



## Long Term Sphincter Function after Lateral Internal Sphincterotomy for Anal Fissure

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### Abstract

**The background and purpose of the study:** Anal fissure is a common benign anal condition, the gold standard treatment is Lateral Internal Sphincterotomy (LIS), and this procedure carries a risk of incontinence. The aim of this study is to determine the long-term risk of sphincter dysfunction after LIS using a questionnaire.

**Method:** All patients who had LIS for chronic anal fissure between the years 2004 till 2010 were interviewed by phone and assessment of Sphincter function (incontinence) using Wexner Fecal Incontinence Score (WIS).

**Results:** 59 patients (34 females, 57.6%) with a mean follow-up duration of 10.6 years (range 8 to 15 years) were interviewed. Twelve patients (20.3 %) had WIS score of one or more. The majority of the patient noticed the change in sphincter function years after the operation.

**Conclusion:** This long-term risk of abnormal sphincter function after LIS could be higher than expected especially in the presence of multiple vaginal deliveries or systemic diseases such as Diabetes mellitus. Larger prospective studies are required before LIS is offered routinely to these patients.

**Keywords:** Anal fissure; Sphincterotomy; Incontinence; Wexner score

### Introduction

Anal Fissure is a tear in the mucosal lining of the anal canal. It is a common benign condition affecting all age groups but more common in young adults [1,2]. Classically patients present with anal pain and sometimes bright red blood related to defecation [2]. Whilst most anal fissures are acute and respond well to conservative and topical treatment, chronic anal fissures are not uncommon [1,2]. As a result of spasm and persistent hypertonia of the Internal Anal Sphincter (IAS) the blood supply is impaired leading to poor wound healing. In about 40% of cases the fissure persists for more than six weeks and is called chronic anal fissure [3,4]. Non-surgical treatment modalities are performed to reduce the pressure in the anal canal. This include: Topical Glyceryl Trinitrate (GTN), calcium channel blockers, with variable successful healing rate (68% to 80%). Botulinum toxin injection has been used with comparable success rates but it remains an invasive procedure that carries the risk of infection, hematoma, pain and transient incontinence [5-8].

Typically, surgical intervention is required for the effective treatment of chronic anal fissures or for fissures that do not respond to medical therapy or botulinum toxin injections. Surgical options include fissurectomy, advancement flaps, and Lateral Internal Sphincterotomy (LIS). Sphincterotomy had been proven to be the most effective modality of treating anal fissures, it provides symptomatic relief and has a greater cure rate with 0% to 3% recurrence rate [1,9-12], and high patient satisfaction. It was first described by Stephen Eisenhammer in 1951 [13], who recommended four-fifths to total division of the anal sphincter. Subsequently, Eisenhammer revised his technique stating that a lesser division to the dentate line is adequate and safer [14]. LIS is associated with possible complications including infection, bleeding, and fistula formation [15]. But the most feared complication is anal incontinence. Up to 39% of patients experience transient incontinence, varying from the inability to control gas or loose stool to loss of control over formed stool [16]. Lateral internal sphincterotomy can cause long-term incontinence in up to 15% of cases [17-20]. Patients who have a higher risk of anal incontinence are multiparous women (2 or more vaginal deliveries) [17], older patients, and patients who already have some degree of incontinence [21]. Fortunately, in most cases, incontinence is transient and is mainly for gas or soiling. Previous

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**Table 1:** Wexner fecal incontinence score [22].

Type of Incontinence	Frequency				
	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

studies looked at the immediate and relatively short-term risk of fecal incontinence after LIS [17-20]. We wished to study the long-term risk of incontinence after LIS for chronic anal fissure.

### Methods

All patients who had LIS for chronic anal fissure between the years 2004 till 2010 were included. Demographics were collected from medical records.

Patients were interviewed by phone to collect data regarding, current comorbidities' and assessment of Sphincter function (incontinence) using Wexner Fecal Incontinence Score (WIS) [22]. After explaining the details of the questionnaire, the patients were asked to choose scores of 0 to 4 to represent the frequency of flatus, solid stool leakage, liquid stool leakage, using pads, and lifestyle alternations, including "never, occasional (less than once per month), sometimes (once per month-once per week), usually (once per week-once per day), or always (everyday)," respectively (Table 1) a total score of zero means perfect continence while a score of 20 represent complete incontinence.

Exclusion criteria included patients who had further anal procedure performed concomitantly with sphincterotomy e.g. haemorrhoidectomy, interval anal surgery performed during the follow up period, and inflammatory bowel disease.

All patients had conservative treatment of their condition before having surgery. The LIS was performed under general anesthesia in all patients and involved incision at the anoderm and division of a segment of the internal sphincter with electrocautery. The extent of the sphincter division was equal to the length of the fissure and, the anoderm was partially closed with interrupted absorbable suture.

Ethical approval was obtained from the Ethical Review Committee of the faculty of medicine - the University of Jordan.

### Results

A total of 250 patients underwent lateral internal sphincterotomy for chronic anal fissure performed by a single surgeon during the study period between the years 2004 to 2010. One-hundred and ten patients were not contactable. Eighty-one patients were excluded; 66 patients underwent LIS together with haemorrhoidectomy and 11 other patients underwent LIS with fistula, four patients had major colonic surgery after the LIS.

A total of 59 patients (34 females, 57.6%) were eligible. Mean age at time of surgery was 34.9 (range 17 to 75 years). The mean follow-up duration 10.6 years (range 8 to 15 years). Twelve patients (20.3%) had WIS score of one or more (Table 2); 8 were females (66%). The majority of the patient noticed the change in sphincter function years after the operation. Six female patients had history of intervening multiple vaginal delivers without complications.

### Discussion

Despite the advances in medical treatment of chronic anal fissures, lateral internal sphincterotomy remains the gold standard treatment, yet the risk of faecal incontinence makes the operation unpopular. It has been demonstrated previously that some degree of incontinence can occur in the immediate post-sphincterotomy period but usually improves with the passage of time.

However, the long-term risk of developing incontinence is unknown, and it is unknown if the long-term risk of incontinence changes with the passage of time. The aim of our study was to assess the long-term risk of incontinence after lateral internal sphincterotomy done by a standard technique.

In this study, one fifth of our patients had abnormal incontinence score, 66% of whom were females. Most of the patients experienced abnormal sphincter function years after the operation which implies that the patient can experience a change in sphincter function years after the procedure. Consequently, the absence of any change in the sphincter function in the early postoperative period is not a reassurance for the future.

In addition, in a population with high fertility (multiple vaginal

**Table 2:** Details of patients with abnormal Wexner score [22].

Patients	Age at time of study (years)	Age at time of Surgery (years)	Follow up period (years)	Gender	Wexner score	Start of sphincter symptoms	Number of vaginal deliveries Pre op	Number of vaginal deliveries post op
1	70	56	14	Female	5	Years	8	
2	36	26	10	Female	10	Years	1	4
3	53	41	12	Female	3	Years	8	
4	47	35	12	Male	5	Weeks		
5	51	41	10	Female	1	Days	6	1
6	41	26	15	Female	3	Weeks		
7	30	17	13	Female	3	Years		
8	42	30	13	Female	5	weeks	2	1
9	29	20	9	Male	8	Year		
10	42	33	9	Male	8	years		
11	49	40	9	Female	1	Days	4	
12	68	59	9	Male	3	Years		

deliveries before or after LIS) or high risk of diabetes mellitus, the risk of long-term sphincter dysfunction may be higher which needs to be considered when sphincterotomy is offered to patients who suffer chronic anal fissures.

This study has limitations; it is a retrospective study based on the recall of the patients using a single instance of phone interview. Despite the fact that Wexner questionnaire is widely used, simple, and reflects the patient's own perception of the function of their anal sphincter, one-off questionnaire without using objective measures such as anal manometry. A prospective study is required assessing the sphincter function at regular intervals over a long period of time as well as before and after any intervention that may affect the sphincter function.

## Conclusion

This long-term risk of abnormal sphincter function after LIS could be higher than expected especially in the presence of multiple vaginal deliveries or systemic disease such as Diabetes mellitus. Larger prospective studies are required before LIS is offered routinely to these patients.

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