

Original Research Article

CHEMICAL SPHINCTEROTOMY VERSUS SURGICAL INTERNAL SPHINCTEROTOMY IN THE MANAGEMENT OF CHRONIC FISSURE IN ANO

Niharika Adusumilli¹, Krishna Chowdary Amirineni², Kola Praveen Kumar³, Rao Haneesh⁴, R. Indu⁵, S B J L. Harshini⁶

^{1,2}Assistant Professor, Department of General Surgery, Kamineni Academy of Medical Sciences & Research Centre, LB Nagar, Hyderabad, Telangana, India.

^{3,4,5,6}Postgraduate, Department of General Surgery, Kamineni Academy of Medical Sciences & Research Centre, LB Nagar, Hyderabad, Telangana, India.

Received : 17/04/2024
Received in revised form : 05/06/2024
Accepted : 20/06/2024

Corresponding Author:

Dr. Krishna Chowdary Amirineni,
Assistant Professor, Department of
General Surgery, Kamineni Academy
of Medical Sciences & Research
Centre, LB Nagar, Hyderabad,
Telangana, India.
Email: amirinenikrishna@gmail.com

DOI: 10.5530/ijmedph.2024.2.185

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2024; 14 (2); 958-964

ABSTRACT

Background: To compare the efficacy of 2% Diltiazem (chemical sphincterotomy) with lateral internal sphincterotomy in the management of chronic fissure in ano.

Material and Methods: This study was undertaken mainly to study the outcomes of chemical sphincterotomy, and surgical sphincterotomy in the management of chronic fissure in ano. The present study is a prospective, observational, and comparative study, undertaken in the Department of General Surgery, Kamineni hospital L.B Nagar Hyderabad, Telangana.

Results: In the present study, the mean age of the study participants in Diltiazem group was 42.03 ± 17.46 , and surgical group was 38.50 ± 10.87 . In the Diltiazem group 66.7% were male, and 33.3% were female., and in the surgical group, 50% were male, and 50% female. 73.3% had pain on presentation in the Diltiazem group, and in surgical group 70% had pain. The mean pre-operative pain score (VAS score) in the conservative group was 4.72 ± 1.07 , and in surgical group was 4.81 ± 1.20 . In the Diltiazem group bleeding per rectum was present in 96.7%, and in surgical group 86.7%. Diltiazem group had Anterior fissure in 20%, and Posterior in 80%. 10% in surgical group had anterior fissure, and 83.3% had posterior fissure where as both anterior, and posterior fissures were seen in 6.7% of the surgical group. 72.7% in Diltiazem group, and 85.7% in surgical group had relief from pain after 2 weeks of follow up. 82.7% in the Diltiazem group, and 76.9% in surgical group had relief from bleeding per rectum after 2 weeks. In the present study, 81.8% in Diltiazem group, and 95.2% in surgical group had relief from pain after 4 weeks of follow up. 89.6% in the Diltiazem group, and 84.6% in surgical group had relief from bleeding per rectum after 4 weeks. 90.9% in Diltiazem group, and 100% in surgical group had relief from pain after 3 months of follow up. 93.1% in the Diltiazem group, and 96.1% in surgical group had relief from bleeding per rectum after 3 months of follow up. Significant difference observed with relation to relief from pain, and bleeding per rectum in both the groups as the p value is <0.05 . In the present study, 10% in the Diltiazem group had recurrence, and this observation was not statistically significant ($p>0.05$).

Conclusion: The present study concluded that Significant difference observed with relation to relief from pain, and bleeding per rectum in both the groups as the p value is <0.05 . In the present study, 10% in the Diltiazem group had recurrence, and this observation was not statistically significant ($p>0.05$). The primary treatment of choice in the management of Chronic fissure in ano should be Chemical sphincterotomy with 2% Topical Diltiazem gel, while the surgical method must be kept reserved for the non- responders and recurrent fissures.

Keywords: Diltiazem, fissure in ano, VAS Score, rectum, Bleeding.

INTRODUCTION

An anal fissure is a linear ulcer usually found in the midline, distal to the dentate line.^[1] Anal fissure most often is manifested with excruciating anal pain during defecation (because of its location extending onto the very sensitive anoderm), and bleeding.

Spasm of the internal anal sphincter, which results in pain, increased tearing, and decreased blood supply to the anoderm is caused due to a tear in the anoderm. This cycle of pain, spasm, and ischemia contribute to the development of a poorly healing wound that becomes a chronic fissure.^[2]

An acute fissure is a superficial tear in the distal anoderm. Chronic fissures develop ulceration, and heaped-up edges. They often have an associated external skin tag, and/or a hypertrophied anal papilla internally. Chronic fissures are usually more difficult to treat when compared to acute fissures, and might need surgery. Anal Fissures, most commonly present in the posterior midline 6'o clock, and around 15% present in the anterior part 12'o clock. Management mainly focuses on breaking the cycle of pain, spasm, and ischemia.^[3-5]

Surgery is the treatment of choice in the management. 95% of patients achieve healing with this line of treatment.

There is a need for alternate methods of treatment because of surgery related complications. Chemicals have the similar effect as surgery by relaxing the sphincter. Diltiazem, a calcium channel blocker has good healing rates with the least side effects.

In this study, healing rates are primarily compared between local treatment with Diltiazem, and lateral internal sphincterotomy. In terms of recovery of pain, bleeding per rectum, risk of incontinence, and recurrence.

Aim and Objectives

Aim

To compare the efficacy of 2% Diltiazem (chemical sphincterotomy) with lateral internal sphincterotomy in the management of chronic fissure in ano.

Objectives

The objectives were to compare the relief of symptoms as mentioned below in both modalities of treatment:

1. Recovery from pain.
2. Cessation of bleeding per rectum.
3. Incidence of anal incontinence.
4. Recurrence at 3 months.

MATERIAL AND METHODS

This study was undertaken mainly to study the outcomes of chemical sphincterotomy, and surgical sphincterotomy in the management of chronic fissure in ano. The present study is a prospective, observational, and comparative study, undertaken in the Department of General Surgery, Kamineni hospital L.B Nagar Hyderabad, Telangana.

Study Design

Place of study: Kamineni Academy of Medical Sciences And Research Centre, L B Nagar, Hyderabad

Study period: September 2019 – September 2021

Sample size: 60 patients.

Type of Study: Prospective observational comparative study.

Inclusion Criteria

1. Symptomatic chronic fissure in ano.

Exclusion Criteria

1. Pregnant or lactating women.
2. Inflammatory bowel disease, tuberculosis, malignancy.
3. Prior anal surgery.
4. Previously refractory to 2% topical Diltiazem.

Method of Data Collection

Institutional Ethics Committee permission was sought before the present study was started. After informed consent, all patients presenting to outpatient department of General Surgery, with symptoms of anal fissure were examined thoroughly, and a detailed history were recorded in a pre- designed proforma.

The patient was screened for the present study as per the inclusion, and exclusion criteria. If the patient fits into the inclusion criteria, the study was explained to the patient. Pros, and consequences discussed about both the procedures. Well informed consent was taken. If the patient was willing to be a part of the study he/she was included in the study.

Out of 60 patients thus selected for the present study, 30 patients were assigned in group I, and the remaining 30 patients in group II.

Chemical Sphincterotomy: Group I patients were treated for chronic anal fissure on outpatient basis, and they were given 2% topical diltiazem which was applied around the anal skin. They were asked to apply it thrice a day. The duration of this treatment was for six weeks. The patients were also advised to take a high fibre diet, and plenty of oral fluids during the course of treatment. They were also advised to take sitz bath thrice daily, regularly, and were also put on laxatives.

Surgical Sphincterotomy: Group II patients were treated on in-patient basis. They were operated using the lateral internal sphincterotomy method.

VAS is a 10cm horizontal line labeled as 'No Pain' at one end, and 'Worst pain imaginable' on the other end. The patient is asked to mark on this line where the intensity of pain lies. The distance from 'No pain' to the patient's mark numerically quantifies the pain

Verbal Rating Scale (VRS)

Pain as expressed by the patients with their own language, Verbal rating scale was rated as 0-10

0 – No pain

1-2 – Mild pain

3-5 – Moderate pain 6-7 – Severe pain

8-10 – Unbearable pain

Follow Up

All patients were followed for 3 months, and outcomes like relief from pain, bleeding per rectum,

and recurrence along with side effects like incontinence for flatus/faeces was noted in both groups of patients.

Statistical Analysis

Data was compiled, and analysed by using Microsoft excel software, and SPSS 17.0 Inc., IBM statistical system. The data was expressed as proportions, and means. Chi square test, and students t test was used to determine the efficacy of the treatment groups. P value of <0.05 was considered statistically significant.

RESULTS

AGE, AND GENDER

Age, and gender-wise distribution in the present study shows, out of the 20 male participants in the Diltiazem group 60%(12) were in <40-year category, and 40%(8) in >40-year group. In the surgical group, 60%(9) belong to <40 years, and 40% (6) belong to >40 years. Out of the 10 females in the Diltiazem group, 40%(4) in <40 year, and 60%(6) >40 years. In the surgical group, 60%(9) belong to <40 year, and 40%(6) belong to >40 year.

PAIN AT PRESENTATION

Distribution based on pain on presentation shows in the Diltiazem group 73.3%(22) had pain, and in the surgical group 70%(21) had pain.

The mean duration of pain in months in the Diltiazem group was 6.62 ± 3.99 , and in the surgical group was 6 ± 3.46 .

PAIN SCORE AT PRESENTATION

The mean pre-operative pain score in the the Diltiazem group was 4.72 ± 1.07 , and in the surgical group was 4.81 ± 1.20 .

BLEEDING PER RECTUM AT PRESENTATION

In the present study distribution based on bleeding per Rectum on presentation, in the Diltiazem group, it was 96.7%(29), and in the surgical group 86.7%(26) had bleeding per rectum.

The mean duration of bleeding per Rectum in months in the Diltiazem group was 6.30 ± 3.32 , and in the surgical group was 5.56 ± 3.18 .

CONSTIPATION

Distribution based on constipation on presentation, in the Diltiazem group it was 73.3% (22), and in the surgical group 66.7%(20).

PRURITIS

Distribution based on pruritus on presentation, in the Diltiazem group it was 6.7% (2), and in the surgical group 10%(3).

PERSONAL HISTORY

Distribution based on fluid intake, in the Diltiazem group 63.3%(19) <1.5 litre fluid intake, and 36.7%(11) had >1.5 litre fluid intake., and in the surgical group, 60%(18) had fluid intake <1.5 litre fluid intake, and 40 % (12) with >1.5 litre fluid intake. 50%(15) of the Diltiazem group had alcohol intake, and 46.7%(14) of the surgical group had a history of alcohol intake.

20% (6) of the Diltiazem group were smokers, and 16.7% (5) of the surgical group were smokers 26.7%(8) in the Diltiazem group, and 23.3%(7) in the surgical group had regular bowel habits.

CLINICAL FINDINGS

Based on the fissure site, Anterior in 20%(6) in the Diltiazem group, and 10%(3) in the surgical group. Posterior in 80%(24) in the Diltiazem group, and 83.3% (25) in the surgical group. Anterior + Posterior in 6.7%(2) of the surgical group.

All of the surgical, and Diltiazem group (100%) had a minimum of 1 fissure. 90%(27) of both the groups had a sentinel pile. 6.7%(2), and 10%(3) had discharge present. A fistulous opening was not present in the study participants in both groups.

CLINICAL FINDINGS CONTD

30%(9) of the Diltiazem, and 36.7%(11) of surgical had tenderness on palpation.

10% (3) of the Diltiazem, and 13.3%(4) of surgical had abnormal anal tone. 6.7% (2) of the Diltiazem, and 10%(3) of surgical had discharge.

FOLLOW UP: 2 WEEKS

In the present study, 72.7%(16) in the Diltiazem group, and 85.7%(18) in the surgical group had relief from pain after 2 weeks of follow-up.

82.7%(24) in the Diltiazem group, and 76.9%(20) in the surgical group had relief from bleeding per rectum.

FOLLOW UP: 4 WEEKS

In the present study, 81.8%(18) in Diltiazem group, and 95.2%(20) in surgical group had relief from pain after 4 weeks of follow up.

89.6%(26) in the Diltiazem group, and 84.6%(22) in surgical group had relief from bleeding per rectum.

FOLLOW UP: 3 MONTHS

In the present study, 90.9%(20) in Diltiazem group, and 100% (21) in surgical group had relief from pain after 4 weeks of follow up.

93.1%(27) in the Diltiazem group, and 96.1%(25) in surgical group had relief from bleeding per rectum.

FOLLOW UP SUMMARY

Significant difference observed with relation to relief from pain, and bleeding per rectum in both the groups as the p value calculated to be <0.05.

None of the patients in the Diltiazem group experienced any side effects like Headache or Hypotension.

None of the surgical patients experienced any post-operative pain or transient incontinence for flatus.

HEALING OF FISSURE

In the present study, based on healing of fissure at 4 weeks was 63.3%(19) in the Diltiazem group, and 40% (12) in the surgical group.

At 3 months 90%(27) of the diltiazem group was healed whereas it was 100%(30) in the surgical group.

RECURRENCE AT 3 MONTHS FOLLOW UP

In the present study, 10% (3) in the Diltiazem group had recurrence, and this observation was not statistically significant ($p > 0.05$.)

Table 1: Age, and Gender Distribution

	Diltiazem		Surgical		Total	
	Male	Female	Male	Female	N	%
<40	12 (60%)	4 (40%)	9 (60%)	9 (60%)	34	56.67%
>40	8 (40%)	6 (60%)	6 (40%)	6 (40%)	26	43.33%
Total	20 (100%)	10 (100%)	15 (100%)	15 (100%)	60	100%

Table 2: Pain (At Presentation)

	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
Yes	22	73.3%	21	70%	43	71.7%
No	8	26.7%	9	30%	17	28.3%
Total	30	100%	30	100%	60	100%
Duration of Pain	6.62 ± 3.99		6 ± 3.46			

Table 3: Preoperative Pain Score (At Presentation)

VAS	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
3	2	9.1%	2	9.5%	4	9.3%
4	8	36.4%	7	33.3%	15	34.9%
5	8	36.4%	8	38.1%	16	37.2%
6	2	9.1%	2	9.5%	4	9.3%
7	2	9.1%	1	4.8%	3	7%
8	0	0.0%	1	4.8%	1	2.3%
Total	22	100%	21	100%	43	100%
Mean ± SD	4.72 ± 1.07		4.81 ± 1.20		4.76 ± 1.13	

Table 4: Bleeding Per Rectum

	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
Yes	29	96.7%	26	86.7%	55	91.7%
No	1	3.3%	4	13.3%	5	8.3%
Total	30	100.0%	30	100.0%	60	100%
Duration in months	6.30 ± 3.32		5.56 ± 3.18			

Table 5: Constipation

	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
Yes	22	73.3%	20	66.7%	42	70%
No	8	26.7%	10	33.3%	18	30%
Total	30	100.0%	30	100.0%	60	100%
Duration	10.93 ± 8.06		9.20 ± 7.57			

Table 6: Pruritus

	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
Yes	2	6.7%	3	10.0%	5	8.3%
No	28	93.3%	27	90.0%	55	91.7%
Total	30	100.0%	30	100.0%	60	100%
Duration	2.50 ± 0.70		2 ± 1.0			

Chi square test = 0.21, p=0.64, Not statistically significant

Table 7: Personal History

		Diltiazem		Surgical		P value
		N	%	N	%	
Fluid intake	< 1	8	26.7%	8	26.7%	0.98
	> 1	4	13.3%	4	13.3%	
	<1.5	7	23.3%	6	20.0%	
	>1.5	11	36.7%	12	40.0%	
Alcohol	Yes	15	50.0%	14	46.7%	0.79
	No	15	50.0%	16	53.3%	
Smoker	Yes	6	20.0%	5	16.7%	0.74
	No	24	80.0%	25	83.3%	
Bowel habits	Regular	8	26.7%	7	23.3%	0.76
	Irregular	22	73.3%	23	76.7%	

Table 8: Clinical Findings

		Diltiazem		Surgical		P value
		N	%	N	%	
Fissure site	Anterior	6	20.0%	3	10.0%	0.38
	Posterior	24	80.0%	25	83.3%	
	Anterior + Posterior	0	0.0%	2	6.7%	
Number	1	30	100.0%	30	100.0%	-
Sentinel pile	Yes	27	90.0%	27	90.0%	1
	No	3	10.0%	3	10.0%	
Discharge	Yes	2	6.7%	3	10.0%	0.64
	No	28	93.3%	27	90.0%	
Fistulous opening	Yes	0	0.0%	0	0.0%	-
	No	30	100.0%	30	100.0%	

Table 9: Clinical Findings

		Diltiazem		Surgical		P value
		N	%	N	%	
Tenderness	Yes	9	30.0%	11	36.7%	0.58
	No	21	70.0%	19	63.3%	
Anal tone	Spasm	3	10.0%	4	13.3%	0.69
	Normal	27	90.0%	26	86.7%	
Induration	Yes	0	0.0%	0	0.0%	-
	No	30	100.0%	30	100.0%	
Discharge	Yes	2	6.7%	3	10.0%	0.64
	No	28	93.3%	27	90.0%	

Table 10: Follow Up: 2 Weeks

		Diltiazem		Surgical		P value
		N	%	N	%	
Relief from pain	Yes	16	72.7%	18	85.7%	0.12
	No	6	27.3%	3	14.3%	
Bleeding per Rectum	Yes	24	82.7%	20	76.9%	0.24
	No	5	20.0%	6	23.1%	
Anal incontinence	Yes	0	0.0%	0	0.0%	-
	No	30	100.0%	30	100.0%	

Table 11: Follow Up: 4 Weeks

		Diltiazem		Surgical		P value
		N	%	N	%	
Relief from pain	Yes	18	81.8%	20	95.2%	0.13
	No	4	18.2%	1	4.8%	
Bleeding per Rectum	Yes	26	89.6%	22	84.6%	0.72
	No	3	10.4%	4	15.4%	
Anal incontinence	Yes	0	0.0%	0	0.0%	-
	No	30	100.0%	30	100.0%	

Table 12: Follow Up: 3 Months

		Diltiazem		Surgical		P value
		N	%	N	%	
Relief from pain	Yes	20	90.9%	21	100.0%	1
	No	2	9.1%	0	0.0%	
Bleeding per Rectum	Yes	27	93.1%	25	96.1%	0.55
	No	2	6.9%	2	7.7%	
Anal incontinence	Yes	0	0.0%	0	0.0%	-
	No	30	100.0%	30	100.0%	

Table 13: Follow UP

		Diltiazem		Surgical		P value
		N	%	N	%	
Relief from pain	2 weeks	16	72.7%	18	85.7%	0.04*
	4 weeks	18	81.8%	20	95.2%	
	3 months	20	90.9%	21	100.0%	
	2 weeks	24	82.7%	20	76.9%	

Bleeding per Rectum	4 weeks	26	89.6%	22	84.6%	0.04*
	3 months	27	93.1%	25	96.1%	

Table 14: Healing of Fissure

	Diltiazem		Surgical	
	N	%	N	%
2nd week	0	0%	0	0%
4th week	19	63.3%	12	40%
3 months	27	90%	30	100%
Total	30	100.0%	30	100.0%

Table 15: Recurrence at 3 Months Follow UP

	Diltiazem		Surgical		Total	
	N	%	N	%	N	%
Yes	3	10%	0	0%	3	5%
No	27	90%	30	100%	57	95%
Total	30	100.0%	30	100.0%	60	100%

Chi square test = 3.10, p=0.07, Not statistically significant

DISCUSSION

AGE DISTRIBUTION

In the present study, the mean age of the study participants in Diltiazem group was 42.03 ± 17.46 , and the surgical group was 38.50 ± 10.87 . 53.3% (16 cases) were in <40 years group, and 46.7% (14 cases) were >40 years in the Diltiazem group. In the surgical group, 60% (18 cases) were in <40 years, and 40% (12 cases) were >40 years.

Our results are comparable with that of Kanche J et al.^[6] reported a mean age in the diltiazem group was 39.32 years, and the mean age of patients in surgery group was 41.35 years. In another study, conducted by Palazzo,^[7] mean age was 44 (17-88). However a study conducted Ammari, and Bani-Hani,^[8] observed the mean age of presentation of fissure as 33(16-68) years. The average age of presentation varies across studies conducted internationally, and regionally. Jonas et al.^[9] study was described in detail, mean age of presentation of anal fissure was 42(22-83) years. Syed,^[10] described mean age of 39(12-95) in his study. Garcea G,^[11] mentioned a mean age of 40.3 years in her study. Hananel, and Golden,^[12] described it as 39.9 (13.5-95) in his study.

Abhivardhan et. Al,^[13] reported the mean age of occurrence of fissure is 34.92 years. Vaithanathan et al,^[15] in their study mean age of the patients was 36.3 in group A, and 35.8 in group B. Umer Farooq et al¹⁴ in their study reported that All patients were between the ages of 20, and 50, with a mean age of 35.84 ± 8.95 .

GENDER DISTRIBUTION

Distribution based on gender shows in the Diltiazem group 66.7% were male, and 33.3% were female. In the surgical group, 50% were male, and 50% female. Similar findings were reported by Kanche J et al⁶ where both the groups were comparable in terms of distribution of males, and females in the present study.

SITE OF FISSURE

In the present study, Based on fissure site, Anterior in 20% in Diltiazem group, and 10% in surgical

group. Posterior in 80% in Diltiazem group, and 83.3% in surgical group. Anterior + Posterior in 6.7% of surgical group.

Boulos,^[16] did a study which says posterior fissure (85.7%) is more common than anterior fissure (14.2%).

PAIN SCORE (VAS)

In our study, the mean pre-operative pain score (VAS score) in the Diltiazem group was 4.72 ± 1.07 , and in surgical group it was 4.81 ± 1.20 .

In the present study, 72.7%,^[16] in Diltiazem group, and 85.7%,^[18] in surgical group had relief from pain after 2 weeks of follow up. 81.8% in Diltiazem group, and 95.2% in surgical group had relief from pain after 4 weeks of follow up, and 90.9%,^[20] in Diltiazem group, and 100%,^[21] in surgical group had relief from pain after 4 weeks of follow up.

Vaithianathan et al,^[15] reported that at the time of presentation, the mean VAS score was 6.18 (standard deviation (SD) of 1.25) for group A, and 6.31 (SD 1.28) for group B patients. The mean VAS score of the patients in group A at 1st week of review was 3.93 (SD 2.31) while that of patients in group B was 3.47 (SD 1.95). At the end of 4th week, the corresponding mean VAS scores were 3.58 (SD 2.19), and 1.93 (SD 1.12) respectively. The mean VAS score for patients in group A at the end of 6th week was 3.38 (SD 2.10), whereas group B patients had almost complete pain relief with a mean score of 1.87 (SD 1.08)

HEALING OF FISSURE

In the present study, at 4th week of follow up 63.3% in Diltiazem 2% group, and in surgical group it was 40% showed healing. At 3 months follow up, 90% in the diltiazem group, and 100% in surgical group showed recovery.

Abhivardhan et al,^[13] reported that, Fissure was completely healed in 37 (92.5%) out of 40 patients by 6 weeks treatment with Diltiazem gel. Study conducted by J. S. Knight et al,^[17] reported a healing rate of 75% post 8-12 weeks treatment with Diltiazem gel.

U. K. Srivastava et al,^[18] reported a healing rate of 80% with Diltiazem gel in 12 weeks. Comparison between Diltiazem gel therapy, and internal

sphincterotomy showed a statistically significant difference in pain relief ($P < 0.025$), and fissure healing ($P = 0.020$).

RECURRENCE

In the present study, 10% in the Diltiazem group had recurrence, and this observation was not statistically significant ($p > 0.05$.)

Abhivardan et al,^[13] reported that, Recurrence was seen in 3 (7.5%) patient in the Diltiazem group, and none in the LIS group.

A recent meta-analysis (Nelson et al,^[19]) of 15 trials ($n = 779$) compared healing rates for medical therapy with healing rates for operative intervention. The patients in the former group had a higher risk of persistence or recurrence of anal fissure when compared to the surgical group (OR 0.11, 95 % CI 0.06 to 0.23).

CONCLUSION

In this study it was observed that Chemical sphincterotomy with 2% Topical Diltiazem in the management of Chronic fissure in ano in comparison with surgical sphincterotomy has:

1. Early recovery of bleeding per rectum with lesser recovery time.
2. Least side effect profile, including risk of fecal incontinence.
3. Needs thorough patient education, motivation, and compliance

The primary treatment of choice in the management of Chronic fissure in ano should be Chemical sphincterotomy with 2% Topical Diltiazem gel, while the surgical method must be kept reserved for the non-responders and recurrent fissures.

Limitations

In the present study, the sample size is small, and the follow up is only for 3 months. A larger study with a longer follow up is required.

Conflict of Interest: None

Funding Support: Nil.

REFERENCES

1. Sabiston DC, Townsend CM, Beauchamp RD, Evers BM, Mattox KL. Sabiston textbook of surgery: the biological basis of modern surgical practice. Wb Saunders; 2001.

2. F. Charles Brunicaudi, MD, FACS, Dana K., andersen, MD, FACS, tenth edition, chapter 29, Schwartz's Principles of Surgery.
3. Williams NS, Bullstrode CJ, O'Connell PR. Bailey & Love's short practice of surgery. Annals of the Royal College of Surgeons of Engl, and. 2010 Mar;92(2):178.
4. Saleem AE, Mohamed EA, Elghadban HM, Abdelghani GM. Potential combination topical therapy of anal fissure: development, evaluation, and clinical study†. Dr. ug Deliv. 2018 Nov;25(1):1672-1682.
5. Siddiqui J, Fowler GE, Zahid A, Brown K, Young CJ. Treatment of anal fissure: a survey of surgical practice in Australia, and New Zeal, and. Colorectal Dis. 2019 Feb;21(2):226-233.
6. Kenche J, Reddy C. Efficacy of chemical sphincterotomy with 2% diltiazem cream vs. surgical sphincterotomy in the management of chronic fissure in ano: a clinical study. International Surgery Journal. 2018 Nov 28;5(12):4047-51.
7. Palazzo FF, Kapur s, Steward M, Cullen PT. Glycerol trinitrate treatment of chronic fissure in ano: one year's experience with 0.5% GTN paste. J R coll surg Edin 2000; 45:168-70.
8. Ammari FT, Bani-Hani KE, Faecal incontinence in patients with anal fissure: A consequence of internal sphincterotomy or a feature of the condition. J R Coll Surg Edin Irel 2004; 3:225-9.
9. Jonas M, Lund JN, sholefield JH. Topical 0.2% glycerol trinitrate ointment for anal fissures: long term efficacy in routine clinical practice. Colorectal Dis 2002; 4:317-20.
10. Sayed SA, Waris S, Ahmed E. Lateral internal anal sphincterotomy for anal fissure: with or without associated anorectal procedures. J Coll Phy Sur Pak 2003; 13:436-9.
11. Garcea G, Sutton C, Mansoori s. Lateral sphincterotomy for the treatment of chronic anal fissure. Colorectal Dis 2003; 5:311-4.
12. Hananel N, Gordon PH. Re-examination of clinical manifestations, and response to therapy of fissure in ano. Dis Colon Rectum. 1997; 40:229-33.
13. Abhivardan D, Sivakumar VV, Rama Rao K, Balaji K, Sujatha M, Ramu L. A comparative study between 2% diltiazem application versus lateral sphincterotomy in fissure in ANO. Int J Contemporary Med Res 2017;4 (3):751- 2.
14. Farooq U, Farooq S, Zahir S, Chaudhry AM. Comparison of surgical, and chemical sphincterotomy in the management of acute anal fissures. Pak J Med Health Sci. 2012 Jan 1; 6:24-31.
15. Vaithianathan R, Panneerselvam S. R, andomised prospective controlled trial of topical 2% diltiazem versus lateral internal sphincterotomy for the treatment of chronic fissure in ano. Indian Journal of Surgery. 2015 Dec 1;77(3):1484-7.
16. Boulos PB, Araujo JGC. Adequate internal sphincterotomy for chronic anal fissure: subcutaneous or open technique? British Journal of Surgery. 1984; 71:360-62.
17. Knight et al; Topical diltiazem ointment in the treatment of chronic anal fissure; British Journal of Surgery; 2001; 88:553-556.
18. U. K. Srivastava, B. K. Jain, Praveen Kumar, Yusuf Saifee; A comparison of the effects of Diltiazem, and Glyceroltrinitrate ointment in the treatment of chronic anal fissure - a r, andomized clinical trial; Surgery Today. 2007; 37:482-485.
19. Nelson RL, Thomas K, Morgan J, Jones A. Non-surgical therapy for anal fissure. Cochrane database of systematic reviews. 2012(2).