Combined Tailored Lateral Internal Sphincterotomy with V-Y Advancement Flap Versus Lateral Internal Sphincterotomy Alone in Treatment of Chronic Anal Fissure

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Abstract

Background: Anal fissure is one of the most common ano-rectal diseases and 10% of patients ultimately receive surgery. Lateral internal sphincterotomy is highly effective and is the surgical treatment of choice for curing chronic anal fissure with hypertonicity after failure of conservative measures. LIS has a high success rate, but can have complications as bleeding and incontinence. There can be delayed or non healing of the sphincterotomy surgical site, and persistence of symptoms or recurrence of fissure.

The Aim of the Study: Was to evaluate the results of V-Y advancement flap combined with tailored open lateral internal sphincterotomy in comparison with open lateral internal sphincterotomy alone in treatment of chronic anal fissure.

Patients and Methods: Between April 2011 and December 2012, twenty patients fulfilling the criteria of having chronic anal fissure with persistence of symptoms inspite of conservative treatment for a period of 4-6 weeks were randomly assigned into two treatment groups.

Group A was assigned to do open lateral internal sphincterotomy (LIS) alone, while in Group B, Tailored lateral Internal sphincterotomy (TLTS) combined with V-Y advancement anal flap was done.

Response to the treatment was assessed in terms of post-operative pain, time and rate of fissure healing and occurrence of complications. Follow-up of the patients was done every week for three months to detect short term postoperative outcomes and every 3 months for one year to detect recurrence.

Results: In Group B, no severe pain was present and less time interval and doses for analgesia was observed. By the end of second week 90% in Group B showed complete healing and acceptance of V-Y-flap whereas only 20% showed complete healing in Group A. By the end of fourth week the rest of patients in Group A showed complete healing except one patient with failure of healing due to infection. Postoperative Bleeding, and infection was found in Group A and flap dehiscence was present in one patient in Group B. Soiling was noticed in all patients of Group A, during first and second week while in Group B, soiling was present in three patients only on the first day. No incontinence was observed in Group B and only one patient in Group A showed incontinence with no recurrence in both groups.

Conclusion: Tailored lateral internal sphincterotomy with V-Y advancement flap appears to produce the greatest and rapid healing rate, with few complications and no incontinence and recurrence rate.

Key Words: Anal fissure – V-Y advancement flap – Lateral internal sphincterotomy.

Introduction

AN anal fissure is a nonhealing linear tear or ulceration in the epithelial lining of the distal anal canal, distal to the dentate line (mucocutaneous Junction) [1]. Although this is an extremely common condition, if not the most common anoarectal problem encountered in practice, it is surprisingly difficult to know the exact incidence, as many people avoid seeking treatment and many fissures will resolve without intervention [2].

It commonly occurs between 2 nd and 4 th decades of life with an equal distribution between men and women [3]. It is usually located in the posteriomidline but occurs anteriorly in fifth of patients [4]. Anal Fissures can be primary (typical) or secondary (atypical). It can be divided into two clinical subtypes, depending upon the duration of disease, the acute and chronic fissures [5]. The aetiology of typical fissure is not clear. A common initiator is trauma from large or hard stool, but many traumatic fissures heal and others do not [6].

Diagnosis is suspected on history alone, it may cause bright red bleeding with bowel movements, and anal pain persisting for one to two hours after bowel movement [7]. The most consistent finding on physical examination is spasm of the anal canal...
due to hypertrophy and hypertonicity of the internal anal sphincter, which can be so severe causing ischaemia, pain and non healing of the fissure. It has been postulated that fissures associated with internal anal sphincter hypertonicity are ischaemic in nature [8].

Studies using ambulatory manometry in patients with anal fissure have shown persisting high resting anal pressure with poor spontaneous relaxation. Another study examining the influence of ischaemia, showed that the higher the sphincter pressure, the lower the anodermal blood flow. This was most pronounced posteriorly, and was followed by a return of normal blood flow after sphincterotomy [4].

All management options aim to reduce anal tone by relaxing the internal anal sphincter and subsequently providing symptomatic relief and healing of the fissure. The first approach in treatment include general measures, such as dietary fiber supplements, adequate fluid intake, topical analgesics, medical treatments, such as Glyceryl trinitrate (GTN) ointment, calcium channel blockers and botulinum toxin [9]. An anal fissure is likely to be non healing, if the fissure persists beyond 4-6 weeks of medical management and surgery is reserved for those patients [10].

Previous procedures such as manual anal dilation, and posterior midline sphincterotomy are rarely used because of high recurrence and incontinence rates and longer time for wound healing [11]. Lateral internal sphincterotomy is the first line surgical option for all fissures, associated with hypertonicity of the internal anal sphincter. It can be performed using open or closed approach depending upon surgeon's preference. It also has associated problems of faecal incontinence which can reach up to 10% and controversy still exists with regard to minor variations in operative technique as Tailored LIS to reduce this complication, also recurrence after LIS is 5% [13].

An anal advancement flap is effective in healing an anal fissure as primary line of treatment, also is a good choice for those who have recurrent anal fissures post LIS and is followed by minor complications. Various flaps have been described, such as rotational or V-Y flap [14]. This study was designed to evaluate the results of V-Y advancement flap combined with open Tailored lateral internal sphincterotomy in comparison with open lateral internal sphincterotomy alone in treatment of chronic anal fissure.

**Patients and Methods**

The study was conducted in Kasr El-Ainy Hospital Faculty of Medicine, Cairo University, from April 2011 to December 2012. The study included twenty patients aged from 20-46 years and all patients fulfill the criteria of having chronic anal fissure with persistence of symptoms inspite of conservative treatment for a period of 4-6 weeks and with increased resting anal pressure.

Patients excluded were those who had previous surgical procedure in the perianal region with cictricial deformation, those with acute anal fissure, large sentinel pile, inflammatory bowel disease, hemorrhoids, anal fistula, old age patients, anal abscesses, and those with coagulopathy. The patients were randomly allocated into two groups, ten patients each:

Group (A): Will have open lateral internal sphincterotomy alone.

Group (B): Will have combined open tailored lateral internal sphincterotomy with V-Y advancement flap.

All patients were subjected to Personal and Medical history, clinical examination (general and local) including P.R examination and Anal Manometric studies. Routine laboratory Investigations were done, and all patients were fit for surgery.

Patients were fully informed about the risks and benefits of the two procedures. Informed consent was obtained from every patient.

The day prior to surgery, all patients were kept on fluid diet. Laxative was given and an enema was done by night, if possible. The perianal region was shaved if needed. All patients received a standard regimen of intravenous antibiotics (1.5gm of ampicillin sulbactam and 500mg of Metronidazole) one hour preoperative and continued at eight hour intervals for up to 24 hours after the end of surgery.

**Operative procedure:**

All patients received spinal anesthesia, and with the patient in lithotomy position, first rectal examination was done to ensure the absence of any associated pathology.

In Group A, traditional lateral internal sphincterotomy was performed by a standard open technique, a 5-mm incision was made into the perianal skin along the intersphincteric groove. The internal
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Anal sphincter was then dissected and a segment is then looped on a right angle and brought into the incision and divided under vision with diathermy to the level of dentate line. The two ends are allowed to fall back. A gap can then be palpated in internal sphincter through anal mucosa. The incision can be closed or left open to heal. Excision of the fibrotic edge of the fissure, curettage of its base and excision of sentinel pile and/or anal papilla, if present. Bleeding was secured by diathermy and a pad of gauze was firmly packed into the anus.

In Group B, Tailored lateral internal sphincterotomy was performed, with the same steps like Group A, but the extent of sphincterotomy was done to be more or less equal to the length of the fissure. Injection of 1/200000 Adrenaline+Lidocaine 10% (45ml saline+5ml lidocaine+1ml adrenaline 0.25mg) in the site of flap to control bleeding. Then the V-Y advancement flap was performed by making a V-shaped incision from the edges of the fissure extending 4cm from the anal verge and away from the midline The V-shaped flap formed of skin and subcutaneous fat was mobilized sufficiently to allow advancement into the anal canal to cover the fissure defect.

Care was taken to preserve enough pedicle to ensure adequate blood supply in addition to the underlying vascular pedicle contained in the subcutaneous fat. Thus, it is necessary to preserve fatty subcutaneous tissue with wide mobilization to maintain flap viability.

The base of the flap was sutured to the lower anal mucosa at dentate line with interrupted 3/0 vicryl. The skin in then closed behind the V at the external portion of the perineum by silk 3/0 to push the V-flap into anal canal and widen the stenotic area.

Postoperative care:

For both groups were the same. The oral feeding was resumed on the first day starting with fluids then soft diet. Urinary catheter was kept for 24 hours for fear of retention.

Analgesia was given according to severity of pain either by oral NSAID for mild pain, or injection of NSAID in moderate pain and opioid (pethidine 100mg IM) in severe pain.

The patients were given a laxative and a lubricant to avoid the bad experience of a painful first motion. The patients were discharged and followed-up clinically every week for three months, to detect shortterm postoperative outcome and every 3 months for one year to detect Recurrence rate. The comparison between the two groups includes the rate and timing of complete healing, soiling or any degree of fecal incontinence and the recurrence. Flap complications (as ecchymosis, hematoma, infection, disruption of flap, and flap necrosis), operative time, length of hospital stay, time of relieve of pain, and persistence of symptoms were also recorded. Methods of statistical study used were student t-test, chi-squared test and Mann-Whitney U test and a probability less than 0.05 (p-value <0.05) is considered statistically significant.

Results

The patients enrolled in Group A were 6 females (60%) and 4 males (40%). Their age ranged from 22-46 years with a mean age 32 years.

The patients in Group B were 6 females (60%) and 4 males (40%) their age ranged from 20-46 years with a mean age 32 years.
All patients in both groups had primary posterior chronic anal fissure; with failure of conservative treatment for 4-6 weeks, and persistence of symptoms.

Thirteen patients (65%) complained from pain, five patients (25%) complained from pain and bleeding, two patients (10%) complained from pain, bleeding, itching and perianal skin irritation.

The operative time in Group A ranged from 10-22 minutes with a mean operative time 15.6 minutes.

In Group B, the operative time ranged from 25-43 minutes with a mean operative time 33.1 minutes. The operative time was significantly longer in Group B and statistically significant difference was observed in Group A ($p$-value= 0.005).

As regard postoperative pain, it was ranged as mild, moderate and severe. In Group A, one patient showed mild pain, three patients showed moderate pain, and six patients showed severe pain. In Group B six patients showed mild degree of pain, three patients showed moderate pain and one patient showed severe degree of pain.

Statistically significant difference in post operative pain between both groups was observed, with less severe pain and less time interval and doses for analgesia in Group B ($p=0.005$).

As regard hospital stay, no difference was found between both groups, as all patients were discharged after one day, except one patient in Group A who had bleeding after pack removal, that necessitated another day for observation.

As regard the rate of healing and the timing of complete healing (epithelization and coverage of the fissure in Group A and good acceptance with coaptation of the edges of flap in Group B) was observed. Any fissure showing no signs of healing or failure of acceptance of V-Y advancement flap after 4-6 weeks of the procedure is considered to show delayed healing.

In the first week no complete healing was found in Group A, but granulation tissue in abundant amount was found in five patients, the other five patients showed no signs of healing.

In the first week, good flap acceptance in all patients of Group B was noticed except one patient who had a defect due to dehiscence of one limb of V-Y flap.

On the 2nd week, complete epithelization of the fissure was observed in two patients in Group A, and incomplete healing in the rest of patients, while in Group B, nine patients showed complete healing and the one patient with wound dehiscence, showed secondary healing. On he 3rd-4th week post operative, the rest of patients in Group A showed complete healing, and only one patient showed persistent raw area with failure of healing, due to infection and bad hygiene, that was followed-up for one month with dressing and antibiotics until complete healing occurred.

Statistically significant difference was observed in Group B as regard the rate of healing and timing of complete healing with a $p$-value (0.0055). As regard postoperative complications, mild postoperative bleeding was observed in one patient in Group A after removal of the pack, that required repacking for another 24 hours.

In Group B, no frank bleeding was detected, only ecchymosis of the perianal area.

During the period of healing, two patients showed spontaneous blood tinged soaked underwear and five patients showed frank blood after defecation in Group A.

In Group B, the patient with flap dehiscence, showed blood tinged under wear after hard stool.

Statistically significant difference as regard postoperative bleeding with no bleeding in Group B ($p=0.005$).

No Flap hematoma, or flap necrosis was observed in patients of Group B.

Only one patient showed disruption of one limb of V-Y advancement flap due to infection. Time of relieve of pain was related to complete healing of the fissure and coverage of the raw area.
No patient in both groups showed persistence of symptoms of anal fissure after complete healing, but the disappearance of symptoms was rapid in Group B.

As regard fecal incontinence, it varied from soiling of under wears by serous or feculent discharge to frank fecal incontinence.

Soiling was noticed in all patients of Group A on the first and second week and one patient complaining of incontinence to flatus and stool.

In Group B only three patients had soiling on the first day with no soiling afterwards in all patients.

Statistically significant difference as regard soiling and incontinence was observed in favour of Group B ($p=0.005$). Follow-up and observation of the patient in Group A with fecal incontinence showed gradual improvement with no permanent incontinence. Follow-up for one year revealed no recurrence of fissure in both groups.

**Discussion**

Anal fissure commonly affects young adults between second and fourth decades with equal distribution between men and women and a lifetime incidence of 11.1% [3].

In our study, the sex distribution ratio was almost equal in both groups with a mean age of 32 years.

The combination of anal pain and bleeding is sufficiently worrisome that patients often seek medical attention. In our study, the majority of patients complained of pain (65%), 25% from pain and bleeding and 10% from pain, bleeding, and itching. Acute fissures may heal spontaneously, although simple conservative measures are sufficient.

Chronic anal fissures need careful evaluation to decide what therapy is suitable [4].

The initial approach in treatment of anal fissure is non-operative, and include Medical therapy with warm baths, stool softeners, laxatives, analgesics, topical anesthetics, and Glyceryl trinitrate oint and calcium channel blockers [9].

Most chronic anal fissures are associated with a raised anal pressure and reduced vascular perfusion at the base of the fissure due to hypertonicity of internal anal sphincter. Current treatment has aimed at reducing resting anal pressure by diminishing sphincter tone and improving blood supply at the site of fissure, thus promoting healing [4].

LIS is the surgical treatment of choice for chronic anal fissure after failure of conservative measures. Sometimes, longstanding chronic Anal fissure do not heal even with an adequate sphincterotomy and an anal advancement flap must be performed to cover the defect in the mucosa [12].

This study was conducted to compare the outcomes of open lateral sphincterotomy alone versus V-Y advancement flap combined with Tailored Open Lateral internal sphincterotomy in treatment of chronic Anal fissure.

This study revealed that there was a statistically significant difference regarding operative time with ($p=0.005$) mean time was 15.6 minutes in Group (A) and 33.1 minutes in Group (B). This was in accordance to the study by Jahan et al., who showed that the mean operative time was 9 minutes in open lateral sphincterotomy alone [15].
Other study by Farid et al., 2010, showed that the mean operative time was (44 minutes) longer in Group B where combined lateral internal sphincterotomy and V-Y advancement flap was done [16].

This study showed that there was less severe postoperative pain and less time interval and doses for analgesia in Group B. The difference was statistically significant (p=0.005). This was in compliance with other studies as Tayyab M. et al., 2010 who found on a study conducted on 45 patients that severe pain was a major complaint in 31 patients (68.8%) with open lateral internal sphincterotomy alone [17].

Wang et al., 2011 on the other hand found less severe pain on those with V-Y advancement flap combined with Lateral internal sphincterotomy [18].

The severe pain in Group A was attributed to the raw area.

As regard the rate of healing of fissure and the timing of complete healing, this study showed rapid rate of healing and earlier complete healing of the raw area in Group B. The difference was statistically significant (p=0.0055).

This was in compliance with other studies, as Filigeri et al., [19]. Who showed no healing occurring in the first week for all patients undergoing only open lateral internal sphincterotomy and by the end of 2nd week only 50% of patients showed healing and by the end of 4th week all patients showed complete healing. Also Jaleel F. et al., [20] showed complete healing of the fissure till 6 weeks postoperatively in 97% of patients and two patients remained unhealed after 6 weeks. Giordano et al., [21] and Chamber et al., [14] in their study on patients with combined lateral internal sphincterotomy and V-Y advancement flap showed complete healing in 98% of patients by the end on first week.

As regard postoperative bleeding, our study showed statistically significant difference as regard bleeding (p=0.0005) with more bleeding occurring in Group A during the first two weeks as the raw area and granulation tissue are easily bleeding during defecation and in Group B, only one case in the first week, showed bleeding in which flap dehiscence on one side was present.

Tayyab et al., [17] and Jaleel et al., [20] noticed immediate post operative bleeding for patients with internal lateral sphincterotomy and Wang et al., [18] showed no bleeding in patients undergoing combined lateral internal sphincterotomy and V-Y advancement flap.

As regard soiling and fecal incontinence our study showed statistically significant difference (p=0.005) as all patients in Group A had soiling in first and second week post operatively and one patient with faecal incontinence and in Group B, only three patients had soiling on the first day postoperative and no soiling afterwards.

Giordano et al., [21] showed no soiling or incontinence in patients with V-Y advancement flap and lateral internal sphincterotomy.

Jahan et al., [15] and Tayyab et al., [17] showed minor faecal incontinence and soiling in 3% and 9% of the patients in their study.

The results of this study show that the technique of combined tailored lateral internal sphincterotomy and V-Y advancement flap can be applied to chronic anal fissures with success as a primary therapy as it shows excellent and rapid rates of healing of fissure with rapid relieve of pain and minor complications.

References


