

Lateral Subcutaneous Internal Sphincterotomy in the Treatment of Chronic Anal Fissure: Our Experience in 246 Patients

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Abstract

Background. Chronic anal fissure is the most common cause of anal pain associated with internal anal sphincter hypertonia. Reduction of hypertonia favours fissure healing. Temporary reduction in sphincter tone can be achieved by conservative treatment. Surgical sphincterotomy achieves permanent reduction of sphincter hypertonia and is very successful at healing anal fissures, but requires an operation with associated small morbidity. **Methods.** A study was undertaken on 246 patients (120 men, 126 women, mean age 48.3 years), undergoing subcutaneous lateral internal sphincterotomy for a chronic fissure-in-ano from January 1, 1981 to December 31, 2004. Therapeutical outcome, postoperative course and early and long-term results were recorded. **Results.** During the study period, the 246 patients underwent total subcutaneous lateral internal sphincterotomy, 62 of them under general anesthesia (1981-1991), and the remainder under local anesthesia. Two-hundred-forty-two patients returned for their postoperative visits at 2, 6, 24 and 48 weeks, while four patients were lost to follow-up. At 3 months postoperatively, 97.5% of fissures had healed; 224 fissures were healed by 6 weeks, 10 by 7 weeks and 2 by 3 months. Pain was significantly reduced in all patients at Day 1 postoperative. Minor complications included hematoma (0.8%) and pain (0.4%). New minor incontinence was seen in 7.02% of patients at 48-week follow up. Patients' satisfaction was 91.7%. **Conclusions.** Total subcutaneous internal sphincterotomy is a safe and effective treatment for chronic anal fissures, that only rarely impairs continence to flatus.

Key words

Anal fissure - surgical techniques - lateral subcutaneous internal sphincterotomy

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Rezumat

Premize. Fisura anală cronică reprezintă cauza cea mai frecventă pentru durerea anală asociată cu hipertonia sfîcterului anal intern. Reducerea hipertoniilor facilitează vindecarea fisurii. Reducerea temporară a tonusului sfîcterian poate fi obținută prin tratament conservativ. Sfîcterotomia determină reducerea permanentă a hipertoniilor sfîcteriene și vindecarea fisurii anale, dar intervenția se asociază cu morbiditate redusă. **Metode.** S-a efectuat un studiu pe 246 pacienți (120 bărbați, 126 femei, cu vârsta medie de 48,3 ani) care au fost supuși sfîcterotomiei interne laterale subcutanate pentru fisura anală cronică, din 1 ianuarie 1981 până în 31 decembrie 2004. Rezultatul terapeutic, evoluția postoperatorie, și rezultatele pe termen scurt și lung au fost evaluate. **Rezultate.** În timpul urmăririi 246 pacienți au fost supuși sfîcterotomiei interne laterale subcutanate, 62 dintre ei sub anestezie generală (1981-1991) și 184 sub anestezie locală. 242 dintre pacienți s-au prezentat la controale postoperatorii în săptămânile 2, 6, 24 și 48, iar 4 pacienți au fost pierduți din urmărire. La 3 luni postoperator 97,5% dintre fisuri erau vindecate; 224 fisuri erau vindecate la 6 săptămâni, 10 la 7 săptămâni și 2 la 3 luni. Durerea a fost semnificativ redusă la toți pacienții din prima zi postoperator. Complicațiile minore au fost reprezentate de hematoame (0,8%) și durere (0,4%). 7,02% dintre pacienți au prezentat în săptămâna 48 de urmărire incontinență minoră de novo. 91,7% dintre pacienți s-au declarat satisfăcuți. **Concluzii.** Sfîcterotomia internă totală subcutanată reprezintă un tratament sigur și eficient pentru fisurile anale cronice, rareori afectând continența pentru flatus.

Introduction

Subcutaneous lateral internal sphincterotomy is the treatment of choice for chronic anal fissures. Sphincterotomy can be carried out using an open or a subcutaneous technique and under local or general anaesthesia (1). Surgical sphincterotomy leads in most cases to quick healing of chronic fissure (94.7%-96% of

fissures heal at six weeks postoperatively) (2-4), and has a low recurrence rate (4) (two large studies have demonstrated a 2.3-3% failure rate at five years) (1).

This procedure, however, has been associated with an overall risk of incontinence of about 10% in a systematic review of randomized surgical trials (5).

To avoid such side effects, medications that effectively cause a chemical sphincterotomy and heal fissures were developed. These pharmacological agents, such as nitroglycerin ointment, injection of botulinum toxin and calcium channel blockers either given as tablets or applied topically produce a temporary or reversible sphincterotomy reducing the sphincter pressure only until the fissure is healed (6).

This study aims to determine the healing rate of chronic fissures after subcutaneous lateral internal sphincterotomy under general or local anesthesia, the median time to fissure healing, the recurrence rate and, also, to define the risk of incontinence.

Patients and methods

A clinical study was undertaken in all patients (246 pts, mean age 48.3 years) undergoing lateral closed sphincterotomy for chronic anal fissure (defined as anal fissure with > 6 weeks symptom duration) from January 1, 1981 to December 31, 2004. Among patients, 120 (48.8%) were men and 126 (51.2%) were women.

Atypical fissures associated with inflammatory bowel disease, cancer, or anal infections were excluded from the study. Exclusion criteria, also, were previous sphincterotomy or anal dilation and suspicion of malignant fissure or ulcer.

The main ailments reported by all patients were persistent pain connected with defecation and small rectal bleedings, while in all of them conservative treatment had failed (lidocaine, hydrocortisone, glycerine trinitrate)

Closed lateral sphincterotomy was performed in all cases (62 patients under general anesthesia and 184 patients under local anesthesia) using a short stab incision and blind division of the internal sphincter guided by the surgeon's finger. All operations were performed as a day case procedure with no readmissions.

Postoperative stay, relief of symptoms, time to fissure healing and complications were assessed. In this series, 242 patients were seen at 2, 6, 24 and 48 weeks postoperatively and fissure healing was assessed.

In order to evaluate continence, a simple questionnaire was administered in all patients before surgery. Postoperatively, symptoms of incontinence were evaluated at 2, 6, 24 and 48 weeks; during the study period 1981-1994, physical examination and questionnaire were used for the assessment of severity of incontinence, while during the period 1995-2004, Wexner Continence Grading Scale was used (7).

Results

Between January 1981 and December 2004 a series of 246 lateral closed total sphincterotomies were performed for chronic anal fissure and patients were followed up in our institution.

All patients had episodic pain that occurred during defecation and for one to six (or more) hours afterwards, while pain was connected with bleeding in 184 patients (65.04%). One hundred fifty patients had failed at least six weeks of nonoperative management, because of lack of efficacy (135 patients) and because of lack of repeating doses and unacceptable side effects (15 patients).

Two hundred forty two patients returned for their postoperative visits at 2, 6, 24 and 48 weeks. Four patients were lost to follow-up at six weeks and we were unable to contact them for the 48-week follow up. Fissure healing was assessed by physical examination during patients' clinic visits after operation.

Two hundred thirty six of 242 patients in this study had completed healing of fissure by 3 months; 224 fissures healed by 6 weeks, 10 healed by 7 weeks and two healed by 3 months. Fissure healing rate was 92.5%, with 18 patients failing to heal at 6 weeks. The overall fissure healing rate in this study was 97.5%.

Pain was significantly reduced in all patients in the first postoperative hours, while symptoms such as bleeding and irritation were reduced in most patients the next day. Complications of surgery comprised a small local hematoma (the 1st postoperative day) in two patients (0.8%) and postoperative pain lasted for 5 days in one patient (0.4%).

In order to evaluate symptoms of incontinence, a simple questionnaire was designed, which was based on information from the patient about the type of incontinence (for solid or liquid stool or for flatus alone) and the possible effects on lifestyle (Table I). Items were each allocated a numerical value based on our perceived estimation of the severity of a particular symptom, ranging from 1 to 3, with a possible maximum score of 10. This questionnaire was administered in each patient before and after operation at 2, 6, 24 and 48 weeks. In this series of patients, the assessment of faecal incontinence was based on the detailed history, the examination findings and the questionnaires' score, without the use of a formal scoring system.

During the period 1995-2004, the Wexner Continence Grading Scale (Table II) was also used postoperatively at 2, 6, 24 and 48 weeks also, for the assessment of the severity of faecal incontinence in 163 patients.

Five patients (2.06%) reported minor imperfections of continence to flatus only, preoperatively. The overall incidence of new incontinence after 48 weeks of follow-up was 7.02%, without a significant deterioration in quality of life. Ten patients (4.1%) reported deterioration in continence (patient's inability to defer defecation and accidental incontinence to flatus) at 2 weeks postoperatively. These symptoms disappeared by week 48. During the period 1995 - 2004, 7 patients (2.9%) reported minor degree of incon-

Table I Simple questionnaire for evaluation of incontinence

Did the patient experienced:	Daily	Weekly	Rarely	Never
Accidental bowel leakage of gas or mucous	3	2	1	0
Accidental bowel leakage of liquid stool	3	2	1	0
Accidental bowel leakage of solid stool	3	2	1	0
Deterioration of life (Yes/No)				
Never (no episode the past month)				
Rarely (1 episode the past month)				
Weekly (1 or >1 episodes a week)				
Daily (1 episode a day)				
Deterioration of life Yes:1 No:0				
Maximum score=10:complete incontinence				

Table II Wexner Continence Grading Scale (7)

Type of incontinence	Frequency				
	Never	Rarely	Sometimes	Usually	Always
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

Never, 0; rarely, <1/month; sometimes, <1/week, ≥1/month; usually, <1/day, ≥1/week; always, ≥1/day.
0, perfect; 20, complete incontinence.

tinence to flatus and soiling, with the Wexner Continence Score ranging from 7 to 4 at 2, 6, 24 and 48 weeks postoperatively. Patients' satisfaction in our series was 91.7%.

Discussion

Anal fissure is a longitudinal defect of the anal canal mucosa and anoderm, extending usually from the dentate line to the external verge of the anal canal and was recognized as a clinical entity in 1934 (8). Acute fissures usually heal with conservative treatment. Fissures lasting longer than two months with features of chronicity (sentinel skin tag, hypertrophied anal papillae and fibrous polyps, exposure of the underlying anal sphincter or anal cicatrisation) are unlikely to heal with conservative management (1, 9). Atypical fissures may be multiple or off the midline, or be large and irregular. They usually are caused by inflammatory bowel disease, local or systemic malignancy, venereal infection, trauma, tuberculosis or chemotherapy and they are unlikely to be resolved with conservative management (5).

The cause of anal fissure remains controversial although it has been recognized that anal fissures are, probably, caused by internal anal sphincter hypertonia (1,8,10-12), which produces ischaemia of the posterior commissure of

the anus. This explains the presence of sphincter spasm, ischaemic severe pain, predilection for the posterior midline and poor healing. It also explains how surgery by disrupting the internal anal sphincter and improving anodermal blood flow allows the fissure to heal (1,5,8).

Surgery achieves high rates of anal fissures healing with a low recurrence rate (1,4,13). Anal dilatation results in successful healing of anal fissures. However there is no way to reliably standardize the procedure and both the internal and external sphincters can be disrupted or fragmented in an irregular manner (14). As a result, sphincter damage occurs in 65% of patients undergoing anal dilatation (14), with a significantly higher risk of minor incontinence than sphincterotomy (15) (12.5% to 24.3% after anal stretch vs 4.8% after lateral internal sphincterotomy) (14,16). Anal dilatation has also a higher risk of fissure persistence compared with lateral internal sphincterotomy (1,17). A method combining the age-old technique of manual dilatation followed by radio surgery is found to be useful for refreshing the edges of the fissure and to tackle pathologies such as sentinel pile, small internal piles or hypertrophied anal papillae (18,19). Revisiting the trends of treatment of chronic anal fissures, the preferred options are manual dilatation with radio surgery and the subcutaneous lateral anal sphincterotomy (18).

Lateral internal sphincterotomy is the most commonly used operative technique, which is highly efficient and succeeds in curing the fissure in 90 to 100% of patients (2-5,20).

Several studies reported that there were no significant differences in pain scores or in incontinence rate between open and closed internal sphincterotomy (1,2,17,21), although more "open" patients experienced minor discomfort at 1 week (2). On the other hand, it has been suggested that open sphincterotomies are longer than closed ones, explaining why they seem to have a higher risk of incontinence than the closed technique (1,15). Morbidity and recurrence, also, were similar in both techniques, even under local anesthesia, which can be used effectively as an alternative to general anesthesia and also has several socioeconomic advantages (high degree of satisfaction and comfort to the patient, rapid solution of the problem) (21,22).

However, the procedure of lateral internal sphincterotomy was associated with a risk of some degree of incontinence in 30% of patients (3,23) (a very high percentage which might be due to inadequate technique). According to a systematic review of randomized surgical trials the overall risk of postoperative incontinence was about 10% and this was mostly incontinence to flatus, while there are no reports delineating the duration of this problem (if it is permanent or transitory) (2,5). Nevertheless, it is still controversial if minor degrees of incontinence could be a symptom of chronic anal fissure or the sequel of lateral internal sphincterotomy (11).

A number of scoring systems have been published for the assessment of severity of faecal incontinence (24,25). These grading scales contain various categories of inconti-

nence in an ordinal fashion ranging from complete continence to complete incontinence. Other outcome measures address the impact of faecal incontinence on the patient's quality of life. This impact is measured by use of questionnaires (25). Unfortunately, there is still no consensus about the optimal outcome measure in the assessment of severity of faecal incontinence.

In order to avoid such postoperative complications, medications were developed that effectively cause a chemical sphincterotomy and heal many fissures (26). The pharmacological agents, such as nitroglycerin ointment, injection of botulinum toxin and calcium channel blockers either given as tablets or applied topically, produce a temporary or reversible sphincterotomy reducing the sphincter pressure only until the fissure is healed (1,5,6,13).

However, chemical sphincterotomy seems to be less effective than surgery (lateral internal sphincterotomy) in curing chronic anal fissures due to the side effects and the frequency of repeating doses (1,3,12,27,28). Long term follow up is not available for chemical sphincterotomy and therefore the risk of recurrent anal fissure in the future is unknown (1). In addition, surgery is the treatment of choice when pharmacologic therapy fails or fissures recur frequently (23).

In this study, all patients with chronic anal fissure were submitted to lateral subcutaneous internal sphincterotomy, performed in standardized fashion by an expert surgeon and trainee staff. During the period 1981 -1991, one group of 62 patients underwent surgery under general anesthesia, while during the period 1991 - 2004, when experience with the procedure was established, a second group of 184 patients underwent surgery under local anesthesia.

No differences were found between the two groups regarding the operating time, the postoperative pain, nausea or vomiting, the pain-free interval after operation, analgesia requirements or patients' satisfaction, with relation to the method of anesthesia. In addition, there were the socioeconomic advantages of local anesthesia (22). Overall fissure healing rate was 97.5% after 48 weeks of follow-up, a result that is consistent with the literature (90-100%). Postoperative complications such as hematoma and recurrence of pain occurred with a very low incidence. The overall rate of new, minor incontinence to flatus and soiling after 48-weeks of follow-up was similar with the results found in other large series.

In conclusion, lateral internal sphincterotomy, especially the closed method, remains the method of choice for treatment of chronic anal fissures, is a safe and effective procedure that leads to symptomatic improvement and beneficially affects health-related quality of life, while only occasionally impairs continence.

References

1. McCallion K, Gardiner KR. Progress in the understanding and treatment of chronic anal fissure. *Postgrad Med J* 2001;77:753-758
2. Wiley M, Day P, Rieger N, Stephens J, Moore J. Open vs closed lateral internal sphincterotomy for idiopathic fissure-in-ano: A prospective, randomized, controlled trial. *Dis Colon Rectum* 2004;47:847-852
3. Hyman N. Incontinence after lateral internal sphincterotomy: a prospective study and quality of life assessment. *Dis Colon Rectum* 2004 ;47:35-38
4. Hasse C, Brune M, Bachmann S, Lorenz W, Rothmund M, Sitter H. Lateral, partial sphincter myotomy as therapy of chronic anal fissure. Long-term outcome of an epidemiological cohort study. *Der Chirurg* 2004;75:160-167
5. Nelson R. Treatment of anal fissure (Editorial). *BMJ* 2003;327:354-355
6. VanKemseke C, Belaiche J. Medical treatment of chronic anal fissure. Where do we stand on reversible chemical sphincterotomy? *Acta Gastroenterol Belg* 2004;67:265-271
7. Jorge JMN, Wexner SD. Etiology and management of fecal incontinence. *Dis Colon Rectum* 1993;36:77-97
8. Dziki A, Trzcinski R, Langner E, Wronski W. New approaches to the treatment of anal fissure. *Acta Chir Iugosl* 2002;49:73-75
9. Gupta PJ. A study of hypertrophied anal papillae and fibrous polyps associated with chronic anal fissures. *Rom J Gastroenterol* 2004;13:103-107
10. Bove A, Balzano A, Perotti P, Antropoli C, Lombardi G, Pucciani F. Different anal pressure profiles in patients with anal fissure. *Techn Coloproctol* 2004;8:151-156
11. Ammari FF, Bani-Hani KE. Faecal incontinence in patients with anal fissure: a consequence of internal sphincterotomy or a feature of the condition? *Surgeon* 2004;2:225-229
12. Sandelewski A, Koreza J, Dyaczynski M, Tomsia D. Chronic anal fissure – conservative or surgical treatment ? *Wiad Lek* 2004;57:80-84
13. Lindsey I, Jones OM, Cunningham C, Mortensen NJ. Chronic anal fissure. *Br J Surg* 2004;91:270-279
14. Nielsen MB, Rasmussen OO, Pedersen JF, Christiansen J. Risk of sphincter damage and anal incontinence after anal dilatation for fissure-in-ano. An endosonographic study. *Dis Colon Rectum* 1993;36:677-680
15. Nelson R, Mehrabian E. Meta-analysis of operative techniques for fissure-in-ano. *Dis Colon Rectum* 1999;42:1424-1428
16. Saad AM, Omer A. Surgical treatment of chronic fissure-in-ano: a prospective randomized study. *East Afr Med J* 1992;69:613-615
17. Nelson R. Operative procedures for fissure-in-ano. *Cochrane Database Syst Rev* 2002;:CD002199
18. Gupta JP. Current trends of management for fissure in ano. *Rom J Gastroenterol* 2002;11:25-27
19. Gupta JP. Sphincterotomy with radio frequency surgery: a new treatment technique of fissure in ano and associated pathologies. *Rom J Gastroenterol* 2003;12:37-40
20. Tocchi A, Mazzoni G, Miccini M, Cassini D, Betteli E, Brozetti S. Total lateral sphincterotomy for anal fissure. *Int J Colon Dis* 2004 ;19:245-249
21. Arroyo A, Perez F, Serrano P, Candela F, Calpena R. Open versus closed lateral sphincterotomy performed as an outpatient procedure under local anesthesia for chronic anal fissure: prospective randomized study of clinical and manometric longterm results. *J Am Coll Surg* 2004;199:361-367

22. Al-Raymoony AE. Surgical treatment of anal fissures under local anesthesia. *Saudi Med J* 2001;22:114-116
23. Jonas M, Scholefield JH. Anal fissure. *Clin Evid* 2004;11:533-543
24. Vaizey CJ, Carapeti E, Cahill JA, Kamm MA. Prospective comparison of faecal incontinence grading systems. *Gut* 1999;44:77-80
25. Deutekom M, Terra MP, Dobben AC, et al. Selecting an outcome measure for evaluating treatment in fecal incontinence. *Dis Colon Rectum* 2005;48:2294-2301
26. Griffin N, Acheson AG, Tung P, Sheard C, Glazebrook C, Scholefield JH. Quality of life in patients with chronic anal fissure. *Colorectal Disease* 2004;6:39-44
27. Nelson R. A systematic review of medical therapy for anal fissure. *Dis Colon Rectum* 2004;47:422-431
28. Orsay C, Rakinic J, Perry WB, et al. Standards Practice Task Force; American Society of Colon and Rectal Surgeons. Practice parameters for the management of anal fissures (revised). *Dis Colon Rectum* 2004;47:2003-2007