COMPARISON OF 0.2 % GLYCERYL TRINITRATE AND OPEN LATERAL INTERNAL ANAL SPHINCTEROTOMY IN TREATMENT OF CHRONIC ANAL FISSURES

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ABSTRACT

Objectives: To compare lateral internal sphincterotomy with 0.2 percent glyceryl trinitrate in the treatment of chronic anal fissure in terms of fissure healing and complications.

Study design: Randomised Controlled Trials (RCT)

Place and duration of the study: The study was of 6 months duration conducted at surgical unit Combined Military Hospital Rawalpindi from August 2006 to February 2007.

Subjects and Methods: Seventy Patients were randomly assigned to two treatment groups. Group 1 was assigned to apply glyceryl trinitrate 0.2 percent paste while, in group 2 lateral internal sphincterotomy was done. Response to the treatment was assessed in terms of fissure healing and occurrence of complications. Follow up of the patients was carried out at the end of 2nd, 4th, and 6th week of treatment.

Results: In this study overall healing rate after 6 weeks with GTN was 71.4% and 100% with LIS ($p< 0.001$).

Conclusions: lateral internal sphincterotomy is better than GTN in fissure healing.

Keywords: Chronic anal fissures, glyceryltrinitrate, lateral internal sphincterotomy

INTRODUCTION

Anal fissure is a common condition affecting all age groups, but it is seen particularly in young and otherwise healthy adults, with equal incidence across the sexes[1]. It was first recognized as a disease in 1934 and currently affects 10% of the patients attending the proctology clinics. Contrary to traditional teaching, a precipitating history of constipation is found only in a small percentage of patients (approximately 20%)[2]. However, the accepted definition is that fissures failing to heal within six weeks despite straightforward dietary measures are designated as 'chronic'[3]. Anal fissure is a linear tear at the anal verge[4]. It can be seen either in the anterior or the posterior midline just distal to the dentate line. 90% of all fissures occur posteriorly and only 10% of the fissures are seen in the anterior midline. Anterior fissures are more common in the women. Less than 1% of patients have a fissure in both the anterior and posterior positions[5].

The classical symptoms are that of anal pain during or after defecation accompanied by passage of bright red blood per anus. The bleeding is separate from the stool and usually modest[6].

On examination the fissure may be apparent as the buttocks are parted, but marked spasm of anal sphincter often obscures the view. An early fissure, if seen has sharply demarcated, fresh mucosal edges and there may be granulation tissue in its base[1]. With increasing chronicity, the margins of fissure become indurated and there is a distinct lack of granulation tissue. Horizontal fibers of internal sphincter may be evident in the base of a chronic anal fissure and secondary changes such as a sentinel skin tag, hypertrophied anal papilla or a degree of anal stenosis are often present[7].

Lateral internal anal sphincterotomy is the most common treatment for Chronic Anal Fissure[7] and can be effective in more than 90 percent of cases but needs general or local anesthesia[8]. Sphincterotomy was first described in 1835 and can be carried out using an open or a subcutaneous technique[9]. The fundamental drawback of this surgery is its potential to cause gas, mucus or occasionally stool incontinence which is permanent in 8 to 30 percent of patients and may be associated with abscess and anal deformity[10].

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A variety of agents have been found to cause pharmacological manipulation of the internal anal sphincter to reduce its tone, a reversible chemical sphincterotomy[11].

The mediator of the non-adrenergic non-cholinergic pathway stimulating relaxation of the internal sphincter has been shown to be nitric oxide[12]. Application of topical nitric oxide donor agents has been shown to reduce anal pressure[13]. Such observations have generated an interest in the use of nitric oxide donors as a form of chemical sphincterotomy.

The aim of this trial was to compare lateral internal sphincterotomy with 0.2 percent glyceryl trinitrate in the treatment of chronic anal fissure in terms of fissure healing and complications (headache and incontinence for feces and flatus).

MATERIAL AND METHODS

Study was conducted in surgical department, Combined Military Hospital, Rawalpindi. Total duration of the study was 6 months from August, 2006 to February, 2007. A total of 70 patients were randomly divided in two groups with 35 patients in each Group 1 and 2. The patients were between between 15 and 70 of either sex. Symptomatic patients having anal fissure

Patients with hemorrhoids, fistulae and perianal abscess and systemic diseases excluded

Data Collection Procedure:

Patients having anal fissure who were not responding to conservative treatment were included in the study and assessed through structured Proforma. A detailed history and examination both local and systemic was undertaken and diagnosis of chronic anal fissure made which was totally clinical. Information regarding duration of pain along with other associated symptoms like constipation, bleeding per rectum, discharge and soiling, sentinel pile and previous treatment were obtained and carefully recorded in the proforma. Patients were randomly assigned to two treatment groups. Patients in group 1 were assigned to apply glyceryl trinitrate 0.2 percent paste about pea size to the anal margins and rubbed gently in clockwise manner for 5-8 seconds and small quantity was also applied inside the anus. The drug was advised to apply three times a day for six weeks. Patients in group 2 underwent lateral internal sphincterotomy. Patients were examined under anesthesia; their findings noted and then proceeded for internal sphincterotomy by an experienced surgeon. An open lateral internal anal sphincterotomy was performed under general or regional anesthesia (spinal or caudal). Under anesthesia the open technique consists of radial incision of the anoderm over the intersphincteric groove and division of the internal sphincter under direct vision. Internal anal sphincter was divided for a length of approximately 2 cm. the integrity of the mucosa was preserved by breaking the innermost fibers of the muscle by lateral pressure with the finger. Haemostasis was ensured by maintaining pressure for 2-3 minutes. Patients undergoing sphincterotomy were not subjected to any other treatment modality or local ointment. No prophylactic antibiotic was given. Patients were discharged after 24 hours. All patients in both treatment groups received stool softeners and fiber supplements. Patients were followed at 2-weekly interval for six weeks and were examined for healing of fissure and side effects of two procedures. Only patients who had completely healed fissure with epithelium over it were considered as healed. Post treatment incontinence for feces and flatus was evaluated by an anonymous questionnaire assessed by an independent observer at 2 weekly intervals during follow up. Follow up of the patients was carried out at the end of 2nd, 4th, and 6th week of treatment

Data Analysis

Data was analyzed by using SPSS version 10 on computer. Descriptive statistics were used to describe the data. Fissure healing and complications between both the groups were compared using chi-square test. P-value < 0.05 was considered as significant.

RESULT

Out of 70 patients 50 (71.4%) were male and 20 (28.6%) females. Male to female ratio

was 2.5:1; with age ranging from 15-70 years. Presenting complaints were given in table I. In this study 56 (80%) patients had posterior midline fissure, 7(10%) had anterior midline fissure. Both the groups were comparable with respect to gender and age.

Fissure Healing

Healing of fissure after 2nd, 4th and 6thweeks was seen in both the groups (Table-II). Only those patients who had a completely healed fissure with epithelium over it were considered as healed. On comparing the healing between the two groups at the end of 2nd week of treatment, no patient in the GTN group showed healing of fissure as compared to21 (60%) patients in the sphincterotomy group; this difference was statistically highly significant($p<0.001$)(Table-II). At 6 weeks, 25(71.4%) patients healed with GTN compared to 35(100%) patients with sphincterotomy. This show that in lateral internal sphincterotomy group healing of fissure with is earlier and most of them 85.7% heal within 4 weeks.

This difference is statistically highly significant ($p<0.001$) and this proves our hypothesis that LIS heals fissure better than GTN.

Complications

In GTN group 7 (20%) patients had a mild headache initially after applying GTN, but it subsided in next few days. None of the patients had to discontinue treatment with GTN. In LIS group 5(14.3%) patients complained of incontinence for flatus but none reported with incontinence of feces. (Table III)

Poor tolerance and poor compliance with treatment were important factors in patients whose fissures did not heal with glyceryl trinitrate. There were no long-term complications from lateral sphincterotomy.

DISCUSSION

A total of nine randomized controlled trials[14] have studied the efficacy of GTN in chronic anal fissure: five comparing GTN to placebo; one compares GTN with botulinum toxin; and three comparing GTN with lateral internal sphincterotomy[15]. Three trials compared 0.2% to 0.5% GTN to lateral sphincterotomy[16]. Sphincterotomy was clearly superior in two of these trials. In the third study there was pseudo randomization of patients. In all three studies there was an unblinded outcome assessment[17]. In each of these trials healing rates with GTN were much lower than in the other trials, with 39% to 45% eventually having to undergo surgery. Follow-up ranged from 4 weeks to 6 months[18,19].

A Medline search showed only four prospective randomized trials reported to date comparing topical GTN with lateral

Table-1: Presentation Of Anal Fissure

Variables	Group 1 (GTN) n= 35	Group 2 (LIS) n= 35
Gender		
Male	25	25
Female	10	10
Ages		
15-30	10	11
31-40	11	11
41-50	9	6
51-60	4	7
61-70	1	-
Symptoms		
Painful defecation	35	35
Sentinel pile	28	34
Constipation	30	30
Bleeding per rectum	30	25
Pruritis	10	9

Table-2: Fissure Healing

Count	Treatment Options		P value
	GTN n=35	LIS n=35	
2 Weeks	0	21	<0.001
4 Weeks	10	30	<0.001
6 Weeks	25	35	<0.001

Table-3: Complications (n=70)

	LIS (n=35)	GTN (n=35)	P value
Headache	0 (0%)	7 (20%)	0.005
Incontinence for flatus	5 (14.3%)	0 (0%)	0.022
Incontinence for feces	0 (0%)	0 (0%)	-

sphincterotomy in the treatment of chronic anal fissure[20]. Oettle randomized 24 patients for treatment with sphincterotomy or local GTN; all 12 patients healed following sphincterotomy while 10 of 12 patients healed with local GTN (P = 0.239). Anal pressure recordings were not recorded or compared in that study. He concluded that local application of GTN could avoid surgery in more than 80% of patients with chronic anal fissure. A multicentre trial[21] involving 82 patients (38 patients in the sphincterotomy group and 44 patients in the GTN group) was conducted by the Canadian Colorectal Surgical Trials group; although again no anal pressure changes were recorded, that study concluded that internal sphincterotomy was superior to topical GTN in the treatment of chronic anal fissure because of a higher rate of healing, fewer side-effects, and a low risk of early incontinence. Another study that randomized 60 patients into lateral sphincterotomy (27 patients) and GTN (33 patients) concluded that GTN heals the majority of chronic anal fissures[22]. However, because a significant minority had little improvement or developed side-effects and required conventional surgical treatment, GTN was not shown to be superior to lateral sphincterotomy. A recent trial from Berkshire, UK, randomized 70 patients to GTN ointment or sphincterotomy and resolution of symptoms and healing of fissures were assessed after 24 months[23]. They concluded that many anal fissures heal with topical GTN; lateral sphincterotomy remains effective but should be reserved for patients who fail to respond to initial GTN[24].

In this study treatment with GTN for 6 weeks we observed overall healing rate of 71.4% which is very much comparable with the results of Lund and Scholefield and other studies. Sphincterotomy results of 100% fissure healing are also consistent with worldwide studies.

Now, researchers report 6-year follow-up results from a randomized controlled trial in which 82 patients received thrice-daily nitroglycerin ointment (0.25%) or underwent lateral internal sphincterotomy[25,26]. Participants were enrolled from February 1997 through October 1998. Sixty-two percent of patients (27 in the nitroglycerin arm and 24 in the sphincterotomy arm) responded to a telephone survey in 2004 about treatment outcomes[27].

Recurrent fissure symptoms were less likely to have occurred in the sphincterotomy arm than in the nitroglycerin arm (0% vs. 41%; P=0.0004), and sphincterotomy patients were less likely to have required additional surgical treatment (0% vs. 59%; P<0.0001). The sphincterotomy patients were more likely to say that they were "moderately" or "very" satisfied with treatment (100% vs. 56%; P=0.04) and that they would use the same therapy again (92% vs. 63%; P=0.02). Fecal incontinence scores were similar in the two groups[28].

CONCLUSION

Both GTN and sphincterotomy brought about a highly significant, but comparable drop in complication in terms of incontinence of feces and flatus but sphincterotomy is better than GTN since healing in the sphincterotomy group was also earlier than with GTN; A rationale approach to the treatment of chronic anal fissure currently would be to institute bulking agents and stool softeners, begin with topical agents such as 0.2% GTN, if patients do not respond with in 4 weeks, lateral internal anal sphincterotomy should then be offered. Surgery is also beneficial in cases of relapse or failure to respond to medical therapy.

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