Comparitive study between surgical sphincterotomy and topical Glyceryl trinitrate in treatment of chronic anal fissure

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Contents

List of abbreviations

CCBs	Calcium channel blockers
GTN	Glyceryl trinitrate
MARP	Maximal Anal Resting Pressure

Abstract

In summary, anal fissures are a common problem that can usually be identified by an attentive history and limited physical examination. Initial management should consist of conservative, nonoperative treatments, as most fissures heal with minimal intervention. Medical options exist for treatment of chronic fissures, but none have proven to be superior to lateral internal sphincterotomy. Lateral internal sphincterotomy has been the standard treatment for chronic anal fissure, but fissure healing rates of up to 80% with topical glyceryl trinitrate (GTN) treatment have suggested that this operation may become redundant. We evaluated the results of topical treatment of chronic anal fissures with 0.2% GTN for 8 weeks in the outpatient clinical setting with the results of treatment by lateral internal sphincterotomy. GTN induced fissure healing in 10 of 20 consecutive patients after8 weeks and 14 of 20 after 13 weeks Lateral internal sphincterotomy was performed in 20 patients. At the 8-week post-sphincterotomy review, 90% of fissures had healed and 100% at 10 weeks post-sphincterotomy, there were no major complications. In this study topical GTN for treatment of chronic anal fissure in the outpatient setting was not as effective as demonstrated in controlled clinical trials. Lateral internal sphincterotomy is still a good therapeutic option, especially in patients not responding to GTN.

Keywords:

Surgical sphincterotomy
Topical glyceryl trinitrate
Treatment of chronic anal

Introduction

Introduction

Anal fissure is a very common disease of the anus, which commonly affects young and middle aged adults and sometimes seen at different ages, including infancy, early childhood and is equally common in both sexes In most cases, the fissure is located in the posterior midline (**Bennett and Goligher, 1985**).

Poor musculature support of the anal canal posteriorly is responsible for occurrence of the majority of fissures in posterior midline (**Shwartz, et al, 1983**).

Recently, it has been proposed that the increased internal sphincter tone in patient with a fissure reduces ano-dermal blood flow at posterior midline. This theory evidenced by angiographic Doppler study of ano-dermal blood flow (**Schouten, 1994**).

The main symptom of anal fissure is anal pain, which is usually burning or sharp and shooting in quality (**Killingbark, 1988**).

The diagnosis of anal fissure is based on the history and physical findings. Pain and bright red rectal bleeding invariably mean that a fissure is present; when these symptoms are chronic, they are even more suggestive (**Goligher, 1984**).

Anal fissures are treated either conservatively or surgically . The aim of treatment is to reduce pain and relieve spasm (**Jensen, 1986**).

Local anesthetic agents may be effective particularly in acute fissure, but allergy may occur in approximately 2% of patients (**Alexander, 1975**).

Botulinum toxin A produces flaccid paralysis of skeletal muscle and diminished activity of parasympathetic and sympathetic cholinergic synapses. Studies of injection of botulinum toxin reported a significant decrease in anal resting pressure of 18–30% **(Brisinda G, et al, 2002).**

CCBs are effective in causing smooth muscle relaxation. Nifedipine was evaluated for treatment of anal fissure. with 0.2% nifedipine ointment, a mean reduction of 30% in MARP was observed **(Staneva-Stoytcheva D. et al, 1992).**

Nitrates relaxes smooth muscles irrespective to the pre-existing cause of muscle spasm (**Murad F. 1999**).

Recognition of nitric oxide as a non-adrenergic, non-cholinergic neurotransmitter mediating relaxation of the internal anal sphincter has initiated the wide use of nitrates in the treatment of chronic anal fissure (**Jonas and Scholefield, 2001**).

A number of studies have shown that topical application of glyceryl trinitrate (**GTN**) to the anus can cause reversible relaxation of the internal anal sphincter in man and heal fissure (**Lund et al, 2005**).

The operative managements available are manual dilatation of the anus or surgical management. Surgical treatment may be posterior sphincterotomy with or without fissurectomy or lateral sphincterotomy without fissurectomy. There is still big debate as to which is the

optimal method. The aim of surgical treatment is to reduce the activity of the internal sphincter, then, reducing the resistance to the passage of stools (**Killingback, 1988**).

In lateral sphincterotomy, the internal sphincter is divided away from the fissure this can be done either by closed or open method. Lateral sphincterotomy avoids the keyhole deformity, and healing is usually complete within three weeks (**Mann et al, 1995**).

Lateral sphincterotomy results in complete healing of the fissure in 92-99% of patients (**Lewis et al, 1988**).

Impaired continence of flatus and liquid stool is sometimes reported, but this is nearly always temporary (**Oh, 1987**).

The study includes 40 patients in **Kasr El Aini** and **Fayoum** surgery outpatients clinic diagnosed to have a chronic anal fissure. patients with chronic anal fissure were randomly selected regardless the age or sex. Patients are divided into two groups.

In our study internal sphincterotomy was done by both surgical and chemical method using local glyceryl trinitrate ointment.

Group A: A lateral circumferential anal incision was made in the cutaneous margin of anal canal over lower edge of internal sphincter.

Group B: Patients subjected to local application of GTN 0.2% for 8 weeks. A regimen of a pea-sized amount of GTN ointment applied 2 times daily anal verge.

Patients followed up at 2 weeks interval for the following

- Relieve of pain

- Fissure healing
- Complication
- Recurrence

Aim of the work

To compare the results of treatment between surgical sphincterotomy and chemical sphincterotomy by GTN.

Anatomy

Anatomy of the pelvic floor

Only three striated muscle regions in the human body are in a state of tonic contraction. The paraspinous muscles are one of them, the other two lie at the entry and exit of the gastrointestinal tract, the cricopharyngeus muscle and the levator ani. The anatomical configuration of the pelvic floor, rectum and anal canal is rather complex. The pelvic floor is formed of musculotendinous sheet of mostly striated fibers known as the levator ani, to which the posteriorly situated coccygeus is sometimes included in the pelvic floor complex. It arises in front from posterior surface of the body of the pubis, posteriorly from the inner surface of the spine of ischium and between both points from the angle of division between the obturator and rectovesical layers of pelvic fascia. Its fibers pass downwards to the midline of the floor of pelvis to be inserted into the sides of apex of the coccyx and the median fibrous raphe, which extends between the coccyx and the margin of the anus. The middle fibers are inserted in the sides of anal canal and blend with the fibers of sphincter muscles, the anterior fibers insert into the central

tendon of the perineum, where they fuse with the musculature of the prostate/vagina and the perineal body to form the levator prostate/pubovaginalis. Some of these fibers travel caudaly along the intersphincteric plane to contribute to the conjoined longitudinal coat of the anal canal. The levator ani receives its nerve supply from direct branches of S3-4 and occasionally S5, which lie on the visceral side of the levator ani muscle as well as from the perineal branch of the pudendal nerve on its underside (**Pearl, 1994**).

The puborectalis arises from the posterior aspect of the body of the pubis, inferior pubic ramus and obturator internus fascia loop around the rectum to form a strong U-shaped sling, which in its tonic contraction state is responsible for angulating the recto-anal junction to an angle about 92 during rest and 137 during straining (**Rcismussen, 1994**).

It is disputed whether or not it belongs to the levator ani complex or to the external anal sphincter complex.

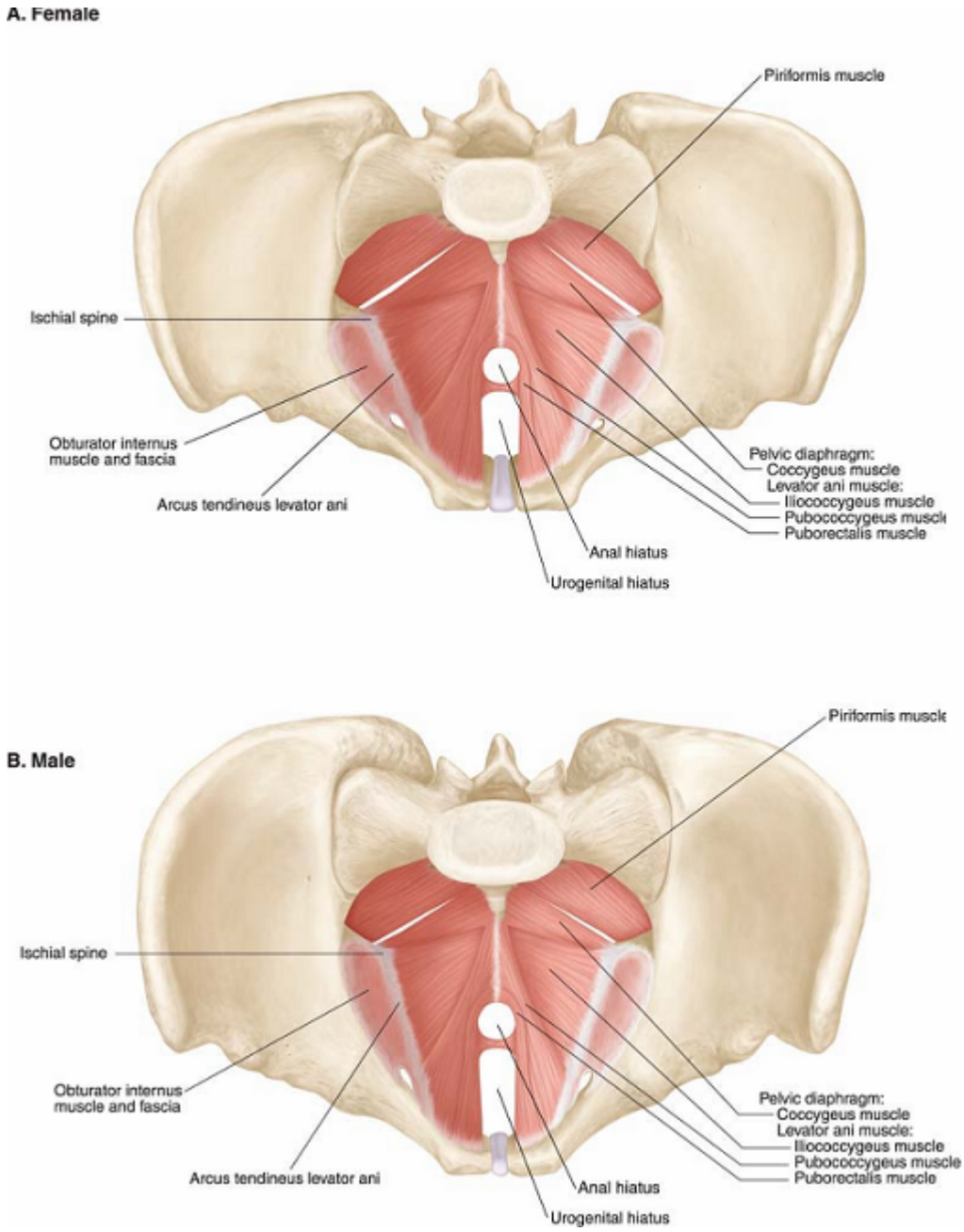

Figure (1) Pelvic Diaphragm, Superior View

Quoted from **(Tank et al,)**