

Prospective Randomized Controlled Study of Nifedipine as Oral Therapy vs Topical Application in the Management of Anal FissureAbhishek Sinha¹, Abhishek Kumar²¹Senior Resident, Department of Surgery, Netaji Subhash Medical College & Hospital, Bihta, Patna (Bihar)²Senior Resident, Department of Surgery, Venkateshwar Hospital, Dwarka, New Delhi, Delhi, India

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Conflict of interest: Nil

Abstract**Objective:** To compare oral nifedipine with topical nifedipine in the management of anal fissure.**Patients and Methods:** In this prospective randomized controlled study, a total of 120 patients ~ anal fissure were selected through surgical outpatient department and divided randomly into 2 equal groups. Group A received oral nifedipine 10 mg TDS and group B were given 0.2% nifedipine ointment for local application TDS. Both groups were compared in terms of pain relief and wound healing at 1st week, 3rd week and 2nd month after starting the treatment.**Results:** Mean age of the patients was 39.11±10.85 years. In the follow-up visits, there was significant improvement in VAS scores in both the groups. Oral and topical applications of nifedipine were comparable in terms of pain relief. On comparing oral nifedipine with topical nifedipine, improved healing rates were observed in patients who received the topical application, but the results were statistically insignificant.**Conclusion :** Both oral and topical nifedipine significantly improve pain relief and healing rate in patients with anal fissure and are comparable in terms of efficacy.**Keywords:** Anal Fissure, Nifedipine, Management.

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Introduction

Anal fissure with a lifetime incidence of 11% which mostly occurs between the 2nd and 4th decades of life is one of the most common and painful proctologic disease presenting in general surgery clinics [1]. Anal fissure is a longitudinal split in the anal mucosa extending from the anal verge towards the dentate line often associated with excruciating pain which may or may not be associated with bleeding per rectum. It may sometimes be associated with pruritus, swelling and discharge. In most of the cases in both men and women, fissure is located posteriorly in the midline. Posterior midline ulceration occurs mainly due to relative ischemia caused by increased resting sphincter pressure, which results in persistence of increased internal sphincter tone [2]. Lateral internal sphincterotomy (LIS) is the 'gold standard' therapy for the treatment of chronic anal fissure but is associated with higher incidence in ~30% patients with post-operative incontinence which may become chronic [3]. Due to this, alternative treatment modalities with various chemical compounds have been suggested to improve the blood supply to the ischemic area by reducing the resting anal pressure to facilitate healing. Topical

Calcium Channel Blockers (CCBs) have been found to be more efficacious than both hydrocortisone cream and lignocaine ointment [3]. For the treatment of anal fissure, oral Nifedipine is better in terms of pain relief as compared to topical Nifedipine whereas topical therapy is better in terms of wound healing. Since international data is inconsistent in support of both forms of treatment, this study was conducted to compare oral Nifedipine with topical Nifedipine in the management of anal fissure between 15 -70 years of age in terms of relief of symptoms and healing after 2 months so that better treatment option can be followed which will help in reducing morbidity and hospital visit.

Patients and Methods

A prospective randomized controlled study was conducted on 120 patients of anal fissure in the department of surgery at Netaji Subhash Medical College & Hospital, Bihta from Oct., 2021 – Sep., 2023. The study protocol was approved by the ethics committee of our hospital. With prior informed consent patients between 15 - 70 years of age presenting to the outpatient department of

surgery, with painful bleeding per rectum and diagnosed to have anal fissure on examination were studied. Study method was explained to all the patients and they were informed regarding the efficacy and adverse effects of the two forms of the drug.

A total of 120 patients were included, randomized into 2 groups comprising of 60 patients each, according to a table of random numbers (computer-generated). Group A received oral nifedipine in the form of 10 mg controlled release tablets thrice daily along with conservative treatment. Patients in group B were given 0.2% nifedipine ointment for local application into the anal canal thrice daily along with conservative treatment.

On the follow up visit at 1 week, 3 weeks and 2 months wound healing and pain relief were recorded. Wound healing was assessed for the development of granulation tissue and re-epithelialization by naked eye examination. A visual analogue scale was devised between 0 and 10 for pain measurement. Patients were asked to give points between 0 to 10 according to their

perception of pain. Patient feedback was taken for relief of symptoms in terms of no pain while passing stool and on inspection of wound healing on follow up visit.

SPSS software Version 24.0 was used for statistical analysis. For numerical values i.e. age and visual analogue scale for pain, means and standard deviations were presented. For categorical data like gender and wound healing, frequency and percentages were presented. Chi square test was done to compare the differences in frequency in both the groups. Using repeated measures analysis of variance, pain scores were compared and healing rates were compared using Fischer's exact test. $P < 0.05$ was considered statistically significant.

Results

Out of 120 patients, 57 (47.5%) were male and 63 (52.5%) were female patients. Mean age of the patients was 39.11 ± 10.85 years. There was no statistically significant difference between groups at start of the treatment, on the baseline visual analogue scale for pain (Table - 1).

Group	Pain score (mean \pm SD)	p-value
A	8.30 \pm 1.5	>0.05
B	8.27 \pm 1.53	

In the follow up visit at 1st week, 3rd week, and 2nd month, there were significant improvement in VAS scores in both groups (Table - 2).

Group	Pain score (mean \pm SD)			p-value
	1 st week	3 rd week	2 nd month	
A	5.35 \pm 1.70	1.89 \pm 2.62	1.11 \pm 1.48	>0.05
B	4.61 \pm 1.79	1.08 \pm 1.51	0.7 \pm 1.58	

Oral and topical applications of nifedipine were comparable in terms of pain relief in patients with anal fissure. Healing was assessed among the two treatment groups at the end of 2 months. Healing was seen in 44 out of 60 patients (73.33%) in group A as compared to 55 out of 60 patients (91.6%) in group B (Table - 3).

Group	Healing			p-value
	Present	Absent	Total	
A	44	16	60	>0.05
B	55	5	60	

Fischer's exact test was used to analyze the results. On comparing oral nifedipine with topical nifedipine, more healing rates were observed in patients who received the topical application, but the results were statistically insignificant.

Discussion

The recent evidence shows that anal fissure is due to hypertonicity of anal sphincter leading to local ischemia, especially in the region of posterior commissure. Calcium channel blockers inhibit Calcium influx through voltage-gated L-type

calcium channels in smooth muscles, leading to smooth muscle relaxation and increased blood flow. These drugs act against the basic pathophysiology behind the disease and facilitate wound healing. Calcium channel blockers were evaluated for the treatment of anal fissure. Orsay C et al reported that calcium channel blockers can be used to treat chronic anal fissures [4].

In our study, comparison of VAS scores for pain relief between two groups revealed comparable results for oral nifedipine with topical nifedipine at all follow up visits. The effectiveness of topical

nifedipine in providing pain relief was also reported by Ahsan Ali Mirza and Muhammad Asif et al, who reported a significant improvement in pain, measured using VAS scores, which reduced from 6.02 to ≤ 2 in their study [5].

Healing rate with topical nifedipine (91.6%) was higher when compared with oral nifedipine (73.33%) in our study. The healing rates between groups were comparable but statistically insignificant. Perrotti et al reported a healing rate of 94.5% after use of 0.3% nifedipine gel [6]. Ezri and Susmallian reported a similar observation of healing rate of 89% using 0.2% topical nifedipine [7]. A study conducted by Agaoglu N et al reported a healing rate of 60% after twice oral daily dosing of 20 mg of nifedipine in the treatment of anal fissure [8]. But a study conducted by Farzaneh Golfa et al reported that topical nifedipine had a statistically significant success rate for pain relief and fissure healing compared to oral nifedipine.

Incidence of side effects was more in the group taking oral nifedipine as compared to group with topical nifedipine in our study. Mustafa et al reported similar results with 10% incidence of side effects with oral nifedipine [9]. Topical nifedipine caused minimal side effects as compared to oral nifedipine. Our results are comparable with the study conducted by Ezri and Susmallian, who reported only 5% incidence of side effects in patients treated with topical nifedipine [7].

Conclusion

Both oral and topical nifedipine significantly improve pain relief and healing rate in patients with anal fissure and are comparable in terms of efficacy.

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