Management of chronic anal fissures: a narrative review

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ABSTRACT

Anal fissures are often encountered in surgical practice in both sexes. It is a distressing disease impacting quality of life and causes profound morbidity among those affected. If left untreated, it may lead onto perianal abscess or even malignancy in long standing cases. Surgery is the gold standard management for chronic anal fissures. Recently the widespread use of pharmacologic agents for chronic fissures has increased. The management of chronic anal fissures has migrated to an era of multifaceted approach. This narrative review looks into various studies spanning over a period of 16 years. Various articles were shortlisted and analyzed for efficacy of various treatment methods, their impact in hospital stay, quality of life improvement, recurrence rate and complications among various treatment methods. We concluded from this review, that open lateral internal sphincterotomy is still the gold standard method of treatment for chronic anal fissure. Among pharmacological agents, 2% diltiazem has the best effectiveness with good compliance rate. Modern surgical techniques like VY plasty can be reserved for special situations. We do not recommend the practice of manual anal dilatation.

Keywords: Chronic anal fissures, 2% diltiazem, Lateral anal sphincterotomy

INTRODUCTION

Anal fissure is defined as linear ulceration of the squamous lining of the distal anal canal. Acute fissure usually heals spontaneously within 4 weeks if primary. Chronic anal fissures are when patient has chronic pain for more than 6-8 weeks. Posterior anal fissures are more common than anterior in the ratio 10:1. Chronic anal fissure is a middle age disease with high incidence between 30 to 50 years of age affecting both men and women equally. Many tried to define chronic anal fissure with duration alone but it is now the presence of exposed internal anal sphincter fibers through the ulcer. Surgery has been the gold standard treatment of chronic anal fissure. Rate of healing and pain relief are the primary end points in deciding the efficacy of any treatment for chronic anal fissures. Generally, it is considered to propose surgery as the first line therapy in stage IV fissures.

Over the course of evolution, various treatment methods have been advocated in the management of chronic anal fissures. This narrative review aims at explaining the various treatment options available for chronic anal fissures and concludes with the possible best treatment option in majority of the situations.

PATHOPHYSIOLOGY

Direct anal canal trauma as a result of passage of hard stools was considered as the original cause of anal fissures. Though acute fissures may occur as a result of this process, the progress to chronic fissures was not clearly explained. Hence new hypotheses have paved way into better understanding the pathogenesis of chronic anal...
fissures. The recent concept of high anal pressures due to constipation (internal sphincter hypertonia) which in turn leads to a state of ischemic hypoxia to the anal mucosa is widely accepted as the pathophysiology of chronic fissures.\(^7\)\(^8\) Hence the management of chronic fissures has migrated from loosening the stool consistency to reduce the internal sphincter hypertonia either surgically or pharmacologically.

**OVERVIEW OF TREATMENT OPTIONS**

As discussed above, the primary aim of management of chronic anal fissures is to reduce the sphincter hypertonia. This secondarily improves the blood flow via digital rectal arteries and help in ulcer healing. Various treatment modalities were proposed ranging from stool softeners to pharmacological agents and finally surgery.

Pharmacological agents include drugs like nitrates (ISDN or GTN), calcium channel blockers and even botulinum toxin. Surgery varies from manual anal dilatation to lateral anal sphincterotomy (gold standard) and recent surgical techniques like fissurectomy, VY advancement flaps etc.

**METHODS**

An electronic search on PubMed, EMBASE, Google Scholar was performed for a period ranging from January 2000 to December 2016 spanning 16 years. The MeSH terms used in this narrative review were ‘chronic anal fissure’ and ‘pharmacological agents’ or, ‘Surgery’, or ‘innovations’ was used in combination with 10 specific terms like diltiazem, botulinum toxin, GTN or ISDN, manual anal dilatation, lateral anal sphincterotomy, anoplasty, fistulectomy etc. Google Scholar was used for citation search for all included articles. A language exclusion of “English only” articles were placed and only such articles were included.

**PHARMACOLOGICAL AGENTS**

The Table 1 shows various studies spanning 16 years where usage of multiple pharmacological agents like nifedipine, nitrates, diltiazem and botulinum toxin have been studied. Among the various agents diltiazem and botulinum toxin have been found to have the most effect in terms of pain relief and ulcer healing. However, Smith et al describes the possibility of incontinence with long term usage of botulinum toxin. Though, diltiazem is associated with few complications like perianal itching etc, its compliance rate is very good (Samim et al).\(^17\) Nitrates and nifedipines are significantly worse in ulcer healing and also may lead to systemic side effects (A la et al and Shrivatsav et al).\(^16\)\(^18\)

<table>
<thead>
<tr>
<th>Author of the study</th>
<th>Study design</th>
<th>Agent used</th>
<th>Outcome</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carapeti et al(^10)</td>
<td>Prospective comparative trial (30 patients in 2 groups of 15)</td>
<td>Topical 2% diltiazem vs 0.1% bethanecol</td>
<td>a) 67% patients healed with diltiazem b) 60% healed with bethanecol</td>
<td>Both equally effective (p&lt;0.05)</td>
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<tr>
<td>Kocher et al(^11)</td>
<td>Prospective double blind randomised, two centre trial (60 patients in 2 groups)</td>
<td>GTN vs 2% diltiazem</td>
<td>a) No significant difference between both groups in healing b) More headaches in GTN group (RR=2.06)</td>
<td>Recommends further studies</td>
</tr>
<tr>
<td>Scholefield et al(^12)</td>
<td>Double blind, multicentre, randomised control trial (200 patients)</td>
<td>GTN (0.1% vs 0.2% vs0.4%) and placebo group</td>
<td>a) No statistical significance between placebo group and GTN group as a whole especially in acute fissures</td>
<td>Recommends revision of definition of chronicity</td>
</tr>
<tr>
<td>Smith and Friezelle(^13)</td>
<td>Correspondence</td>
<td>Describes about long term use of botulinum toxin</td>
<td>NIL</td>
<td>Recommends continued. Botulinum toxin should not be used indiscriminately as it can lead to incontinence (0-18%)</td>
</tr>
<tr>
<td>Nash et al(^14)</td>
<td>Prospective clinical trial (2 years -112 patients)</td>
<td>2% diltiazem</td>
<td>a) 59% of patients required further treatment b) Compliance to</td>
<td>Recommends counselling of patients for possible secondary therapy</td>
</tr>
</tbody>
</table>

Continued.
<table>
<thead>
<tr>
<th>Author of the study</th>
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<th>Agent used</th>
<th>Outcome</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katsinelos et al&lt;sup&gt;15&lt;/sup&gt;</td>
<td>Randomised control trial (64 patients)</td>
<td>0.5% nifedipine vs sphincterotomy</td>
<td>a) 100% healing achieved in surgery group vs 96.7% in nifedipine group</td>
<td>Did not attain statistical Significance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b) 50% complications in nifedipine vs 18.7% in surgery</td>
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</tr>
<tr>
<td>Shrivastava et al&lt;sup&gt;16&lt;/sup&gt;</td>
<td>Randomised clinical trial (90 patients)</td>
<td>2% diltiazem vs 0.2% GTN vs control group</td>
<td>Diltiazem is superior in pain relief and fewer complications</td>
<td>Recommends use of 2% Diltiazem (pain Improvement Statistically significant)</td>
</tr>
<tr>
<td>Samim et al&lt;sup&gt;17&lt;/sup&gt;</td>
<td>Double blind randomised clinical Trial (134 patients)</td>
<td>2% diltiazem vs botulinum toxin</td>
<td>a) Both showed equal healing rated and pain resolution</td>
<td>Botulinum toxin better than Diltiazem in short term, while long term both show equal efficacy. Study did not reach statistical significance</td>
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<td></td>
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<td></td>
<td>b) perianal itching is noted only in diltiazem group (p&lt;0.012)</td>
<td></td>
</tr>
<tr>
<td>Ala et al&lt;sup&gt;18&lt;/sup&gt;</td>
<td>Double blind randomised clinical trial (61 patients)</td>
<td>2% diltiazem vs 0.2% GTN</td>
<td>a) Healing better in diltiazem group (p&lt;0.001)</td>
<td>Recommends use of Diltiazem over GTN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b) less side effects with diltiazem (p&lt;0.001)</td>
<td></td>
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<tr>
<td>Golfam et al&lt;sup&gt;19&lt;/sup&gt;</td>
<td>Randomised control trial (130 patients)</td>
<td>Topical nifedipine vs oral nifedipine</td>
<td>a) Healing better in topical nifedipine (p&lt;0.05)</td>
<td>Recommends usage of only topical Nifedipine</td>
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<td></td>
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<td>b) Side effects more in oral group</td>
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<tr>
<td>Berkel et al&lt;sup&gt;20&lt;/sup&gt;</td>
<td>Randomised multicentre trial (60 patients)</td>
<td>ISDN vs botulinum</td>
<td>a) Less side effects and better healing in botulinum group (p=0.028 and p=0.010)</td>
<td>Recommends usage of botulinum over ISDN. However recurrence rates are found to be higher in both groups</td>
</tr>
</tbody>
</table>

**SURGICAL TECHNIQUES**

Anal fissurectomy (Gabriel procedure) of excision of the anal fissure tissue. It is only removal of subcutaneous portion of the external anal sphincter with excision of sentinel tag, anal papillae if present.<sup>28</sup> In Germany it is still the therapy of choice.

Manual anal dilatation (MAD) is dilatation of anal canal with several fingers for some minutes under general anesthesia, this procedure is not controllable even when done by the same person as it involves stretching of external sphincter along with internal sphincters. Since iatrogenic damage of sohincters can cause incontinence this procedure is no longer recommended. <sup>29</sup>

Table 2 includes various studies comparing the effectiveness of open lateral anal internal sphincterotomies in long term healing and symptomatic relief in patients with chronic anal fissures. Though complications like infection, perianal abscess, flatus and maybe liquid stool incontinence can occur in patients, their incidence is very low and they are usually self-limiting. Surgical management results in lasting effects and long-term quality of life improvements in most patients with very few recurrence rates. Modern surgical techniques like fistulectomies with VY advancement.
flaps, show promising results, but is best reserved for special cases. Manual Anal dilatation is obsolete and should never be used as a single line therapy for the management of chronic anal fissures.

**Table 2: Surgical techniques.**

<table>
<thead>
<tr>
<th>Author of the study</th>
<th>Study design</th>
<th>Technique used</th>
<th>Outcome</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argor and Levandovsky(^{21})</td>
<td>Brief medical report (2340 patients)</td>
<td>Open lateral internal sphincterotomy</td>
<td>96 % healing rate with 1 % recurrence. Complications were minor like infections (1%), temporary incontinence (3%)</td>
<td>Open lateral internal sphincterotomy is still the gold standard</td>
</tr>
<tr>
<td>Wilkey et al(^{22})</td>
<td>Prospective randomised controlled trial (76 patients)</td>
<td>Open Vs closed lateral sphincterotomy</td>
<td>a) No significant difference in both technique 996 % healing rate) b) Incontinence after sphincterotomy was not significant</td>
<td>Both surgical techniques equally effective</td>
</tr>
<tr>
<td>Giridhar(^{23})</td>
<td>Prospective trial (60 patients)</td>
<td>2% diltiazem vs Sphincterotomy</td>
<td>a)100 % healing rate in surgical group as compared to 88% in diltiazem</td>
<td>Topical diltiazem can be an effective first line treatment. Internal sphincterotomy can be reserved for relapse or complicated cases.</td>
</tr>
<tr>
<td>Ankur Popat(^{24})</td>
<td>Prospective Comparative Study(100 patients)</td>
<td>2% diltiazem vs Sphincterotomy</td>
<td>a) 100% healing in surgical group as compared to 89.4% in diltiazem</td>
<td>Gold standard treatment is still lateral anal sphincterotomy.</td>
</tr>
<tr>
<td>Sajith Babu(^{25})</td>
<td>Prospective Comparative Study(70 patients)</td>
<td>2% diltiazem vs Sphincterotomy</td>
<td>a) 97.14% achieved healing in surgery group as compared to 68.7%</td>
<td>Surgery is superior to Diltiazem in all aspects of outcome except complication</td>
</tr>
<tr>
<td>Chambers et al(^{26})</td>
<td>Prospective Clinical Trial (54 patients)</td>
<td>V-Y advancement flap</td>
<td>a) Wound healing achieved in</td>
<td>V-Y advancement flap helps in excellent wound healing , irrespective of previous treatment failures or chronicity of the disease</td>
</tr>
<tr>
<td>Ram et al(^{27})</td>
<td>Prospective clinical trial</td>
<td>MAD VS lateral internal anal sphincterotomy</td>
<td>Recurrence and bowel control problems are more in MAD</td>
<td>MAD was not recommended</td>
</tr>
</tbody>
</table>

Instrumental anal dilatation seems to be a reasonable alternative to MAD because of its high success rates and the low number of complications. Sohn et al found a healing rate of 94% in chronic anal patients using 40 mm diameter balloon with a pressure of 1.5 for 5 mins among 66 patients.\(^{30}\)

**CONCLUSION**

Anal fissures are often encountered in surgical practice in both sexes. It is a distressing disease impacting Quality of life and causes profound morbidity among those affected. If left untreated, it may lead onto perianal abscess or even malignancy. The management of chronic anal fissures has migrated to an era of multifaceted approach.

**Recommendations**

Our recommendation from this narrative review are:

- Open lateral internal sphincterotomy is still the gold standard method of treatment for Chronic anal fissure.
- Among pharmacological agents, 2% Diltiazem has the best effectiveness with good compliance rate.
- Modern surgical techniques like VY Plasty can be reserved for special situations.
- We do not recommend the practice of Manual Anal Dilatation.

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**Conflict of interest:** None declared  
**Ethical approval:** Not required
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12. Scholefield JH, Bock JU, Marla B. A dose finding study with 0.1%, 0.2% and 0.4% glyceryl trinitrate ointment in patients with chronic anal fissures. Gut. 2003;52:264-9.


