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A Comparison of Surgical Sphincterotomy and Medical Treatment for Chronic Anal Fissure

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ABSTRACT

BACKGROUND:

An anal fissure is one of the common anorectal diseases resulting from a split or tear in the anal canal's skin, it causes pain, bleeding, and emotional stress. The occurrence of anal fissures is a common medical problem that affects both sexes equally. Anal fissures are longitudinal or elliptical tears or ulcers in the distal anal canal, extending below the dentate line to the anal verge. Anal fissures are common in people of all ages, especially teenagers and young adults. Some studies suggest that as many as one in five persons develop fissures during their lifetime. Anal fissures occur predominantly in the midline and most commonly 90% are located posteriorly and 10% anteriorly. After childbirth, women tend to develop anterior fissures; less than 1% of patients have fissures both in anterior and posterior positions. Most anal fissures are acute and resolve spontaneously or with conservative medical management in 10–14 days. It takes 6–8 weeks for the actual tear to heal. Fissures that fail to heal become chronic.

AIM: To determine whether the medical Treatment of anal fissures can be an effective alternative to surgery. The aim of the present study was to compare the efficacy of diltiazem and nitroglycerin topical ointments with surgical lateral internal sphincterotomy.

MATERIAL AND METHOD:

This Retrospective study was conducted under the Department of General surgery. Based on the selection criteria 80 patients attending general surgery OPD having anal fissure were screened for eligibility, and all those 60 who fulfilled the inclusion criteria were eligible to participate in the study. The purpose of the study was explained to patients. Informed written consent was taken prior to the actual participation of the patient in the study. After admission, short history was taken and a physical and clinical examination was conducted on each patient admitted to the surgery department with features of the perianal fissure. Informed written consent was taken from the patients or their guardians willing to participate in the study.

RESULTS:

Response to treatment (both pain relief and fissure healing) was not seen in 15 patients of group A five people did not want to continue medical treatment and underwent surgery. seven patients who received medical treatment, after three months follow up, in five patients the pain disappeared. The pain continued for two people who were treated surgically. In group B, there were 10 patients without response until 3 months of follow-up, of whom 6 people had pain relief finally and the other 3 underwent surgery voluntarily. All people in group C had complete pain relief, but fissure healing was not completed in 3 people until month 3.

CONCLUSION:

In conclusion the recent developments in the treatment of chronic anal fissures, it is possible to draw the conclusion that conservative treatments such as those involving lignocaine, nitroglycerine, botulin toxin, or oral nifedipine are all effective methods that may reduce the need for anesthesia and surgery in a significant number of patients. Despite good responses to medical treatment, surgical treatment was the more effective medical treatment of choice for patients who are willing to have surgery.

KEYWORDS: Anal fissure; Diltiazem ointment; Nitroglycerin; Lateral internal sphincterotomy, Anal dilatation, Diltiazem, Chronic anal fissure, Clinical trial.

INTRODUCTION:

An anal fissure is a longitudinal wound in the anoderm just below the dentate line, and it is often

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located at the posterior midline of the anus.[1,2] It is one of the most common pathologies of the anorectal region and can change the quality of life as it causes patent pain and emotional stress while defecating.[1,3] Causes are still unknown, but it may be due to increased sphincter pressure which is significantly higher in patients with an anal fissure, in companion with the passage of stiff fecal material.[4,5]

Anal fissures can be acute or chronic. Acute fissures are shallow tears in the ANO derm. Symptoms associated with acute fissures include anal pain, spasm, and/or bleeding with defecation. Chronic fissures are present for more than 6 to 8 weeks. Features of a chronic fissure are exposed fibers of internal anal sphincters at the base, hypertrophied anal papilla proximally, and a skin tag or sentinel pile distally.[6] The diagnosis can typically be confirmed by physical examination and Endoscopy in the office if tolerated by the patient. By gentle separation of the buttocks and examination of the anus, a linear separation of the ANO derm can be identified at the lower half of the anal canal.[7] Hypertonicity of the internal anal sphincter, mucosal ischemia along the posterior midline, chronic constipation, and injury from hard stools are the factors causing the development of fissures in ANO. Treatment of anal fissures focuses on breaking the cycle of pain, spasms, and ischemia. First-line therapy to minimize anal trauma includes bulk agents, stool softeners, and warm sitz baths.[8]

Anal fissures cause bleeding on toilet paper, underwear, and the toilet. Most chronic fissures are posterior midline, although 10% of women and 1% of men have them anteriorly.[9-10] Anal fissures occur 1 in 350 people, are equally common in males and women and are most common in adults 15–40.[11] Conservative therapy will focus on constipation treatment. Acute and chronic anal fissures should be treated non-surgically.[12,13] It includes topical nitroglycerin, diltiazem, and botulinum toxin examples.[14] Other therapies include warm sitz baths, topical anesthetics, high-fiber diets, and stool softeners.[15,16] After one to three months of medical treatment, anal fissures may require surgery. Not the first treatment. In the early 1990s, repeatable anal dilatation was effective with few side effects.[17] Anal dilation, or Lord's procedure, has fallen out of favor because of fecal incontinence. [18] Fissurectomy treats persistent anal fissures. In older, multiparous, normal-anal-tone, and anorectal surgery patients, several surgeons used this procedure to prevent incontinence.[19]

An anal fissure is known as Acute type; mostly relieving in one week and chronic; usually lasting for more than 6 weeks, having a hypertrophic papilla of the fissure and a sentinel tubercle and exposure of sphincter muscle fibers on the floor of the wound.[20,21] Based on the probable pathophysiology, treatment of anal fissures usually involves the reduction of sphincter pressure whether by physical or chemical means. Since the introduction of lateral internal sphincterotomy by Eisenhammer in 1951, this procedure has been used with increasing frequency and is now considered the surgical treatment of choice for anal fissures.[22] The method immediately relieves symptoms by reducing pathologically elevated anal canal pressures.[23] Lateral internal sphincterotomy (LIS) is the preferred surgery for anal fissures due to its simplicity and 95% success rate.[24]

Most anal fissures are acute and resolve spontaneously or with conservative medical management in 10–14 days. It takes 6–8 weeks for the actual tear to heal. Patients usually need further treatment or intervention, when the fissure becomes large and deep, forming chronic anal fissures.[25] we are going to compare the efficacy of diltiazem and nitroglycerin topical ointments with surgical lateral internal sphincterotomy.

MATERIAL AND METHODS

This Retrospective study was conducted under the Department of General surgery. Based on the selection criteria 80 patients attending general surgery OPD having anal fissure were screened for eligibility, and all those 60 who fulfilled the inclusion criteria were eligible to participate in the study. The purpose of the study was explained to patients. Informed written consent was taken prior to the actual participation of the patient in the study. After admission, short history was taken and a physical and clinical examination was conducted on each patient admitted to the surgery department with features of the perianal fissure. Baseline investigations, as routinely required, were done followed by imaging studies. Patients were then explained about their disease process and the possible line of management. Informed written consent was taken from the patients or their guardians willing to participate in the study.

Inclusion criteria

- ✓ Patients above the age of 18 years with ANO rectal ailments and patients with a history of recurrence after prior anal surgery.
- ✓ Suffering from anal fissure for more than 6 weeks, exposure of sphincter muscle fibers, having sentinel tubercle, and having hypertrophied anal papilla of the anal fissure to confirm chronicity.

Exclusion criteria

- ✓ Patients below the age of 18 years with ANO rectal malignancies, pregnant/ lactating mothers, and patients having

fissures in ANO with gross co-morbid conditions like congestive cardiac failure, chronic renal failure, myocardial ischemia, and HIV-positive patients.

- ✓ People with simultaneous anal abscesses, inflammatory bowel diseases (IBD), heart failure, breast-feeder women, and people without cooperation.
- ✓ Patients using any other therapies along with topical diltiazem therapy except for rescue medication

60 patients were given 8 weeks of topical ointment application (0.2% nitroglycerin or 2% diltiazem applied every 12 hours) followed by a warm sitz bath constituted the medical treatment. Patients whose symptoms got relieved completely will be left for further data analysis and follow-up while the remaining will be subdivided into left lateral internal sphincterotomy and lord's dilatation through a randomized process using the block method. The medical records of the patients reviewed and demographic data (sex, age), medical history, referral symptoms, and findings, first-second-fourth-eighth week examination findings, response to the treatment (pain relief and evaluation of the fissure, erythema, and/or inflammation), side effects of the treatment and presence of recurrence of the disease were recorded and analyzed.

Patients were randomly divided into 3 nearly equal groups:

group A- those being treated with topical nitroglycerin ointment,

group B- patients using topical diltiazem ointment and

group C- patient underwent lateral internal sphincterotomy by a General Surgeon.

Patients were followed at first, second, fourth, and ultimately at eight weeks after intervention. Response to treatments was defined as both pain relief and fissure healing (complete epithelialization of wound with no erythema or inflammation). Patients were also followed for probable complications and side effects of either medical or surgical treatment at 3, 6, and 12 months after.

STATISTICAL ANALYSIS

Acquired data were analyzed chi-square test and the fisher exact test using SPSS version 18. According to the results of the comparison between pain and healing in two groups (A and C or B and C), the P calculates with the Chi^2 test and Fisher exact test was less than 0.001. The effect size of the test was 0.282 or 0.239, so the power of sample size respectively was 90% and 97%.

RESULT: -

Most complaints of patients were first pain and then anal bleeding. The average period of complaints was at least 9 months. Fissures were situated 85% posteriorly and 15% anteriorly. After starting the therapies for each group, patients were followed in the first, second, fourth, and eighth weeks for assessing responses and problems. Response to therapy in terms of pain reduction in groups A and B were not observed, respectively, in 12 and 10 patients at the end of the eighth week. In Group A, seven people did not want to continue medical treatment and underwent surgery. five patients who received medical treatment, after three months of follow-up, in three patients the pain disappeared. The pain continued for two people who were treated surgically.

Table 1: Results of pain relief and of fissure healing

Results of pain relief				
Total Person	**Person-1st week**	**Person-2nd week**	**Person-4th week**	**Person-8th week**
Group A	20(40 %)	26(48%)	33(63%)	42(77%)
Group B	30(52%)	24(40%)	38(65%)	47(83%)
Group C	50(93%)	41(80%)	52(100%)	52(100%
Results of fissure healing				
Total Person	**Person-1st week**	**Person-2nd week**	**Person-4th week**	**Person-8th week**
Group A	0(0%)	0(0%)	1(3%)	38(74%)
Group B	0(0%)	0(0%)	12(25%)	43(83%)
Group C	0(0%)	15(30%)	33(70%)	45(94%)

Response to treatment (both pain relief and fissure healing) was not seen in 15 patients of group A five people did not want to continue medical treatment and underwent surgery. seven patients who received medical treatment, after three months follow up, in five patients the pain disappeared. The pain continued for two people who were treated surgically. In group B, there were 10 patients without response until 3 months of follow-up, of whom 6 people had pain relief finally and the other 3

underwent surgery voluntarily. All people in group C had complete pain relief, but fissure healing was not completed in 3 people until month 3.

Table 2. Demographic data

	NGT	Diltiazem	Surgery
Male	12	15	17
Female	8	5	3
Total	20	20	20

The mean age of the 60 study sample was 35.55 years, with the highest at 55 years and the lowest at 21 years. There were 44 (81%) males and 16 (19%) females in the study while 19 (39.06) % samples were from the 31-40 years age group followed by 18 (31.25 %) subjects in the 41-50 years age group.

DISCUSSION

Anal fissure causes morbidity in otherwise healthy people. It causes pain, rectum hemorrhage, discomfort, and incapacity. Several pharmacological sphincter relaxants claim to work well, although surgery is still necessary. Lateral Internal Sphincterotomy is the gold standard for treating fissure-in-ANO. In 1818, Boyer recommended sphincterotomy for anal fissures.[24] Since **Eisenhammer launched LIS in 1959**,[23] it's been the preferred therapy for fissure-in-ANO. This research compares LIS with Lord's dilation. In our research, 60 chronic anal fissure patients had surgery. Recurrence and incontinence were also analyzed in detail. The research reports patient satisfaction and anal fissure healing. There have been many changes in the treatment of anal fissures in the last decade.[5] Medical treatment, as not injuring the anal sphincter, and being non-invasive, is presumed as the first option. [3,5,8] But surgical sphincterotomy remains the gold standard for the treatment of anal fissures.[6,7,11] Mostly used medications are diltiazem, nitric oxide derivatives, and botulinum toxin injections

Gagliardi et al.2012[26], who utilized 6 weeks of medical treatment, were more satisfactory. Perhaps, it may be explained by completing the treatment course over time. **Samindra Nath Basak et al2020**[27] study where pruritus (17.0%) and rectal hemorrhage (77.9%) were the two most frequent symptoms, with discomfort during feces (97.4%) coming in third. These findings are comparable to those made by **A. Tocchi et al.2004**[28] and **J.S. Khan et al.2009**[29] in which patients with anal fissures complained of discomfort (96–100%), rectal bleeding (80%), and itching (39%). **Al-Thoubaity F et al2020**[30] is worth highlighting that most patients (67%) had a posterior anal fissure, whereas substantially fewer patients had an anterior anal fissure. Similarly in our study posterior anal fissure was most common and it was present in 45 (70%) of patients, while anterior anal fissure was present in 19 (30%) of patients.

Recently, diltiazem has been found efficacious in the treatment of chronic anal fissures. Studies showed that oral intake and topical applications of diltiazem reduced anal pressure significantly. As compared with GTN, diltiazem reported minimal side effects, most of the side effects were facial flushing, mild headache because of changes of negligible diastolic pressure, and postural changes of blood pressure, which can be avoided by applying topical diltiazem at bedtime. [31, 32] Anal fissures are demonstrated by the paucity of arterioles at the anterior and posterior commissures of the distal anal canal sites. Besides this, chronic anal fissure patients usually have high rectal pressure and sphincter hypertonia, which can compromise local blood flow. Treatment with diltiazem relaxes the sphincter and enhances the local blood flow clearly by different pathways. [33]

A prospective clinical experiment was conducted by **Araujo et al.2010**[34] with 190 patients in three groups to compare medical therapy (n: 128) to LIS (n: 62). The researchers found pain alleviation rates of 100% for LIS after the eighth week (93% after two weeks and 100% at the end of the eighth week). Only seven percent of patients in the group who had LIS were unhappy with the outcomes of their therapy, according to the findings of research that compared the effects of Botox and LIS. [35] In a research conducted at a single center, **Salih et al.2017**[36] found that this rate was 1%. [36] Due to the need for regular dressing changes, parenteral antibiotics, and analgesics, the fissurectomy group in the study by **Ghose SS et al.2021**[37] required a minimum of six to seven days in the hospital after their procedure. The modified closed LIS group had an average length of hospital stay of just one to two days, while the closed LIS group had an average length of hospital stay of two to three days.

In a study conducted by **Vishruth K. Raj et al.2014**[38] the most common symptom in cases of acute fissure in ANO was pain during defecation which was found in 93% of cases and in cases of chronic fissure in ANO the most common symptom was mass at anus which was found in 76% of cases. In a study done by **Varadarajan MS et al.2018**[39] the most common presenting symptom was pain during defecation which was found in 86% followed by bleeding per rectum in 62%. In a study done by

Sandesh Pawar et al.2015 [40] of the most common symptoms were observed (100%) in all the patients. Bleeding was during defecation which was found in 88% of cases. The second most common symptom was bleeding per rectum in an acute fissure in ANO which was found in 84% of patients.

In a study conducted by **Sajith Babu et al. 2017**[41] most common symptom in cases of acute fissure in ANO was pain during defecation which was found in 100% of cases and the second most symptom was bleeding PR which was found in 86% of cases. In a study conducted by **Ahmadi Firdous Nikhat et al., 2019**[42] most common symptom in cases of chronic fissure in ANO was pain during defecation which was found in 100% of cases and the second most symptom was bleeding PR which was found in 82% of cases

CONCLUSION:

It concludes that despite a good response to medical treatment, surgical treatment is more effective. A medical treatment especially treatment with diltiazem due to lack of side effects is of choice in patients who are not willing to undergo surgery. In conclusion the recent developments in the treatment of chronic anal fissures, it is possible to draw the conclusion that conservative treatments such as those involving lignocaine, nitroglycerine, botulin toxin, or oral nifedipine are all effective methods that may reduce the need for anesthesia and surgery in a significant number of patients. Patients who are not interested in having an operation performed on them might always be provided these alternatives instead. In the event that the condition returns or if conservative therapy is ineffective, surgical manipulation should be considered. In this particular research, men were more likely to be afflicted than females, and constipation was shown to be the primary risk factor. Furthermore, the majority of fissures were found in the posterior midline region. Early pain alleviation and a high ulcer healing rate are provided by anal dilatation and lateral internal spinteretomy treatment respectively. On the other hand, as compared to AD, it seems that LIS is a safer option in terms of recurrence.

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