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Review Article

TREATMENT OF CHRONIC ANAL FISSURE

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Abstract:

Chronic anal fissure is a non healing ulcer in the anoderm appearing as a painful tear below the dentate line. There are debates about the efficacy of different treatment options for chronic anal fissure. This review aims to evaluate existing and newer treatment modalities. Aspects of chronic anal fissure aetiology and pathogenesis are also reviewed. Glyceryl trinitrate (GTN) ointment, Diltiazem ointment can be used as first line and Botulinum toxin (BTX) injection as second line pharmacological treatment. The effects of these chemicals are not permanent with higher fissure recurrence rates. Lateral internal sphincterotomy is the operative treatment of choice for fissures with high anal tone. Flap anoplasty should be done for fissures with normal anal tone especially in female patients. Both surgical procedures can be used as primary treatment option. The newer treatment options like gonyautoxin, controlled balloon anal dilatation, closed anal sphincterolysis and fissurotomy need more research. Perineal support device can be used as an adjunct to other treatment modalities.

Key words: Chronic anal fissure, Pharmacological treatment, Lateral internal sphincterotomy

Introduction:

A chronic anal fissure is a non healing linear tear in the distal anal mucosa below the dentate line[1]. Anal fissure is considered chronic if it persists beyond 4-6 weeks and fails to heal spontaneously[1,2]. During rectal examination chronic anal fissure can be identified by its indurated edges, visible internal anal sphincter muscle fibres at the floor, sentinel skin tag at the distal end of the fissure and fibroepithelial polyp at the apex[1,2]. The positions are posterior midline (6 o'clock position, 85%), anterior midline (more common in female,10%) and lateral (5%)[1,2]. Primary chronic anal fissures are usually provoked by hard stool and associated with straining during constipation and chronic diarrhea[2,3]. Secondary chronic anal fissures may be multiple and seen in tuberculosis, inflammatory bowel disease, leukaemia, agranulocytosis and infections (HIV, Syphilis)[1,2]. Though it can occur in all age groups, chronic anal fissure is more common in young and otherwise healthy adults[1].

Pathogenesis:

The understanding of pathogenesis of chronic anal fissure has evolved over time. Previously it was thought that fissures originate from chronic phlebitis in anal crypts or from cryptitis[2]. Now a days it has been agreed that resting internal anal sphincter tone plays a crucial role[4,5,6]. Elevated resting internal anal sphincter pressure reduces the anodermal blood flow demonstrated by Doppler laser flowmetry combined

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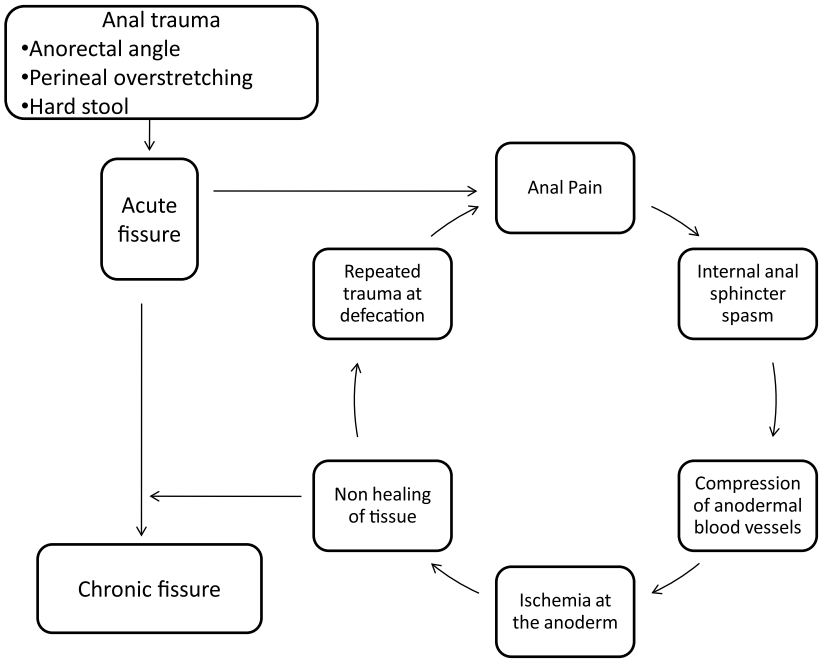
with anorectal manometry[7]. Initially hard stool or repeated straining may cause anal mucosal tear with anal pain causing anal sphincter spasm thus reducing anodermal blood flow. The resulting ischemia causes further anal pain, persistence of sphincter spasm, reduced blood flow and continuing ischemia of the anoderm thus forming a viscious cycle. This continuing ischemia causes healing failure and persistence of chronic anal fissure[2]. The more common posterior location of chronic anal fissure can be due to the anatomical topography of inferior rectal artery. The terminal branches of this artery supplying the anoderm passes through the internal anal sphincter thus subjected to compression by high sphincter tone. The scarcity of small arteriolar anastomoses between end branches of right and left inferior rectal artery on the dorsal aspect of anoderm were also observed[8]. Other factors may also play roles in the pathogenesis. The paucity of supportive connective tissue between coccyx and anorectal ring as well as the angle of anorectum leads to preferential overstretching of posterior perineum while passage of stool. This may cause repeated trauma to anal sphincter causing pain and sphincter hypertonia[1]. Anti endothelial cell antibody, detected in patients with anal fissure might also be involved by endothelial activation and vasospasm leading to anodermal ischemia[9]. The end stage of a chronic anal fissure is a fibrotic, atonic lesion. Recurrent inflammation at the fissure site can lead to local abscess and fistula formation.[2]

Overview of treatment options

The aim of all modalities of treatment is healing of the fissure. Most of the treatment approaches are directed at reduction of internal anal sphincter tone. Treatment options include non surgical and surgical means. Non surgical treatment involves pharmacological agents including nitrates (isosorbide dinitrate or glyceryl trinitrate) ointments, calcium channel blockers (Diltiazem ointment, nifedipine gel), botulinum toxin injection, á-adrenoceptor antagonists, â-adrenoceptor agonists and muscarinic agents.[1] Newer pharmacological agent such as gonyautoxin, a paralytic phytotoxin derived from shellfish is also under clinical trial[10, 28]. Among the surgical treatment options lateral internal sphincterotomy is the gold standard. Modification of sphincterotomy by blunt division of internal sphincter fibres called sphincterolysis are also tested.[11] Subcutaneous fissurotomy is also in practice[12]. Though finger anal dilatation is considered obsolete, controlled balloon anal dilatation is under evaluation[13]. Flap anoplasty by V-Y advancement flap and rotation flap are also in clinical practice[14]. In addition posterior perineal supportive device, incorporated into a toilet seat, aimed at reducing perineal overstretching during defecation to improve fissure healing is being studied[15].



Discussion

In evaluating the outcome of different treatment modalities, fissure healing rate, recurrence rate and anal incontinence were taken into consideration. Studies show results of individual treatment option as well as comparisons between different treatment modalities. The data available are heterogenous. This may be due to inclusion of acute fissures in the study, previous treatment, different end points for assessment, addition of new treatment in the event of failure of primary treatment and incomplete follow up. Glyceryl trinitrate (GTN), Diltiazem ointment and Botulinum toxin (BTX) injection are the pharmacological agents most widely used. Glyceryl trinitrate studies show healing rate of 68%[16], 46%[17], 49%[18], 40.4%[19] and 60%[20] using 0.2% GTN ointment. Studies with Diltiazem shows a healing rate of 49%[21], 67%[22] and 75%[23] using 2% Diltiazem cream. Botulinum toxin injection studies shows a healing rate of 27%[24], 43%[25], 73%[26] and 96%[20] using 20-30U of BTX injection. The healing efficacy of GTN and Diltiazem appears to be similar though one study reported healing of GTN resistant anal fissures by Diltiazem cream[21]. Less occurance of headache as a complication was also reported by using Diltiazem cream comparing GTN ointment[27]. Both GTN and Diltiazem have a common advantage of being topical in nature hence can be considered as first line pharmacological treatment. Botulinum toxin injection appears to offer better symptomatic improvement than GTN and Diltiazem[25]. although the healing rate appears to be similar. The healing by BTX is related to dose and number of injection sites[30]. BTX injection has the disadvantage of being an invasive procedure requiring injection into the internal anal sphincter and around the anus with potential side effects like bleeding, haematoma and abscess formation. Also BTX causes temporary anal incontinence rare with GTN or Diltiazem[25]. Though botulinum toxin can be used as first line pharmacological treatment but considering potential serious side effects it has been recommended as second line treatment in the event of GTN or Diltiazem treatment failure.[25] A common disadvantage of all pharmacological agents is the nonpermanent effect on sphincter relaxation resulting in fissure recurrences between 10%-20% on long term follow up[28]. To overcome this, combination of pharmacological agents in slow releasing form have also been suggested[29]. The lateral internal sphincterotomy is the gold standard of surgical treatment. The main concern of sphincterotomy is anal incontinence. The long term (more than 2 months) anal incontinence rate found in this review was in the range of 3.3% - 7%[26, 31-38]. The conservative lateral sphincterotomy up to fissure apex had significantly less anal incontinence compared to traditional lateral sphincterotomy up to dentate line[31, 39]. The sphincterotomy is associated with better healing rate, less recurrences and better patient compliance than the pharmacological agents[26,36,37,38]. Sphincterolysis by closed anal sphincter manipulation technique appears to offer an alternative to lateral internal spincterotolmy avoiding skin incision and lower anal incontinence[11]. However the sphincterolysis is an uncontrolled procedure and further study is needed to evaluate the long term effects on fissure recurrence and anal incontinence. The flap anoplasty techniques are proposed for chronic anal fissures those fail to heal with pharmacological treatment and also for fissures with normal sphincter tone especially female patients, where persistent anal incontinence following lateral internal sphincterotomy is a risk[40,41]. Flap anoplasty shows to have a healing rate of approximately 94%[41]. In one study flap anoplasty was suggested to be an altenative to lateral internal sphincterotomy[14]. However the flap failure rate was not clearly mentioned in the study and more clinical research are needed in this field. The subcutaneous fissurotomy is a new technique with a reported healing rate of nearly 98%[12]. But due lack of studies the long term outcome remains to be mentioned. Simple finger anal dilatation has no role in modern day treatment of chronic anal fissure due to unacceptably high rate of anal incontinence[1]. Newer technique of calibrated pneumatic balloon anal dilatation showed similar healing rate as compared to internal sphincterotomy with a significantly reduced post operative anal incontinence[13]. Further investigations will assess its long term outcome. The concept of posterior perineal support is to provide counter pressure to the posterior aspect of pelvic floor balancing the pressure exerted by the faeces, thus reducing trauma to the anal canal wall by hard stool. In one study a toilet seat device to provide posterior perineal support reported significant symptomatic improvement[15]. This device may be used as an adjunct to other treatment options.

Conclusion

There are a number of treatment options for chronic anal fissure and all of them have their merits and

demerits. Glyceryl trinitrate ointment, Diltiazem cream and lateral internal sphincterotmy can be used as first line of treatment. Those fissures with normal or low anal muscle tone can be offered flap anoplasty as primary treatment. The Botulinum toxin injection should be used as second line pharmacological treatment. Newer treatment options need further clinical research.

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