

# Comparison of Lateral Internal Sphincterotomy and GTN Gel for management of Chronic anal fissure: A Randomized Controlled Trial

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## ABSTRACT

**Background:** Anal fissure is quite a common and painful condition which occurs in all age groups and in both genders. The treatment options are numerous; however, broadly it may be surgical and non-surgical. Among surgical, most commonly performed procedure is Lateral Internal Sphincterotomy (LIS), while among non-surgical most common in use of Glycerin Trinitrate gel (GTN)

**Aim:** To compare the successfulness of treatment with GTN and LIS in patient with chronic anal fissure.

**Methods:** This randomized controlled trial was conducted at Allama Iqbal Memorial Trust Hospital Gt Road, Gujranwala Medicare International Hospital Gill Road Gujranwala and Services Institute of Medical Sciences Lahore over a period of 3 years, from 2014 to 2016. All the patients presenting with chronic anal fissure with the age of 18-60 years were included in this study. They were randomly divided into two groups by computer generated numbers: group A (LIS) and group B (GTN). Patients in group A underwent LIS by consultant surgeons on elective list in a standard fashion. Patients in group B received 2% GTN gel. All patients in both groups were assessed after 8 weeks of start of treatment or intervention. All the data were analyzed using SPSS version 20.

**Results:** A total of 60 patients (30 in each group) were included in this study. All the demographic details were almost comparable in both groups. Regarding the position of fissure, most common position was posterior in both groups. Treatment was successful in all patients (100%) in patients in group A while it was successful in 22 patients (73.33%) in group B (P <0.05). One patient in group A had incontinence for flatus, while in group B, headache was reported by all and 6 patients discontinued the treatment with GTN due to severe headache.

**Conclusion:** We conclude that LIS is better than GTN and it may be considered as gold standard treatment for anal fissure particularly in chronic cases. However, the importance of conservative and non-surgical management regimens can't be negated.

**Keywords:** Anal Fissure; GTN; Lateral Internal Sphincterotomy

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## INTRODUCTION

Anal fissure is a painful condition of the perianal region occurring due to tear in the perianal skin. The most common presentation is due to pain at perianal region during and after defecation<sup>1,2</sup>. It affects patients of both gender and is particularly common among young adults. The exact reason and pathophysiology is still eluded, however, it is considered that due to laceration, perianal region and sphincter develop hypotonia, which ultimately causes ischemia and poor wound healing<sup>3</sup>. There may be many treatment options for it. Initial measures are always conservative which include life style changes, more water intake, stool softeners and more fiber

intake. Also other anti-inflammatory drugs and pain killers are added. Later on local ointments including Glycerol Trinitrate (GTN), calcium channel blockers may be given<sup>4,5</sup>. Surgery including Lateral Internal Sphincterotomy (LIS) is considered as standard treatment by most of the general surgeons; however, it is associated with some grave complications like incontinence which may occur in 1-38% of patients<sup>6</sup>.

Treatment of anal fissure is a difficult job as due to pain and spasm of sphincter fibers, there is decreased blood supply to this area. It leads to delayed healing rate and makes job of a surgeon very difficult sometimes. So an ideal technique must technically break this vicious cycle and promote healing with prevention of the recurrence<sup>(7)</sup>. An anal fissure is considered as chronic if it lasts for more than 8 weeks duration. Among many treatment options available for it, including local ointments, GTN, LIS, manual dilatation of sphincter and other

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home remedies, the most promising is LIS by many authors<sup>8</sup>. In LIS, the internal sphincter fibers are divided laterally. Although being associated with advantage of prompt relief of pain, logically dealing with sphincter may have some implications also<sup>9,10</sup>. The objective of this study was to compare the successfulness of treatment with GTN and LIS in patient with chronic anal fissure.

**MATERIALS AND METHODS**

This randomized controlled trial was started after approval from ethical committee of our hospitals. This study was conducted at Allama Iqbal Memorial Trust Hospital GT Road Gujranwala, Medcare International Hospital Gill Road Gujranwala and Services Institute of Medical sciences Lahore, over a period of 3 years, from 2014 to 2016. All the patients presenting with chronic anal fissure with the age of 18-60 years were included in this study. Chronic anal fissure was labeled if there is history of painful defecation from more than 8 weeks and on examination a fissure is present at that site. Also chronicity was labeled if on examination, sentinel skin tag is present or fibers of sphincter are visible on examination. We excluded those patients who had previously undergone LIS or had received Botulinum injection at sphincter area previously. All the patients included in the study were informed about the purpose of the study and informed consent regarding inclusion in the study was obtained. They were randomly divided into two groups by computer generated numbers: group A (LIS) and group B (GTN). Patients in group A underwent LIS by consultant surgeons on elective list in a standard fashion. Patients in group B received 2% GTN gel. They were advised to apply GTN gel at peri-anal area thrice a day for 8 weeks. Also pain killer and stool softener treatment was given to all patients in both groups. All patients in both groups were assessed after 8 weeks of start of treatment or intervention. The successfulness of treatment was considered if the symptoms of the patients have subsided and fissure has healed on clinical examination. All the data were analyzed using SPSS version 20. The qualitative and quantitative variables were addressed accordingly. To compare successful treatment in both groups, Fisher exact test was applied taking  $P < 0.05$  as significant.

**RESULTS**

A total of 60 patients (30 in each group) were included in this study. The mean age of the patients was found to be  $37 \pm 12.9$  years in group A and  $31.9 \pm 10.67$  years in group B. All the other general and demographic details were almost comparable in

both groups. Regarding the position of fissure, most common position was posterior in both groups. Demographic details are summarized in table 1.

As per operational definitions, treatment was successful in all patients (100%) in patients in group A while it was successful in 22 patients (73.33%) in group B ( $P < 0.05$ ). Regarding the complications, one patient in group A had incontinence for flatus, while all others were continent and no other complication was reported. All patients in group B reported headache and 6 patients had discontinued the treatment with GTN due to severe headache. They underwent LIS later on and are doing well after surgery.

Table 1: Demographic details of all patients in both groups

	Group A	Group B
Age (in years) (mean $\pm$ SD)	$37 \pm 12.9$	$31.9 \pm 10.67$
<b>Gender</b>		
Male	18(60%)	14(46.66%)
Female	12(40%)	16(53.33)
Male: Female ratio	1.28 : 1	1:1.3
Duration since start of symptoms (in days) (mean $\pm$ SD)	$65.8 \pm 33.97$	$55.33 \pm 36.07$
Family history	14 (46.66%)	9 (30%)
<b>Position of fissure</b>		
Posterior	21(70%)	23(76.66%)
Anterior	6(20%)	5(16.66%)
Both posterior and anterior	3(10%)	2(6.66%)

**DISCUSSION**

The main objective of this study was to compare the successfulness of LIS and GTN in patients with anal fissure. It was found that LIS was successful in all patients while in GTN group treatment was effective in 73.33% of patients. In another Pakistani study, it was found that GTN treatment was successful in 74% patients of anal fissure<sup>(11)</sup>. Sphincterotomy was first introduced as a treatment option for anal fissure in 1818 by Boyer. Since then, many modifications in it including LIS, anal dilatation, flap rotation and fissurectomy have been introduced<sup>(12)</sup>. In a study, authors had included 190 patients with anal fissure undergoing LIS and the follow up time was 5 years. They concluded that patients reported high satisfaction after LIS approaching 98.4% and recurrence was observed in only 1.6% of patients<sup>13</sup>. In our study, no recurrence was seen in patients undergoing LIS. In a systematic review, authors had recommended that GTN and other local applications may be considered as second line treatment of anal fissure following dietary changes, however, LIS may be considered as gold standard treatment due to

higher successfulness of this modality<sup>14</sup>. In another study with long-term outcome, LIS was found successful in 98.7% of patients<sup>15</sup>.

The main disadvantage with the usage of GTN has been reported as headache<sup>11</sup>. In our study, headache was observed by all patients receiving GTN while severe headache was reported by 6 patients (20%). In a study by Joshi MR et al, it was found that headache was experienced by two thirds of all patients receiving GTN and severe headache was observed by 10% of patients<sup>16</sup>. In a meta-analysis, it was found that both GTN and diltiazem may be used for anal fissure with almost equal effectiveness, however, headache is usually more prevalent with the usage of GTN<sup>7</sup>. Also considering the pathophysiology of disease, GTN is effective and it does reduce the anal tone, however, this effect is temporary and reversible. This is also true for other treatment modalities like Botulinum injection, in which recurrence may occur even after complete healing. In a prospective study, authors found that recurrence occurred in 76% of patients receiving Botulinum and 12% patients receiving LIS after 6 months of follow up<sup>17</sup>.

The most common position of fissure noted in our study was posterior, which was noted in 73.33% in both groups in our study. Generally, it is the most common position narrated in literature also. Tauro et al also noted the similar findings and posterior position of anal fissure was found in 94% of patients<sup>18</sup>.

On the basis of this study, we conclude that LIS is better than GTN and it may be considered as gold standard treatment for anal fissure particularly in chronic cases. However, the importance of conservative and non-surgical management regimens can't be negated. As our study had smaller sample size, so we recommend further trials on this issue with larger sample size and long-term outcomes and follow up.

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