

Despite that full length division of the internal sphincter have a higher incidence of temporary incontinence to flatus and stools, but still have better long-term results than partial length internal sphincterotomy. In a study done by Kensarah et al doing partial length LIS, 14.1% patients had incontinence of flatus, 4.3% of liquid stools, and 1% incontinence of solid stools.[22]

Conclusion

The full length lateral internal sphincterotomy with fissurectomy is a safe and effective procedure for the treatment of chronic anal fissure with acceptable long-term results in the previously continent patients. Further studies should be done to include patients with previous pelvic and perineal surgeries.

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