

A review of conservative and surgical management of anal fissure

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Abstract

Background : Anal fissures are one of the common perianal conditions presenting with bleeding, itching, and pain of varying severity. The method of treating this pathology should preferably be the one that results in optimal clinical outcome, is less painful, and is patient friendly. Despite a plethora of techniques in vogue, an ideal management of this condition continues to be a subject of debate.

Materials and Methods : A Medline database was used to perform a literature search for articles relating to the term 'anal fissure'.

Conclusion : Analysis of the available literature shows that by far, medical manipulation of the internal sphincter should be the first-line treatment in anal fissure. A surgical therapy is called for if the medical therapy fails or there is a recurrence (Acta gastroenterol. belg., 2005, 68, 446-450).

Key words : Anal fissure, conservative, sphincterotomy, recurrence, continence.

Introduction

Anal fissure is the most common cause of severe anal pain. It equally is one of the most common reasons for bleeding per anus in infants and young children. It may manifest with anal discharge, pruritus, constipation, dyspareunia and dysuria in addition. The pain induced by anal fissure is intolerable and usually is disproportionate to the severity of physical lesion. The disease could be classified into 1) Acute or superficial and 2) Chronic anal fissure.

Predisposing Factors

Constipation is one of the important factors responsible for initiating the process of fissure formation (1). Passage of hard stool, irregularity of diet, consumption of spicy and pungent food, faulty bowel habits, and lack of anal hygiene are a few other contributory factors. In females, the disease is usually initiated during pregnancy and following childbirth. Acute fissure begins as a superficial split in the anoderm that may progress to a chronic fissure.

Pathology

The anodermal blood flow at the posterior midline is relatively precarious as compared to other segments of the anal canal. The perfusion of the anoderm at the posterior commissure gets reduced when the anal canal pressure increases as during straining at stool. This explains the ischemic nature of pain at the fissure site,

predilection for the posterior midline, and poor healing rate when the fissure assumes chronicity.

Treatment of Acute anal fissure

Acute fissures can be effectively managed with conservative therapy (2). The following approach is adopted.

1. Warm water sitz bath with or without the addition of boric powder, povidone iodine solution or potassium permanganate in the water. This treatment soothes the pain and relaxes the spasm of the internal sphincter (3).
2. Adequate analgesia is necessary to break the vicious cycle of pain- holding of stool-trauma and pain. A suitable dose of oral analgesic consumed half an hour before defecation gives a fair amount of pain relief.
3. Stool softening is essential as soft and formed stools negotiate the anal canal in non-traumatic physiologic maneuver. Plenty of oral fluids also help in keeping the stools soft.
4. High-fiber-diet and bulk-forming agents such as Isaphghula husk (Fybogel) or soft laxatives like lactulose (Duphalac) or paraffin oil, green leafy vegetables and fibrous fruits provide a smooth and swift act of defecation.
5. Reassurance and encouragement for not resisting the urge for defecation help prevent hardening of stool. Application of local anesthetic cream or gel may help avoid the torture experienced during passage of stools by patients with acute fissures. Ointments containing opiates, xylocain, amethocain, and cinchocain to relieve pain, belladonna to alleviate sphincter spasm and silver nitrate to promote healing have all had been in use since long. These mixtures are introduced on the finger or a short rectal bogie to ensure a through application over the desired part of the fissure (4). The possible complication with this treatment includes pruritus due to allergy with the anesthetic agents and loss of rectal bogie in the rectum (5).

Summary. — Acute anal fissures are superficial and are rarely multiple. they respond well to conservative therapies like warm sitz bath, analgesics, stool softeners and dietary

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modifications. application of various 'hemorrhoidal' creams should be avoided if they contain corticosteroids.

Chronic or complicated fissure in ano

The approaches detailed above do not prove effective in anal fissure, which has assumed chronicity. A definitive therapy is needed to tackle this resistant entity. The fissure is labeled as chronic or complicated if it manifests with one or more of the following features (6).

1. Presence of a fibrous anal polyp.
2. Presence of an external anal skin tag.
3. Induration or fibrosis of the edges of fissure.
4. Visible fibers of the internal sphincter at the floor of the fissure.
5. An infected/suppurated fissure.
6. A bridged fissure with underlying fistula (a post fissure fistula).

Historically, it has been noticed that fissure, complicated by any of the above, neither heal spontaneously nor does it respond to conservative therapy (7).

Summary. — Chronic anal fissures are mostly found on the posterior or in the women on the anterior midline. they are often associated with concomitant pathologies like sentinel tags, anal papillae, fibrous polyps and sometimes with pathological hemorrhoids.

Therapies useful for acute fissures provide only a short term relief in chronic fissure. They in addition, do need some form of internal sphincter manipulation.

Material and methods

Medline (1965-2004) was searched for all published reports using the key word 'anal fissure'. All reports in which there were at least two references describing one common treatment modality were selected. This study sum up different anal fissure therapies, which either are in vogue or have been used with a proven degree of success. The treatment modalities are grouped into non-operative and operative maneuvers. The advantages and drawbacks of each of them have been highlighted.

Non-operative techniques

1) **Injection of Botulin Toxin.** The major effect of botulinum toxin on the internal anal sphincter is blockade of sympathetic (noradrenaline mediated) neural output. This is probably a postganglionic action, involving a reduction in noradrenaline release at the neuromuscular junction. When 20 Units of type A botulinum toxin (Botox) diluted to 50 U/ml is injected bilaterally in the vicinity of the fissure, it causes sphincter paresis for about 3 months, a period which is sufficient for healing of a chronic non-complicated fissure (8,9) (not associated with sentinel tag, internal hemorrhoids, anal polyps or post fissure fistula).

Botox is well tolerated and can be administered on an outpatient basis. The healing rate reported is about 60-96% (8).

Drawbacks

Accidental injection in the surrounding tissue amounting to general poisoning, hematoma and infection has been reported with botulinum toxin therapy (10). The high cost of botox is another constrain.

2) **Oral Nifedipine.** Nifedipine is an L-type calcium channel antagonist and is found effective in relieving the anal sphincter spasm¹¹. The drug inhibits smooth muscle excitation, which helps reducing the resting tone in the smooth muscles of the internal anal sphincter and thereby reducing resting anal pressure. The ideal dose is 20 mg of nifedipine given twice daily.

Drawbacks

The internal anal sphincterolysis caused by nifedipine is of reversible type. The action of the drug is short-termed, resulting in recurrence of symptoms. Adverse side effects like headache, postural hypotension, palpitations, flushing, dizziness, colicky abdominal pain; ankle edema, reduced taste and smell, nausea and diplopia have been reported with this therapy.

3) **Local application of vasodilators.** Nitric oxide is a neurotransmitter, which helps mediating internal anal sphincter relaxation. Nitric oxide donors such as glyceril trinitrate (GTN) or isosorbid-di-nitrate are known to cause a chemical sphincterotomy promoting healing of anal fissure (12). Application of 2% GTN ointment over the anoderm 2-3 times daily for about 6 weeks results in fissure healing in 90-98% of patients (13).

In another study, diltiazem ointment was used topically. Its use was claimed to offer significant healing rate and reduced side effects (14).

Drawbacks

Headache during therapy with nitroglycerine is a major concern. One may need to titer the concentration of the medication before it can be aptly applied. While the application of GTN has a high healing rate, it also has a high recurrence rate. These topical therapies, however, have not been found useful in combating acute anal fissures.

4) **Chemical cauterization.** This involves curettage of fissure using silver nitrate or phenol-in-glycerin. This procedure has to be repeated until healing occurs, which may take 4 to 8 weeks duration.

Drawbacks

Accidental spread of these drugs in the surrounding tissues causing systemic toxicity and infection has been reported.

Summary. — Drug therapy in chronic anal fissure includes oral nifedipine, diltiazem, lacidipine, bethnecol, salbutamol, and indoramine. Local applications include 2% GTN ointment, nifedipine, diltiazem and l-arginine gel. Local injection of botulinum toxin [botox] has also been found useful. However, increasing incidences of adverse effects

and decreasing efficacy in long term have been the major drawbacks of these medications.

5) **Direct current probe treatment.** This technique has been used in patients of chronic anal fissures with associated internal hemorrhoids.

Studies have claimed that when the DC probe (Ultroid, Homeron) was applied to the internal hemorrhoids, the patients were relieved of anal pain and fissure healing occurred in 90% of patients (15).

Drawbacks

The treatment needs special equipment and the procedure requires a long time to be accomplished (about 10 minutes for each hemorrhoid). Moreover, the mechanism of action promoting fissure healing is unexplained. In addition, complication like perianal abscess and subsequent fistula formation has been reported following DC probe treatment (16).

6) **Endoscopic anal dilatation.** This procedure involves dilatation of the anal sphincter using various appliances under local anesthesia. One study using two-valved anoscope has claimed a success rate of 93% (17). In another series, a Parks' retractor and a recto-sigmoid balloon were used for sphincter dilatation. This series of 495 patients has recorded a success rate of about 90% within 3 months of the procedure (18). More recently, anal dilatation using pneumatic balloon has reported good results.

Drawbacks

There are but a few references in support of this technique. It is, therefore, not possible to reach to a conclusion as to the efficacy of this procedure.

Summary. — Chemical cauterization, use of direct current probe, anal dilatation using anoscope or recto-sigmoid balloon are not substantiated with benefits on long term follow up and thus are reportedly not employed in most part of the world.

Operative techniques

7) **Stretching of anal sphincter.** Anal stretching was described by Recamier in 1838. This was one of the most favored and accepted methods of treating anal fissures (19-20).

Drawbacks

Recent studies however, have shown that anal dilation has a higher risk of fissure persistence and higher risk of incontinence (21). It is no more recommended as a procedure for anal fissure.

8) **Excision of the anal fissure (fissurectomy).** A triangular part of the anoderm is excised along with the fissure itself. This procedure is usually preceded by anal stretch.

Drawbacks

A large and rather uncomfortable external wound is left behind after this surgery, which takes a long time to heal (21).

9) **Fissurectomy with immediate skin grafting.** This is an additional maneuver carried out after fissurectomy where a split thickness graft is applied to the wound in an attempt to expedite healing and shorten the period of convalescence.

Drawbacks

It takes a long time to furnish the procedure. A hospital stay of about a week is needed to keep patient's bowel held up to avoid possible detachment of the graft. Precisely, for these reasons, the procedure could not get enough acclimation and acceptance.

Summary. — Fissurectomy, fissurectomy with skin grafting and posterior anal sphincterotomy are fraught with complications like delayed wound healing, infective complications, and long convalescence period. Though a gentle anal stretch [anal dilatation] is still favoured by surgeons in some parts of the world, it is required to be abandoned as it leads to disruption of both the internal and external sphincters in an irregular manner.

10) **Division of internal anal sphincter.** Division of internal sphincter fibers to relieve the sphincter spasm is presently the preferred therapy for chronic, recurrent and non-healing fissures (22).

Two techniques have been described.

A. **Open posterior internal sphincterotomy.** Posterior sphincterotomy is done by dividing the sphincter fibers through the wound of the fissure itself.

Drawbacks

This wound is slow to heal and has a tendency to lead to a posterior midline keyhole defect that may cause a persistent seepage or difficulty in continence

B. **Lateral internal sphincterotomy.** It is by far the most accepted procedure. The grounds favoring this technique are the simplicity of the procedure, minimal anesthesia requirements, and good results (23).

A controlled sphincterotomy is performed on the left lateral wall of the anal canal. Both open and closed (subcutaneous) approaches have been described (24). A shorter sphincterotomy corresponding to length of the fissure has been found to reduce the risk of anal incontinence in comparison to the sphincterotomy extending up to the dentate line (25).

Drawbacks

The most common complications encountered are bleeding needing hospitalization, abscess and fistula formation, incontinence to flatus and feces, and recurrence.

Summary. — Lateral internal sphincterotomy is a procedure of choice. both open and closed methods are equally effective. Surgery, though being highly efficacious and successful in curing the fissure in more than 90% of patients, a systematic review of randomized surgical trials shows that the overall risk of incontinence is about 10% depending on the technique and the experience of the surgeon.

11) **Combined outpatient surgical and cryotherapeutic treatment.** A lateral anal sphincterotomy is followed by fissure curettage with N protosside cryosound²⁶. This is claimed to be quicker and more effective procedure.

Drawbacks

The additional maneuver is not found to be of any specific advantage and so it has not found many takers.

12) **Laser surgery.** Lasers are used for vaporization of the fissure or for conducting internal sphincterotomy in place of a knife. Laser is also being used to give relieving incisions in the three quadrants of the anal canal other than the one with anal fissure (27).

Drawbacks

The high cost of the laser unit seems to be the major determinant for its low acceptance (28). The procedure does not have any added advantage over the conventional procedures

13) **Lateral subcutaneous internal sphincterotomy and radio frequency surgery.** In an attempt to improve on the available options, a combined method of sphincterotomy and use of radiofrequency for fissures associated with concomitant pathologies like sentinel tags, hypertrophied anal papillae, fibrous polyps, post fissure fistula or internal hemorrhoids is reported (29-30).

A Ellman Dual Frequency radiofrequency generator (Ellman International, Oceanside, NY) was used which had a property of cutting, cutting and coagulation and pure coagulation.

It is claimed that the edges of the fibrosed fissure can be refashioned with the help of the radio frequency surgery. The entire procedure is claimed to be quick and virtually bloodless (31).

Drawbacks

No controlled or randomized trials are available using this technique. Further studies are awaited to analyze long-term results with this approach.

Summary. — Use of lasers, cryosound, and radiofrequency depends on the availability of these specialized gadgets. They can be coupled with the conventional surgical procedures.

Discussion

Revisiting the range of available modalities of treatment of chronic anal fissure, it can be concluded that

conservative treatments with nitroglycerine, botulin toxin, and oral nifedipine are all effective methods that may reduce the need for anesthesia and surgery in many of the patients (32). These could always be offered to the patients who are not willing for operative procedure (33). However, recent reports show that though initial results with these non-surgical options for chronic anal fissures have been projected with great enthusiasm, majority of these drugs have a high rate of side effects and incidences of recurrence in the long term (34). Medical therapy for chronic anal fissure is only marginally better than placebo, and doubtlessly far less effective than surgery (35).

Surgical treatment should be the ultimate choice as indicated in our review. Lateral internal sphincterotomy is a universally accepted method of surgical treatment, and a controlled sphincterotomy has minimized the complications inherent with this technique.

Conclusion

The above-mentioned treatment guidelines are not being claimed as inclusive of all methods of care and cure reasonably directed in obtaining the same results. The ultimate judgment regarding the propriety of any specific procedure must be left to the physician in light of all the circumstances presented by the individual patient.

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