

# Comparative Study of 2% Diltiazem Gel Application versus Lateral Sphincterotomy in the Management of Anal Fissure

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## Abstract

**Introduction:** Anal fissures are longitudinal tears in the squamous epithelium of the anal canal, anal fissures are located distal to the dentate line, and in around 90% of cases, they are located on the posterior midline. The most common pathologies of the anorectal region can change quality of life as it causes patient pain and emotional stress while defecation. With a lifetime risk of 11%, anal fissure is mainly treated by relaxing the spasm of the internal sphincter either by dilating the anal canal or sphincterotomy. Reduction of spasticity of anal sphincters is the specific treatment for fissure healing. For this purpose, treatment is performed by lateral sphincterotomy or by anal dilatation.

**Methods:** Out of 100 randomly selected, 50 patients were treated with diltiazem ointment and 50 patients with informed consent were treated with lateral sphincterotomy. Observations after treatment were recorded at the 2<sup>nd</sup> week, 6<sup>th</sup> week, and 12<sup>th</sup> week interval for pain and healing and at the 12<sup>th</sup> week follow-up were documented to analyze the result of treatment.

**Results:** Out of 50 patients undergoing treatment with diltiazem ointment, 42 patients healed completely. Patients in lateral sphincterotomy group underwent surgery under spinal anesthesia. In lateral sphincterotomy group, fissure healing was found in 49 (98%) out of 50 patients. In our study, out of 50 patients, 48 (96%) were completely relieved from pain and 2 (4%) had pain on follow-up at the end of 3 months.

**Conclusion:** Topical 2% diltiazem should be given as the first option of treatment for anal fissure. Lateral sphincterotomy, which gives better result to relieve the symptoms but require hospitalization, should be offered to patient who present with relapse and does not respond to pharmacological treatment.

**Key words:** Anal fissures, Diltiazem, Sphincterotomy

## INTRODUCTION

Anal fissure is one of the most common pathologies of the anorectal region and can change the quality of life as it causes patient pain and emotional stress while defecation.<sup>[1]</sup>

Fissures are classified into acute and chronic form and also into primary and secondary fissures based on their pathogenesis. Chronic fissures are defined by both either

chronology or morphology. The criteria being symptoms persist for more than 8 weeks.<sup>[2]</sup>

The exact pathology of primary fissure is unknown, but a core point is increased tone of the internal anal sphincter,<sup>[3]</sup> which causes local ischemia.<sup>[4]</sup>

The etiology of this disease is still in doubt but mucosal ischemia secondary to sphincter spasm favors for its etiology. It has been considered that hypertonicity in the internal sphincter muscle further reduces the blood flow, especially at the posterior midline.<sup>[5]</sup>

With a lifetime risk of 11%, anal fissure is a common problem in routine medical care.<sup>[6]</sup>

Treatment option includes medical and surgical means. Conventional pharmacological treatment involves the use

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of muscle relaxants commonly topical nitrates, calcium channel blocker, neurotoxin, alpha-adrenoceptor agonist, and muscarinic agonist.<sup>[7]</sup>

## MATERIALS AND METHODS

The present study “A Comparative Study of 2% diltiazem gel application Versus Lateral Sphincterotomy in the Management of Anal Fissure” was carried out in the department of Surgery, Jayarogya Hospital Associated with Gajra Raja Medical College, Gwalior (M.P.), during the period of June 1, 2019, to May 31, 2020, after the Institutional Ethical Committee approval. One hundred cases, irrespective of age and sex, included in the study in which 50 were admitted in surgical wards of Jayarogya Hospital associated with Gajra Raja Medical College, Gwalior (M.P.), through SOPD, casualty, or transferred from other departments diagnosed as anal fissure during the period of study.

### Inclusion Criteria

- The following criteria were included in the study: Acute anal fissure
- Chronic anal fissure.

### Exclusion Criteria

The following criteria were excluded from the study:

- Recurrent fissures
- Fissures with hemorrhoids and fistula
- Fissure associated with malignancies
- Fissure associated with Crohn’s disease, tuberculosis, etc.
- Pregnant women
- Patients with cardiac problems
- Patients with immune compromised state.

### Patient Data Collection

Patients with symptoms of fissure in ano were included in comparative study on randomized trial.

- History of the patients was noted.
- Clinical examination was done to confirm fissure in ano.

### Sample Size

One hundred patients during the period of study.

### Procedure Plan

One hundred cases of anal fissure diagnosed and managed, and efficacy of both (50 in each group) the modalities (diltiazem and lateral internal sphincterotomy) of treatment was analyzed.

### Methods of Collection of Data

Out of 100 randomly selected, 50 patients with informed consent were treated with diltiazem ointment and

50 patients with informed consent were treated with lateral sphincterotomy for the management of anal fissure. Observations after treatment were recorded at the 2<sup>nd</sup> week, 6<sup>th</sup> week, and 12<sup>th</sup> week interval for bleeding and pain and at the 12<sup>th</sup> week follow-up were documented to analyze the result of treatment.

### Method of Application of 0.2% Diltiazem Ointment

Informed consent from the patient was taken before the study. Patients were instructed to apply 2 cm length of ointment 2 times in a day at least 1.5 cm inside the anus. Patients were advised to wash hands before and after use of gel. All patients were reviewed at the 2<sup>nd</sup> week, 6<sup>th</sup> week, and 12<sup>th</sup> week on outpatient basis.

### Lateral Sphincterotomy

Lateral sphincterotomy was carried out under spinal anesthesia. Postoperatively on the day of operation, patients were kept nil orally till evening. All patients were given mild laxatives like Cremaffin (milk of magnesia 11.25 ml, liquid paraffin 3.75 ml, per 15 ml of emulsion) three tea spoons, at bedtime next day onward following the operation and sitz bath was started from the 2<sup>nd</sup> post-operative day. Post-operative complications such as bleeding and hematoma formation were assessed. Patients were discharged between the 3<sup>rd</sup> and 7<sup>th</sup> post-operative days. They were reviewed on the 7<sup>th</sup> post-operative day. Digital examination was performed to assess the relaxation of sphincter or for infection. Patients were instructed to follow up at the 2<sup>nd</sup>, 6<sup>th</sup>, and 12<sup>th</sup> week on outpatient basis and at the 12<sup>th</sup> week follow-up were documented to analyze the result of treatment. After the 12<sup>th</sup> week, those patients who were not relieved in the diltiazem group and lateral sphincterotomy group were offered alternative modalities but that were not part of this study.

## OBSERVATIONS AND RESULTS

### Diltiazem Ointment Group

As it is evident from above Table 1 and Graph 1, 80.0% of patients of anal fissure were completely relieved from pain and 20.0% of patients having no relief in pain even after follow-up at the end of 3 months.

### Lateral Sphincterotomy Group

As it is evident from above table, 96.0% of patients of anal fissure were completely relieved from pain and 4.0% of patients having no relief in pain even after follow-up at the end of 3 months.

### Diltiazem Ointment Group

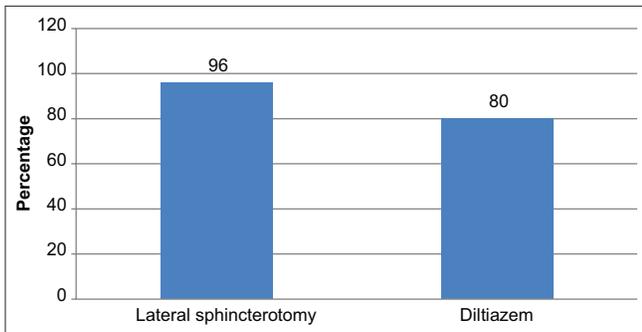
As it is evident from above Table 2 and Graph 2, 84% of patients healed completely within 12 weeks.

**Table 1: Pain relief after treatment (n=50)**

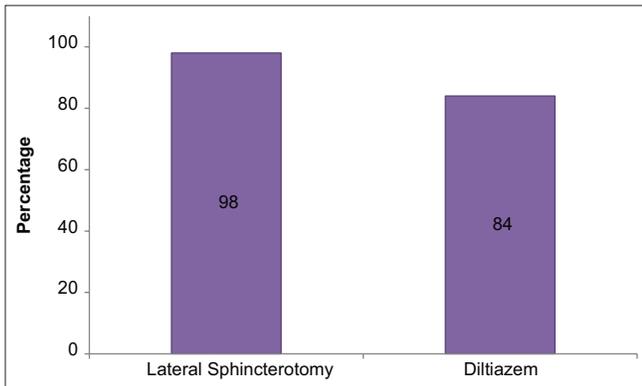
Treatment modality	Patients with pain	No. of patients relieved from pain		No. of patients not relieved from pain	
		No.	%	No.	%
Diltiazem	50	40	80.0	10	20.0
Lateral sphincterotomy	50	48	96.0	02	04.0

**Table 2: Healing in the patients after treatment (n=50)**

Treatment modality	Total patients	No. of patients with healing after treatment		No. of patients without healing after treatment	
		No.	%	No.	%
Diltiazem	50	42	84.0	8	16.0
Lateral sphincterotomy	50	49	98.0	1	2.0



**Graph 1:** Percentage of pain relief in patients after treatment



**Graph 2:** Percentage of healing in patients after treatment

**Lateral Sphincterotomy Group**

As it is evident from above table, 98% of patients healed completely within 12 weeks.

**DISCUSSION**

Anal fissure is a very common problem. It causes discomfort to the patient. It also affects the quality of life of patient. The main cause of symptom is anal spasm

which needs to be taken care of either by medical or by surgical procedure.

Operative management includes anal dilatation and lateral sphincterotomy. Lateral sphincterotomy is the operation of choice to be performed in patients with chronic anal fissure. Post-operative management is simple and rate of healing is faster.<sup>[8]</sup>

Chemical sphincterotomy is considered to be the first line of treatment in many centers.<sup>[9-12]</sup> Calcium channel blockers such as nifedipine and diltiazem act by lowering resting anal pressure<sup>[12]</sup> and promote healing of fissure. They also have some side effects such as headache and perianal dermatitis.<sup>[8]</sup>

**Diltiazem Group**

Patients receiving diltiazem ointment therapy underwent domiciliary treatment and were reviewed on the 2<sup>nd</sup>, 6<sup>th</sup>, and 12<sup>th</sup> week on outpatient basis. Out of 50 patients undergoing treatment with diltiazem ointment, 42 patients healed completely.

In our study, 40 patients out of 50 patients were relieved from pain and 10 had pain on follow up after 3 months.

In our study, only two patients had complaint of headache after diltiazem therapy during follow-up which was relieved after decreased dosage of diltiazem ointment.

**Lateral Sphincterotomy Group**

Patients in lateral sphincterotomy group underwent surgery under spinal anesthesia. In lateral sphincterotomy group, fissure healing was found in 49 (98%) out of 50 patients.

In our study, out of 50 patients, 48 (96%) were completely relieved from pain and 2 (4%) had pain on follow-up at the end of 3 months.

**Summary**

- In diltiazem gel group, 40 out of 50 patients were relieved from pain and 10 had slight pain on follow-up within 12 weeks.
- In lateral sphincterotomy group, 48 out of 50 patients were relieved from pain and two had slight pain on follow-up within 12 weeks.
- In diltiazem group, out of 50 patients undergoing treatment, 42 patients healed completely within 12 weeks.
- In lateral sphincterotomy group, out of 50 patients, 49 patients healed completely within 12 weeks.
- Healing of patient was found significant in lateral sphincterotomy group as compare to nifedipine group ( $P = 0.036$ ).

Pain relief was found significant in cases of lateral sphincterotomy group than diltiazem group ( $P$  value = 0.031).

## CONCLUSION

The conclusion from my study is that lateral internal sphincterotomy is the treatment of choice though many fissures showed healing with topical 2% diltiazem therapy. Side effects of diltiazem gel therapy are minimal. In comparison to surgery, medical treatment with diltiazem is reversible, and therefore, chances of adverse effects on continence are minimal. Patients who are medically unfit for surgery can be treated with diltiazem therapy. Patients who are treated with medical therapy can be avoided from the trauma caused by surgery. Hospital stay is not required. Topical 2% diltiazem should be given as the first option of treatment for anal fissure. Lateral sphincterotomy, which gives better result to relieve the symptoms but require hospitalization, should be offered to patient who present with relapse and does not respond to pharmacological treatment.

## REFERENCES

- Madalinski MH. Identifying the best therapy for chronic anal fissure. *World J Gastrointest Pharmacol Ther* 2011;2:9-16.
- Herzig DO, Lu KC. Anal fissure. *Surg Clin North Am* 2010;90:33-44.
- Ayantunde AA, Debrah SA. Current concepts in anal fissures. *World J Surg* 2006;30:2246-60.
- Schouten WR, Briel JW, Auwerda JJ, De Graaf EJ. Ischaemic nature of anal fissure. *Br J Surg* 1996;83:63-5.
- Golfam F, Golfam P, Khalaj A, Sayed Mortaz SS. The effect of topical nifedipine in treatment of chronic anal fissure. *Acta Med Iran* 2010;48:295-9.
- Cross KL, Massey EJ, Fowler AL, Monson JR; ACPGBI. The management of anal fissure: ACPGBI position statement. *Colorectal Dis* 2008;10 Suppl 3:1-7.
- Poh A, Tan KY, Seow-Choen F. Innovations in chronic anal fissure treatment: A systematic review. *World J Gastrointest Surg* 2010;2:231-41.
- Kumar Y, Kumar P. Lateral Internal Sphincterotomy Versus 2% Diltiazem Gel Local Application: A Comparative Study in Treatment of Chronic Fissure in Ano. *Indian J Appl Res* 2018;8.
- Knight JS, Birks M, Farouk R. Topical diltiazem ointment in the treatment of chronic anal fissure. *Br J Surg* 2001;88:553-6.
- Bhardwaj R, Parker MC. Modern perspectives in the treatment of chronic anal fissures. *Ann R CollSurg Engl* 2007;89:472-8.
- Haq Z, Rahman M, Chowdhury RA, Baten MA, Khatun M. Chemical sphincterotomy--first line of treatment for chronic anal fissure. *Mymensingh Med J* 2005;14:88-90.
- Carapeti EA, Kamm MA, Evans BK, Phillips RK. Topical diltiazem and bethanechol decrease anal sphincter pressure without side effects. *Gut* 1999;45:719-22.

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