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Review Article

### EVALUATION OF THE RECENT UPDATES REGARDING ANAL FISSURES MANAGEMENT: A SIMPLE LITERATURE REVIEW

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#### Abstract

**Background:** Anal fissure is a painful condition characterized by a persistent tear in the epidermal lining of the anus. Patients with acute anorectal problem should be handled with a careful clinical assessment since many of them are suffering from pain, discomfort and embarrassment. The guidelines recommend initial nonsurgical management, which results in resolution of the anal fissure in the majority of patients. Unfortunately, a significant proportion of patients will fail conservative management and require further treatment.

#### Objective

To review the different approaches of anal fissure treatment mentioned and discussed in the recent literature.

#### Method

PubMed database were used for articles selection. All relevant articles related to our review were chosen to cover the following topics: Anal Fissure, Management, Diagnosis and Outcomes. We excluded other articles, which are not related to our objectives. The data have been extracted according to specific form to be reviewed by the authors.

#### Conclusion

The goals of management are to break the cycle of anal sphincter spasm allowing improved blood flow to the fissured area so that healing can occur. Almost half of patients with acute anal fissures will heal with conservative measures alone such as increased fiber intake and sitz baths. Pharmacological sphincterotomy can be achieved by use calcium channel blockers, or injections of botulinum toxin into the sphincter but pharmacological relaxation of the sphincter does not always lead to rapid and persistent healing of chronic anal fissures. However, the search for the perfect nonsurgical treatment will continue. Lateral internal sphincterotomy remains the gold standard surgical treatment for chronic anal fissures of all other surgical interventions. Nevertheless, recent papers advice for judicious sphincterotomy in order to minimize the risk of incontinence.

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**INTRODUCTION:**

An anal fissure is a small break or tear in the skin of the anal canal, which typically runs from below the dentate line to the anal verge and is usually situated in the posterior midline. There are approximately 342,000 new anal fissure cases diagnosed in the US each year. The overall annual incidence was 0.11% (1.1 cases per 1000 person-years), but ranged widely by age [0.05% in patients 6–17 years to 0.18% in patients 25–34 years]. The incidence also varied by sex and was significantly higher among females 12–24 years and among males 55–64 years (1).

Anal fissure is considered as one of the anorectal emergencies along with other conditions such as acutely thrombosed external hemorrhoid, complicated internal hemorrhoid, anorectal sepsis, irreducible rectal prolapse, sexually transmitted proctitis and obstructing rectal cancer. Although it is not life-threatening and may be successfully treated in an outpatient setting, an accurate diagnosis remains a challenging problem for physicians and surgeons. It should be noted that patients with acute anorectal problem should be handled with a careful clinical assessment since many of them are suffering from pain, discomfort and embarrassment (2).

The American Society of Colon and Rectal Surgeons guidelines recommend initial nonsurgical management, which results in resolution of the anal fissure in the majority of patients (3). Unfortunately, a significant proportion of patients will fail conservative management and require further treatment (4). Therefore, in this review, we will discuss the different methods of anal fissure treatment mentioned in the recent literature.

**METHODOLOGY:****Sample**

We performed comprehensive search using biomedical databases; Medline, and PubMed, for studies concerned with anal fissures management and diagnosis published in English language. Keywords used in our search through the databases were as {Anal Fissure, Management, Diagnosis and Outcomes}. More relevant articles were recruited from references lists scanning of each included study.

**Analysis**

No software was used, the data were extracted based on specific form that contain (Title of the study, name of the author, Objective, Summary, Results, and Outcomes). Double revision of each author outcomes was applied to ensure the validity and minimize the errors.

**DISCUSSION:**

Anal fissure is a painful condition characterized by a persistent tear in the epidermal lining of the anus. It

was first described in 1934 by (Lockhart-Mummery)(5) as a linear or oval shaped tear in the anal canal starting just below the dentate line extending to the anal verge. The upper part of an anal fissure lies over the lower end of the internal sphincter and also across the annular subcutaneous external sphincter. This latter muscle is in spasm in such cases and its division is a necessary part of the operation for cure of a chronic fissure. Fibrosis also occurs in the subcutaneous sphincter and its division produces relaxation of the anus and relief of symptoms (6).

Anal fissures can be acute or chronic. Acute Fissures are a shallow tear in the anoderm. Chronic fissures are present for more than 6 to 8 weeks. Features of a chronic fissure are exposed fibers of internal anal sphincters at the base, hypertrophied anal papilla proximally, and a skin tag or sentinel pile distally.

Although the pathogenesis of anal fissure is still uncertain, it is thought that most fissures are initiated by direct trauma from passage of hard bulky stools or diarrhea (7). Two other factors account for the persistence of the fissure. Hypertonia or spasm of the internal sphincter can be primary or a secondary reflex to the pain caused by the raw ulceration, resulting in a vicious circle of repeated anal trauma due to reflex sphincter spasm caused by fear of defecation (8). This primary role of spasm has been demonstrated by anal manometry of patients with chronic anal fissure, which is the resting tone of the internal anal sphincter is high with little relaxation (9). The second predisposing factor is local ischemia of the anoderm, which impairs the healing of the fissure. The anoderm is vascularized by branches of the inferior rectal artery. These arterioles reach the mucosa after piercing through the internal anal sphincter. The posterior commissure is at risk of ischemia because it is less well vascularized. Therefore, sphincter spasm promotes mucosal ischemia by reducing the blood flow through the arteries as they pass through the internal anal sphincter (8). However, only a quarter of patients with anal fissure had chronic constipation according one review of the etiology of anal fissure. In a prospective study, anal fissure occurred among more than half of the mothers after the delivery (10). The finding of multiple fissures or anal fissure in an unusual lateral position can be associated with Crohn's disease, ulcerative colitis, HIV infection, neoplasia, syphilis, and tuberculosis (10,11).

**DIAGNOSIS:**

Pain during defecation with a passage of red blood is a typical symptom of this condition. Pain is usually excruciating and may last from minutes to several hours. Although patients are relatively pain-free

between bowel movement, experiencing severely painful defecation may preclude patients to have another bowel movement resulting in even harder stool. A vicious cycle of pain, anal spasm and passage of hard stool would exacerbate further traumatic and ischemic injury to anoderm and prevent the fissure from healing. For those with a short history of painful defecation, a small shallow linear laceration of the anoderm in the midline is normally evident of acute anal fissure without the need of digital rectal examination. Meanwhile, a chronic linear laceration of anoderm exposure to the underlying internal anal sphincter, with or without hypertrophic anal papilla and enlarged perianal skin tag, is a paramount finding of chronic anal fissure (2).

### MANAGEMENT:

The goals of management are to break the cycle of anal sphincter spasm allowing improved blood flow to the fissured area so that healing can occur. Almost 50% of patients with acute anal fissures will heal with conservative measures alone involving only increased fiber intake and warm bathing of the perineum (sitz baths). It is hypothesized that warm baths lead to relaxation of the internal anal sphincter via a somatoanal reflex (12).

Medical management is the standard first-line of therapy due to its safety and simplicity of implementation. It aims to regularize bowel movements and improve patient comfort. Bowel regulation is enhanced by a high fiber diet and mild laxatives chosen according to the quality and intensity of constipation (8). The problem of treatment of chronic anal fissure has not yet been solved. Surgical treatment of anal fissures is an unsatisfactory option because it can lead to irreversible damage to the sphincter and varying degrees of incontinence (13). An alternative is pharmacological sphincterotomy, which is widely achieved by use of donors of nitric oxide, calcium channel blockers, or injections of botulinum toxin into the sphincter. However, pharmacological relaxation of the sphincter does not always lead to rapid and persistent healing of chronic anal fissures (14). Nevertheless, the search for the perfect nonsurgical treatment will continue (15).

(S L Jensen)(16) in his comparative study advised to start the treatment with warm sitz baths combined with an intake of unprocessed bran as the treatment of choice for an acute first episode of anal fissure. After one and two weeks of treatment symptomatic relief was significantly better among patients treated with sitz baths and bran than among patients treated with lignocaine ointment or hydrocortisone ointment. This treatment is cheap, has no potential serious side effects, and brings the best and quickest relief of

symptoms (16).

Topical agents gained a rapid success because they lead to a chemical sphincterotomy. It is more preferable due to its reversible nature. The most commonly used agent is glyceryl trinitrate that works as a nitrogen donor increasing nitric oxide, which in turn, induces a dose-dependent relaxation of the internal anal sphincter. However, the healing occurs only among less than half of the cases and the recurrence is considerably high along with its association with severe headache as an adverse effect among a quarter of the patients (17). (Bawahab et al.)(18) compared it with a calcium channel blocker which is nifedipine regarding the efficacy in healing chronic anal fissure. They found that local application of 0.5% nifedipine ointment showed better results than 0.2% glyceryl trinitrate ointment in treating anal fissure as regards healing, headache and patient compliance to treatment with equal results as regards recurrence after complete cure in twelve months follow-up period (18).

In patients unresponsive or noncompliant to glyceryl trinitrate, another calcium channel blocker which is topical diltiazem showed its efficacy as well (19,20). Recently, captopril which is an angiotensin-converting enzyme inhibitor has been found to decrease anal tone in vitro, possibly by inhibition of smooth muscle by angiotensin II (21). Therefore, (Ala et al.)(22) conducted a prospective randomized clinical trial comparing the efficacy of captopril cream with that of diltiazem cream in the treatment of chronic anal fissure. they found that topical captopril and diltiazem were found to be equally effective in the management of pain, bleeding and perianal irritation due to chronic anal fissure. Nevertheless, topical captopril is not recommended due to the high incidence of pruritus observed with it (22).

A new direction in the management of chronic anal fissure has been shown by antibiotics (23). (Pelta et al.)(24) hypothesized that subclinical infection is the reason for causing symptoms in chronic anal fissure. Then, several studies have been published providing more evidence for the efficacy of antibiotics in treating chronic anal fissure (25). (Grekova et al.)(15) took swabs from the bases of fissures and found a wide spectrum of pathogenic microorganisms colonizing these anal defects. The chronic anal fissures were colonized by mixtures of gram-positive/gram-negative anaerobic bacteria or gram-negative aerobic monocultures. Patients in whose samples anaerobic bacteria were identified were then invited to participate in a prospective randomized clinical trial comparing topical metronidazole with conventional treatment. Patients with anaerobic bacteria in their swabs who received topical metronidazole treatment experienced rapid relief of

pain and anal sphincter spasm along with enhanced fissure healing. Moreover, (Pankaj Garg)(23) suggested a new antibiotics treatment method which is local and oral antibiotics with avoidance of constipation (LOABAC) but further studies are still needed.

(Jost and Schimrigk)(26) in 1993 first reported injecting botulinum toxin directly into the anal sphincter as new mode of treatment for anal fissures. Botulinum toxin is an exotoxin produced by the bacterium *Clostridium botulinum*. When injected locally the toxin binds to presynaptic nerve terminals at the neuromuscular junction, thereby preventing release of acetylcholine and resulting in temporary muscle paralysis. Thus, it reduces internal anal sphincter hypertonicity and allows the fissure to heal (27). Studies have shown a variable efficacy with success rate 60% to 80% for chronic anal fissures (28,29). Recently, the existing studies are heterogeneous and there is lack of consistency in botulinum toxin dosing. The injection dosage reported in the literature ranges from 20 to 50 IU with injection sites either directly under the fissure or on both sides of the fissure. (Ravindran et al.)(30) suggested increased effectiveness with larger doses such as 80 or 100 IU and with more injection sites. They found that the recurrence rate post-botulinum toxin injection was significantly lower in the high-dose group and there was no long-term incontinence. On the other hand, (Dat et al.)(31) demonstrated that low dose (33 IU) can be given with good efficacy. The recurrence rate post Botox injection is comparable with other studies. Considering that a 100 IU Ampoule of Botox costs \$450, adopting the use of low botulinum toxin has the potential for great cost saving and reduced theatre waiting times (31).

A recent paper has been published by (Brady et al.)(32) comparing botulinum toxin with lateral internal sphincterotomy and they found that Although botulinum toxin injection is viewed as a safer option for these patient populations, both botulinum toxin and lateral internal sphincterotomy patients experienced a decline in continence. Rates of recurrence were higher in botulinum toxin patients than lateral internal sphincterotomy patients, although patients were equally satisfied with the procedure. According to recent guidelines, lateral internal sphincterotomy remains the gold standard surgical treatment for chronic anal fissures of all other surgical interventions such as uncontrolled manual anal dilation, controlled pneumatic balloon dilation and fissurectomy. For the reason that it yields superior healing rates with less incontinence (3). Moreover, (Liang et al.)(33) confirmed the role of redo lateral internal sphincterotomy in the treatment of surgically recurrent chronic anal fissure. However,

the debate continues regarding how much of the internal sphincter should be divided. It can be performed in either an open or closed manner. Closed lateral sphincterotomy involves a short stab incision and blind division of internal sphincter guided by the surgeon's finger. While, with a small incision, open sphincterotomy allows for direct visualization of the internal sphincter, hence a more controlled sphincter division and this offers a theoretical reduction in inadvertent external sphincter injury and better continence outcomes. However, a recent Cochrane review shows similar fissure healing rates and minor incontinence rates (34). (Laing et al.)(33) also think that judicious sphincterotomy cures chronic fissures with minimal risk of incontinence. Their overall patient satisfaction score was 9.7 out of 10 and a significant improvement in the quality of life post-surgery. In addition, (Nessar et al.)(35) think that this type of incision is excessive and should be approached in a more conservative manner because of the high percentage of postoperative soiling or incontinence problems. They introduced a new less invasive sphincterotomy. They revealed that subcutaneous lateral internal partial sphincterotomy is effective, safe, and a reproducible technique for the management of chronic fissure pain.

### CONCLUSION:

The goals of management are to break the cycle of anal sphincter spasm allowing improved blood flow to the fissured area so that healing can occur. Almost 50% of patients with acute anal fissures will heal with conservative measures alone such as increased fiber intake and sitz baths. Pharmacological sphincterotomy can be achieved by use calcium channel blockers, or injections of botulinum toxin into the sphincter but pharmacological relaxation of the sphincter does not always lead to rapid and persistent healing of chronic anal fissures. However, the search for the perfect nonsurgical treatment will continue. Lateral internal sphincterotomy remains the gold standard surgical treatment for chronic anal fissures of all other surgical interventions. Nevertheless, recent papers advice for judicious sphincterotomy in order to minimize the risk of incontinence.

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