COMPARISON OF LATERAL INTERNAL PARTIAL SPHINCTEROTOMY AND TOPICAL USE OF GLYCERYLTRINITRATE OINTMENT (0.2%) IN THE MANAGEMENT OF CHRONIC ANAL FISSURE

AJMALKHAN, SAMIULLAH, MANZOORALI,

Department of Surgery, Saidu Group of Teaching Hospital Saidu Sharif Swat, KPK, Pakistan.

ABSTRACT

OBJECTIVE: The objective of this study was to compare the results of surgical internal sphincterotomy with that of local 0.2% Glyceryltrinitrate ointment (chemical, sphincterotomy) in the treatment of chronic anal fissure.

STUDY DESIGN: This is a descriptive, comparative, prospective study.

PLACE AND DURATION OF STUDY: The study was conducted in the Department Of Surgery Saidu Group of Teaching Hospital Saidu Sharif Swat from January 2011 to January 2014.

PATIENTS AND METHODS: Total of one hundred and forty patients between the age of 15 and 60 years with chronic anal fissure were randomized in a prospective trial to receive either surgical sphincterotomy or 0.2% Glyceryl trinitrate ointment locally. Patients were followed up at 2 weeks' interval for 14 weeks. Symptomatic relief, fissure healing and anal continence were the parameter for the outcomes. Data was analyzed using SPSS version 16 employing chi-square test (X^2 test). A p-value below 0.05 was considered statistically significant.

RESULTS: Surgical sphincterotomy was significantly more effective in providing pain relief and was associated with significantly better fissure healing at 6 weeks and 10 weeks, in all 66(100%) patients (both $p < 0.01$). There were persistent problems with compliance in ointment group related to slow healing {42(67.74%) patients} and longer time needed for symptomatic relief {50(80.64%) patients}. Minor incontinence was (4.54%) in sphincterotomy group and none in ointment group ($p > 0.05$).

CONCLUSION: lateral partial internal sphincterotomy is an effective first line management for chronic anal fissure. This has excellent symptoms relief, a better healing response and low recurrence rates.

KEYWORDS: Anal fissure, sphincterotomy, 0.2% GTN ointment

INTRODUCTION

Anal fissure is a longitudinal tear, ulcer in the long axis of lower anal canal causing significant morbidity due to sharp severe anal pain, especially during defecation. The incidence of anal fissures is around 1 in 350 adults. They occur equally in men and women and most often occur in young adults aged 15 to 40. It is usually located in the posterior midline but occurs anteriorly in a fifth or more patients. Young adults are the usual affected patients. Though, the exact etiology of primary anal fissure is still unknown, high resting anal pressure caused by increased internal sphincter tone appears to be the underlying pathological factor^{1,19}. There is a vicious cycle beginning from a tear in the anal mucosa from forceful dilatation of the anal canal during the act of defecation exposing the underlying internal anal sphincter muscle that

eventually goes into spasm and fails to relax during next bowel movement. Further tearing results in persistent muscle spasm leading to relative ischemia of the anal mucosa causing persistence of symptoms and impairment of healing.

Majority patients of acute anal fissures heal with stool softeners, bulking agents and sitz baths.² A fissure is defined as chronic when it fails to heal within 6-8 weeks from an acute attack³. Reduction in the internal anal sphincter tone increases anodermal blood flow leading to symptomatic relief and healing of chronic anal fissure⁴. Lateral partial internal sphincterotomy is successful in reducing the sphincteric tone in 95% of cases¹. However, a significant number of patients are reported to develop fecal incontinence following this procedure^{2,5}.

Over the past few years, topical application of different pharmacological agents like Glyceryl trinitrate, Diltiazem, Nifedipine are being used to reduce the resting anal tone with eventual healing of chronic anal fissure in a significant number of patients³. These pharmacological agents produce reversible chemical sphincterotomy without compromising the anal continence. Glyceryl trinitrate releases Nitric oxide that mediates the relaxation of internal sphincter. Local application of 0.2% Glyceryl trinitrate ointment to the distal anal canal is reported to heal chronic anal fissure in a good number of patients^{3,4}. A significant number of patients experience temporary headache and this side effect some times reduces compliance.

Patients with a longer history or who have a sentinel piles are less likely to heal with Glyceryl trinitrate ointment⁶. Following surgical sphincterotomy healing of fissures occurs in 98% to 100% of cases^{2,7,8}. Varying degrees of incontinence ranging from 5% to 30% were reported in different studies following surgical sphincterotomy^{2,8,9,10}.

The main objective of this study was to compare the effectiveness and morbidity of surgical versus chemical sphincterotomy by 0.2% Glyceryl trinitrate ointment in the treatment of chronic anal fissure.

MATERIAL & METHODS

This comparative clinical study was carried out at the Department of Surgery, Saidu Group of Teaching Hospital (SGTH) Saidu Sharif Swat. Hundred and forty adult patients both male and female (65:75), with the ages range from 15 to 60 years with chronic anal fissure since January 2011 to January 2014, were included in the study. Informed consent was taken after full explanation regarding disease process, options of treatment, ultimate outcome, possible side effects, complications and chances of recurrences in either procedure. They were informed of their right to withdraw from the study at any stage.

Data was recorded on a proforma, designed especially for this study. The study variables included age, gender, treatment prescribed, compliance of the patients, symptoms scoring, healing of the fissure at the end of treatment with no recurrence on a follow-up visits for one year. The protocol was approved by the Institutional Ethics Committee of SGTH, SMC. The protocol was considered violated if the patient failed to come for a regular follow-up or had withdrawn from the study.

Those patients who had violated the study protocol were excluded from the final analysis. Patients with primary anal fissure lasting for more than 6-8 weeks were included in the study. Those with hemorrhoids, fissures complicated with fistula, anal stenosis and those who have undergone previous anorectal surgery were excluded from the study.

Patients were divided into two groups of 70 patients in each group. One group underwent lateral partial internal sphincterotomy and the other group was prescribed 0.2% Glyceryl trinitrate ointment to apply locally by the tip of finger about a size of pea to the distal anal canal thrice daily for 8 weeks.

In surgical group, the patients underwent lateral partial internal sphincterotomy either under general or loco regional anesthesia after complete pre-operative evaluation. Sphincterotomy was carried out by the open method; a 1-2 cm circum anal incision was made at the anal verge at 3 or 9 O'clock position over the free edge of the internal sphincter. Blunt scissor dissection was carried out to open the plane inside and outside the internal sphincter to make it free. The free lower edge of the internal sphincter was then grasped, drawn into the wound and a length of sphincter equal to the length of fissure below the level of dentate line was divided either by scissor or by diathermy. Associated sentinel skin tag at the lower end of the fissure and sometimes a fibro epithelial polyp at the upper end were also excised if present. The wounds were left open.

Patients of both groups were advised, lactulose for stool softening, have sitz baths, should take high fiber diet and drink plenty of water. They were followed up at 2 weeks' interval for 14 weeks. Pain relief, fissure healing, patients compliance and continence scores were evaluated during each follow-up visit.

Pain relief was defined as complete absence of pain to mild, moderate and severe pain. Healing of fissure was accepted when there was no visual lesion in anal mucosa. A patient was defined fully continent when there was no soiling of perianal region or undergarments under normal circumstances or during stress. In continence to flatus or mucus only while on stress was designated as minor degree of in continence.

STATISTICAL ANALYSIS: Data were compiled and statistical analysis were carried out with chi-square test (χ^2 test). All p values were obtained using standard statistical table.

RESULTS

In this study more female patients (75) presented than male (65). Twelve patients were excluded from the study for protocol violations (4 in the surgical group and 8 in the ointment group), leaving 128 patients for data analysis, and 66 in the surgical sphincterotomy group and 62 in 0.2% Glyceril trinitrate ointment group. They were followed up at 2 weeks' interval for 14 weeks.

In surgical group (Figure-1) symptomatic relief occurred in 44 (66.67%) patients as compared to 8 (12.90%) patients in 0.2% Glyceril trinitrate ointment group at the end of 2nd week. No healing of fissure was observed in either group at the first visit. At 4 weeks relief of symptoms were noted in 63 (96%) patients in surgical and 14 (23%) in ointment group ($p < .01$). After 6 weeks, symptomatic relief was achieved in all 66 (100%) patients in surgical group and 28 (45.27%) patients in ointment group ($p < 0.001$). Overall healing occurred in 56 (84.85%) patients in surgical group and in 22 (35.48%) patients in

ointment group ($p < 0.01$) at the same time (Figure-2).

Surgical sphincterotomy was more effective in providing early pain relief and allowing rapid healing of fissure after 8 weeks of complete treatment. 50 (80.64%) patients in ointment group were asymptomatic with healed fissure in 42 (67.74%) patient at 10th week follow-up, in contrast to surgical sphincterotomy showing 100% pain relief as well as healing of fissure ($p < 0.001$). In both groups symptomatic relief occurred earlier than fissure healing.

Three female patients (4.54%) in surgical group reported to have minor incontinence to flatus on stress but no incontinence was reported in ointment group ($p > 0.05$). During the topical application of 0.2% Glyceril trinitrate ointment, 16 (25.80%) patients had experienced mild headache persisting for an average of 3 days. None had reported to have incontinence of flatus or faeces.

Figure 1, showing symptomatic relief in both groups.

Figure no:2 showing Fissure healing in both groups.

DISCUSSION

Reduction of high resting anal tone in patient's with chronic anal fissure leads to increased anodermal blood flow with resultant symptomatic relief and healing of fissure⁴. Lateral partial internal anal sphincterotomy is the standard surgical practice for the treatment of chronic anal fissure⁴. However, varying degrees of anal incontinence was reported following this procedure^{2,3,5}. On the other hand local application of 0.2% Glyceryl trinitrate ointment can improve anodermal blood flow by inducing sphincter relaxation and thereby results in symptomatic relief and healing of fissure without compromising the anal continence⁴. In our study, symptomatic relief occurred in 100% patient's in surgical group at the end of 6th week. Healing of fissure was observed in 84.85% cases during the same period rising to 100% complete healing of fissure at 10th week. These results are fairly consistent with other studies showing a healing rate of 90% to 100%^{7,9,11,12}.

Rithinsuvarna and Bhuwan reported a 100% healed fissure at 10 weeks after surgical sphincterotomy^{13,14}. Varying degrees of incontinence was reported to occur in 30% of patients, more frequently in women^{2,8,13,14}. In our study 3 female patients (4.54%) developed minor degree of incontinence to flatus on stress.

Less morbidity in our study may be procedure related where the length of incision was limited to the length of fissure and always below the dentate line. In the present series symptomatic relief occurred at a slower pace in patients receiving topical 0.2% Glyceryl trinitrate ointment. Fissure healing rate was close to a study made by Lund and Scholefield with healing of fissure in 66% of their patients following 8 weeks treatment with 0.2% Glyceryl trinitrate ointment^{4,14,15}.

In our study approximately 25% of the patients experienced mild headache during the application of 0.2% Glyceryl trinitrate ointment, persisting

for an average of 3 days. More than half the patients were reported to have experienced headache, although this diminished in intensity with continuing application; however this side effect reduces compliance^{3,16,17}.

Local application of 0.2% Glyceryl trinitrate ointment for chronic anal fissure is safe and a high rate of healing the fissure can be achieved without the risk of incontinence, though symptomatic relief occurs at a slower rate than that of surgical sphincterotomy. It may be considered as a satisfactory option in the treatment of chronic anal fissure where there is a significant chance of incontinence especially in unfit elderly and female patients^{18,19}.

This study also shows the same age and gender distribution as mentioned in the literature^{4,6,20,21}, study made locally and internationally.

As surgical sphincterotomy offers better result considering early symptomatic relief and rapid healing of fissure with better patient compliance, we recommend that surgical sphincterotomy is the treatment of choice in chronic anal fissure when the procedure is performed by an experienced and skilled surgeon.

CONCLUSION:

For chronic anal fissure we recommend that Surgical, internal sphincterotomy is the best treatment option for the rapid relief of patient's problem.

REFERENCES

1. Kirk RM. "General surgical operation", CHURCHILL, LIVING STONE, ELSEVIER, 5th ed 2006. 269-70.
2. Normas William, Christopher J.K., Bulstrode & Pearson Connel, "Bailey, and love" SHORT PRACTICE OF SURGERY 25th ed 2008. 1251-53.
3. Nugent KP, Johnson CD, Taylor I. "Benign anal diseases" Recent advances in surgery; 25th ed. London, Royal Society of Medicine Press Ltd, 2002: 147- 60.
4. GEI-labban, GEL-Gazzan, EHokamam. "Local Glyceryl trinitrate ointment versus lateral internal sphincterotomy in management of anal fissure". Internet Journal of surgery, 2009, v22, N2.
5. Lund JN, Scholfield JH; "Aetiology and treatment of anal fissure". Br J Surg. 1996; 83(6): 1335-44.

6. Zubair M, Saaq M, Shah SA. "Efficacy and Safety of subcutaneous lateral internal sphincterotomy for chronic anal fissure". J Ayub Med Coll Abbottabad 2014;26(2).
7. Garcia-Anguilar J, Belmonte Montes C, Perez JJ, Jensen L, Madoff RD, Wong WD; "Incontinence after lateral internal sphincterotomy" Anatomic and functional evaluation. Dis Colon Rectum 1998; 41:423-27.
8. SamadA, Tariq WK, Champa S. "Cost effectiveness of topical Glyceryl Trinitrate versus Lateral Internal Sphincterotomy for chronic anal fissure" JPMI2007,V21,N1.
9. Fahri Y, EbruS, BanuY, MustafaA, MuratbY, Mehmet K. "Comparison of lateral internal sphincterotomy with topical Nitroglycerin treatment in patients with chronic anal fissure: A prospective Randomized study; Surgery cur res 2012,2.4.
10. Nyam DC, Pemberton JH. "Long-term results of lateral internal sphincterotomy for chronic anal fissure with particular reference to incidence of faecal incontinence". Dis Colon Rectum 1999; 42:1306-10.
11. Hashmat A, Ishfaq T. "Chemical versus surgical sphincterotomy for chronic fissure in ano". J CollPhysiSurg Pak. 2007; 17: 44-47.
12. FazilaH, GHANIS. "Diltiazem(2%) versus Glyceryl trinitrate cream(0.2%) in the management of chronic anal fissure". Journal of the college of physician and surgeon Pakistan 2009.vol19 (12):750-3.
13. Bhuwan, Ajay S, Meena RS. "A comparative study of Anal dilatation and lateral anal sphincterotomy in patients of chronic anal fissure; international journal of recent trends in science and technology. Vol (7)1: 2013 pp 06-09.
14. Rithinsuvarna, Panchami, Guruprasa, Draid. "Chemical sphincterotomy versus surgical sphincterotomy" in the management of chronic fissure in ano. A prospective, randomized clinical trial. Journal of clinical and diagnostic research. Aug 2012.vol-6(6): 1018-21.
15. Gupta Pj. "treatment trend in anal fissures". bratisllek, listy. 2004; 105(1)30-34.
16. Jenkins JT, Urie A, Molloy R. "Anterior anal fissures are associated with occult sphincter injury and abnormal sphincter function". Colorectal Dis 2008. (10):280-5.
17. Hisham MA. "A comparative study on oral and topical nifedipine in the treatment of chronic anal fissures". Sudanese Journal of Public Health 2012 (Oct): 5(4).
18. Al Raymoon AE. "Surgical treatment of Anal Fissure under local Anesthesia". Saudi Med J2001;22(2).114-6.
19. Ansar L, Anila A, Muhammad Q B. "Morbidity associated with treatment of chronic anal fissure". Pak Med Sci 2013, sep-oct 29(5):1230-35.
20. Tauro LF1, Shindhe VV, Aithala PS, Martis JJ, Shenoy HD. "Comparative study of glyceryl trinitrate ointment versus surgical management of chronic anal fissure". Indian J Surg. Aug 2011.73(4):268-77.
21. Aslam M, Pervaiz A, Figueiredo R. " Internal sphincterotomy versus topical nitroglycerin ointment for chronic anal fissure". Asian J Surg. Jan 2014.37(1):15-9.

CORRESPONDENCE ADDRESS

Dr. Ajmal Khan
 Assistant Professor
 Department of Surgery SGTH Swat
 E-mail: ajmalkhan78@gmail.com
 Cell No: 0333-914-6350