

## Lateral Internal Sphincterotomy for Treatment of Chronic anal Fissure in Paediatrics

Azad A. Haleem<sup>1\*</sup>, Qader M. Salih<sup>2</sup> and Sahned S Jaafar<sup>2</sup>

<sup>1</sup>P κ, Heevi Hospital Lecturer, School of Medicine, Duhok-Iraq.

<sup>2</sup>Pediatric surgeon, Heevi Hospital, Lecturer, School of Medicine, Duhok-Iraq.

### \*Corresponding author

Azad A. Haleem, Pediatrician, Heevi Hospital Lecturer, School of Medicine, Duhok-Iraq, Tel: +9647504661444; E-mail: azad82d@gmail.com.

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### Abstract

**Aims:** Lateral internal sphincterotomy is a well established surgical technique for treatment of chronic anal fissure in adult. We performed this study to evaluate the outcome of lateral internal sphincterotomy in Paediatrics.

**Patients and Methods:** This is a prospective study performed over a period of 4 years from October 2008 to October 2012 on 37 patients with chronic anal fissure of a duration exceeding 3 months and history of failure to conservative treatment. All patients underwent left lateral internal sphincterotomy through an open technique. Outcome was evaluated by assessing the effectiveness of this procedure in relieving the symptoms, fissure healing, parents' satisfaction and complication rate.

**Results:** There were 26 boys and 11 girls, mean age was 11 months with a range of (6 months - 12 years), and symptoms were relieved within 2 weeks in 28 cases and within one month in 5 cases. 4 patients require postoperative oral laxative for 1-3 months to overcome the withholding behavior. Fissures were healed in 34 by 8 weeks postoperatively. Parent satisfied with the outcome in 32 patients. 4 patients developed postoperative bleeding and only one of them was serious and required cauterization, soiling occurred in 3 cases. No permanent incontinence was reported.

**Conclusion:** Lateral internal sphincterotomy is an effective and safe surgical technique for treatment of chronic anal fissure not responding to medical treatment in paediatric. Complications are uncommon and the risk of incontinence is very minimal if proper surgical technique is performed.

**Keywords:** Lateral Sphincterotomy, Chronic Anal Fissure, Children.

### Introduction

Anal fissure is a linear tear in the squamous epithelium of the distal anal canal extending from dentate line to the anal verge [1,2]. Usually it involves the posterior midline but in 10% or more may involve the anterior midline [2]. It is mostly occurred in children aged 6-24 months, coincident with the weaning [2,3]. Usually the patient present with painful defecation, constipation and streak of bright blood on the hard stool, on the diaper, or toilet paper [1-4]. It is the commonest cause of lower gastrointestinal bleeding in children [5]. It caused by a mechanical tear that result from the passage of hard stool, the pain will encourage stool retention by the child and this will further increase the constipation [3]. Internal anal sphincter hypertonicity and ischemia of anoderm have been implicated in adult series [1,6,-9]. Similar pathophysiology could be implicated in children [2].

Anal fissure regarded as chronic when it present with indurated edge, a sentinel pile, visible internal anal sphincter fibers and hypertrophied anal papillae [2,10]. Anal fissure with history of more than 6 – 8 weeks also regards as chronic [7,10].

Anal fissure in children usually respond to increased dietary fiber, stool softener and sitz bath but when medical treatment has failed, surgical treatment is indicated [3,4,6]. Surgical options in children

includes anal dilatation, lateral sphincterotomy or fissurectomy [2-4, 6]. Lateral sphincterotomy in adult regarded as the gold standard for treatment of chronic anal fissure [7, 10,11]. It can be performed with open or closed technique and both have the similar effectiveness [12].

### Patients and Methods

This is a prospective study was conducted at paediatric surgery department, Heevi Hospital over a period of 4 years from October 2008 to October 2012. A total of 37 patients with chronic anal fissure of a duration exceeding 3 months with failure of medical treatment were included in the study. Diagnosis of chronic anal fissure was made on history and clinical examination. Digital rectal examination was not performed because of severe pain. Informed consent obtained from all parents. All patients underwent left lateral internal sphincterotomy through an open technique under general anesthesia and in lithotomy position. The procedure performed as a day case surgery. Postoperatively stool softener and analgesia prescribed for two week. Patients were followed-up weekly for one month then monthly for 6 months. Outcome was evaluated by assessing the effectiveness of this procedure in relieving the symptoms, fissure healing, parents' satisfaction and complication rate. Continence was evaluated by assessing the frequency, quantity and quality of defecation. Continuous stool leak-out or soiling or defecation without urge or warning was recorded as incontinence.

## Results

In this study, 37 patients with chronic anal fissure were included. There were 26 boys and 11 girls, mean age were 11 months with a range of (6 months – 12 years). All patients have had constipation and proctalgia while bleeding per rectum was present in 28 patients. The mean duration of symptoms was 4 months (3-9 months). All patients underwent open left lateral internal sphincterotomy. Symptoms were relieved within 2 weeks in 28 cases (75.7%) and within one month in 5 cases (13.5%). 4 patients (10.8%) require postoperative oral laxative for 1-3 months to overcome the withholding behavior. Over all healing rate of chronic anal fissure at 8 weeks was 92%. Parent satisfied with the outcome in 32 patients (86.5%). 4 patients developed postoperative bleeding and only one of them was serious and required cauterization. No recurrence reported during follow up. Soiling occurred in 3 cases (8%). No permanent incontinence was reported.

## Discussion

Anal fissure are common in infancy and is usually associated with constipation and passage of hard fecal mass that result in anal tear [2]. Most of acute anal fissures in children respond to conservative or medical treatment [6]. When acute anal fissure failed to healed, it will change to chronic fissure and medical or surgical sphincterotomy is required. If the fissure persists despite medical treatment, surgical intervention is required. Operative options include manual dilatation, fissurectomy and lateral sphincterotomy. The aim of surgery is to reduce anal hypertonia thereby increasing blood supply to the anoderm to facilitate healing of the fissure [1].

Lateral sphincterotomy in adult, regard as the first line or the gold standard for chronic anal fissure with a cure rate higher than 90% but limited data of this procedure existed on paediatric [7, 10,11]. In our study, 90% of patients with chronic anal fissure healed by 4 weeks after performing lateral sphincterotomy and in 93% of patients by the 8 weeks and this finding are comparable to a similar study by Cohen and Dehn on pediatric patients and also to adult studies [4,12]. Cohen and Dehn performed lateral sphincterotomy on 23 children with chronic anal fissure and all the fissures healed with no recurrence is reported [4].

Complications were rare and simple. One of 4 patients who develop bleeding required cauterization. Soiling and fecal incontinence is a possible complication and it is difficult to be assessed in children below 4 years but change of the normal bowel habit either in the form of Continuous stool leak-out or soiling of the diaper or defecation without urge or warning in a child less than 4 years was recorded as incontinence. Three patients develop soiling but all were transient and by the 6 months postoperative follow up, no permanent incontinence was reported. Cohen and Dehn reported no fecal incontinence after lateral sphincterotomy in children and only one mentally retarded child had soiling before and after operation [4]. Risk of incontinence following lateral sphincterotomy in adult series varies from 0-15% [13]. The rate of incontinence following lateral sphincterotomy in systemic review of 324 studies on adult was 14% but in the meta-analysis by Nelson, the reported incontinence was minor and rare while no incontinence reported by others [12-16]. It had been found that incontinence following lateral sphincterotomy is transient and this is may be attributed to the increased tone of the internal sphincter indicating recovery of the sphincter after operation [7,10,16,17]. The high percentage of incontinence following lateral sphincterotomy in some adult series

may be attributed to older aged patients, multiparous women and additional or previous anal surgery [18, 19].

Chemical sphincterotomy is another option in the treatment of chronic anal fissure and aimed to relax the spasm of internal anal sphincter without causing permanent damage. Tander et al reported high healing rate (84%) of anal fissure in paediatrics using GTN but his study ended after 8 weeks of treatment with no prolonged follow up for recurrence [20]. Similarly Simpson et al reported response in two third of patients but his study only included patients older than 3 years [6]. Demirbags et al reported recurrence of anal fissure in one third of patients [21].

In an adult series by Evan comparing GTN with lateral sphincterotomy for chronic anal fissure, the healing rate for GTN after 8 weeks of treatment was 60% while in lateral sphincterotomy group was 97%, in addition 45% of those who respond previously to GTN develop recurrence [15].

Botulinum toxin had been widely studied on adult but only limited experience exist on paediatric and it have been associated with high recurrence rate. Husburg studied botulinum toxin in children with anal fissure but his study was conducted on a small number of children and there were recurrence in half of cases [22].

In a study by klin et al, Nifedipine with lidocain gel was used for treating patient with anal fissure and they concluded that it is the most efficient mode of treatment but his study conducted on patients with acute and chronic anal fissure and there were 7% recurrence [2].

In a meta-analysis of medical therapy for anal fissure by Nelson, he found that GTN, Diltiazem and Botox were not significantly better than placebo in curing anal fissure and the headache which caused by GTN was often severe enough to stop the therapy and it was significantly less effective than sphincterotomy in curing of anal fissure [23].

Anal dilatation had been studied in many adult series but in children has not been found to be so beneficial and is associated with high rate of recurrence [24]. It may lead to transient symptomatic improvement but does not appear to heal the fissure and may cause sphincter disruption [25]. The risk of incontinence and recurrence is higher in patient who underwent dilatation than those who underwent lateral sphincterotomy and Sphincter damage have been reported in more than half of patients who underwent dilatation [26-28]. In a meta-analysis of operative techniques for anal fissure by Nelson RL comparing dilatation with sphincterotomy, the author concluded that lateral internal sphincterotomy is superior to anal dilatation and significant difference were found for incontinence when comparing anal dilatation with lateral sphincterotomy [25]. The advantage of lateral sphincterotomy over anal dilatation, if fecal incontinence occurred internal sphincter can be repaired following lateral sphincterotomy while repair is impossible in disruption of the sphincter after dilatation [4].

Lambe et al performed fissurectomy to treat children with anal fissure and 81% were asymptomatic at 6 weeks postoperatively but some patient required reoperation in addition they required additional postoperative stool softener with only 6 weeks follow up but lateral sphincterotomy is superior to fissurectomy because

it is associated with faster and higher healing rate with less postoperative incontinence [4,29].

We concluded that Lateral sphincterotomy is the preferred procedure in children with chronic anal fissure but should be reserved only for those failing to heal with medical treatment. Risk of sphincter damage is still a concern and prolonged follow up is required to exclude incontinence as it is difficult to assess the continence in infants. Data and studies in paediatric anal fissure are limited and further studies are required to compare different medical and surgical modes of treatment.

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