

Extent of Lateral Internal Sphincterotomy in Female Patients with Chronic Anal-Fissure

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ABSTRACT

Introduction: Lateral internal sphincterotomy is the ideal surgical management of chronic anal fissure. Excess division of the internal sphincter leads to incontinence either to stool or flatus or both especially in females because of anatomical causes or previous trauma. Also insufficient muscle cutting leads to recurrence so; we must determine the extent of lateral sphincterotomy for satisfactory results. **Patients and methods:** This study was done in the period from Aug 2017 to Dec 2018 in the General Surgery Department of Zagazig University. Sixty two female patients with chronic anal fissure with mean ages of (34.1 + 8.2) group A and (41.8 + 9.05) of group B were complaining of chronic anal fissure. Group A of (31) patients (50%) of study cases were subjected to lateral internal sphincterotomy up to the fissure apex. Group B of (31) patients (50%) of study cases were subjected to lateral internal sphincterotomy up to 50% of fissure length. **Aim of our work:** To compare the results of lateral internal sphincterotomy using two techniques : up to the apex of the chronic fissure or up to 50% of the fissure length to avoid incontinence either to stool or flatus in both females groups and ensure rapid fissure healing , rapid pain relief and low recurrence rate. **Results:** Group A showed complete fissure healing in 4 weeks (25) patients (80.6%) with (6) patients cases comprising (19.35%) with delayed wound healing in 6 weeks .(9) patients (29 %) had transient incontinence to flatus . one(3%) patient only had recurrence after 6 months follow up **Group B** showed complete fissure healing in 5 weeks (20) patients (64.5%) with (11) patients cases comprising (35.5%) with delayed wound healing in 6 weeks .(2) patients (6 %) had transient incontinence to flatus and 2patients(6%) had recurrence after 6 months follow up **Conclusions:** In females with chronic anal fissure, division of internal sphincter up to 50% of fissure length is usually sufficient and no need to reach apex of the fissure to preserve the internal sphincter function and prevent incontinence either to stool or to flatus.

Key words: Fissure-female-sphincter-lateral sphinterotomy

INTRODUCTION

Anal fissure is a painful ulcer/crack in the skin lining the lower third of the anal canal distal to the dentate line. Anal fissure has acute or chronic forms, affecting both males and females at any age. ^[1] Acute anal fissure can be managed by diet modification or medical treatment, but chronic anal fissure usually needs surgical treatment. ^[2] Lateral internal sphincterotomy remains the surgical intervention of choice for management of chronic anal fissures or that not responding to non-surgical therapy. Lateral internal sphincterotomy when indicated, remains the gold standard for surgical management of anal fissure^[3]. Lateral internal sphincterotomy cures chronic anal fissure by preventing internal sphincter stenosis and hypertonic sphincter. However, division of the internal sphincter predisposes to sphincter dysfunction, manifests

as incontinence, subdivided into different degrees of severity which, as might be expected, showed that flatus incontinence and soiling were much more frequent than frank incontinence of stool of any consistency ^[4]. Lateral internal sphincterotomy can be done by local or spinal anesthesia, carried out in the lithotomy or lateral decubitus position. There are two methods for LIS, closed method and open method ^[5].

Risk factors of fecal incontinence;

Constipation: "Hard stool makes it difficult for one of the anal sphincters to contract, allowing liquid material to seep through.

Diarrhea: as the sphincter accommodate soft stool, so diarrhea can cause leakage.

Childbirth: "repeated trauma to the muscles and rectum especially when the doctor makes a cut in the tissue between the vagina and anus for easier delivery.

Nerve or muscle damage: with trauma especially if chronic health conditions, such as diabetes and multiple sclerosis. ,Others condition as Rectal scarring from surgery or radiation therapy ,Crohn`s disease, ulcerative colitis and irritable bowel syndrome [6].

PATIENTS AND METHODS

The study was approved by the Ethical Committee of the surgical department. Faculty of Medicine, Zagazig University with informed patient consent. This prospective randomized study included a total of 62 female patient in the period between Aug. 2017 and Dec. 2018. All female patients were presented by chronic anal pain with or without bleeding during defecation and lasts about 1-2 hours , with mean ages of (34.1 + 8.2) and (41.8 + 9.05) of group A and B respectively.

Study design:

All female patients with chronic anal fissure fulfilled inclusion criteria and visited the outpatient clinic during the period of study were included. we randomly divided the patients as even numbers to be group A and odd numbers to be group B with exception of patients with fissure more than 2 cm(we put them directly to group B)

Patients had been grouped A and B:

Group A of (31) patients with lateral internal sphincterotomy up to the fissure apex.

Group B of (31) patients with lateral internal sphincterotomy up to 50% of the fissure length.

Inclusion criteria:

Female Patients, at any age with chronic anal fissure not responding to medical treatment and increased resting anal pressure, classified according to digital rectal examination scoring system (DRESS) in all patients (manometry is not available).

Exclusion criteria:

Male patients, patients with acute anal fissure, hypotonic sphincter, Coexisting Crohn`s disease or ulcerative colitis, Previous history of anorectal surgery, Previous history of anorectal malignancy/radiotherapy, scarring , Patients unfit for surgery, a history of fecal incontinence, previous anal sphincter injury or surgery, concurrent fistula or hemorrhoids, multiple obstetric delivery, diabetes or other endocrinal

disorders, and patients using calcium channel blockers and oral sublingual nitrite.

Preoperative:

Female Patients, at any age with chronic anal fissure, with mainly hypertonic anal sphincter (score 4, 5) classified according to digital rectal examination scoring system (DRESS) (digital Rectal Examination Scoring System (DRESS) which is the basic examination for any patient with anal surgery).Assessment of anal sphincter tone is a critical examination of anorectal examination before and after performing (L.I.S).

Digital rectal examination scoring system	
Score (0)	No discernable tone at rest, an open or patulous anal canal
Score (1)	Very low tone
Score (2)	Mildly decreased tone
Score (3)	Normal
Score (4)	Elevated tone
Score (5)	Very high tone, a tight anal canal, difficult to insert a finger

Informed consents were taken from the patients with discussing the procedure to be done, possible postoperative complications, length of hospital stay and time needed to regain normal daily activities. Full preoperative laboratory investigations needed for surgery. Patients admitted to hospital one day before surgery, perianal hair shaved by clipper on table and rectal enema was performed to evacuate the rectum.

Surgical techniques:

Group (A): lateral internal sphincterotomy up to the fissure apex **as shown in figure 1**. Thirty one cases were managed by lateral internal sphincterotomy up to the fissure apex by using of open method. Patients in lithotomy position with spinal anesthesia (without muscle relaxant), the buttocks skin were retracted, laterally, using plasters and under complete aseptic precautions, anal region sterilization done by povidone. A small curved 1-cm incision is made in the intersphincteric groove, and artery forceps is used to separate the internal sphincter from the mucosa and from the external sphincter or catching by forceps, the internal sphincter is carried out –at the level of fissure apex - by using a curved clamp to the surface of wound or catching by forceps then divided with the help of electro cautery, with sustained pressure for 5 min for bleeding control.



Fig. (1): showing catching of internal sphincter by Allis forceps and cutting by diathermy up to fissure apex of fissure in female with chronic anal fissure with previous normal mamomertry.



Fig. (2): Showing internal sphincter separation with 1cm muscle cutting and using diathermy for muscles cutting.

Group (B): lateral internal sphincterotomy with 50% of fissure length as shown in figure 2. Thirty one cases were managed by lateral internal sphincterotomy up to 50% of fissure length. Patients were in lithotomy position using spinal anesthesia (without muscle relaxant); the buttocks skin were retracted also, laterally, using plasters and under complete aseptic conditions, anal region sterilization done by povidoneiodine. A small 1-cm incision is made in the intersphincteric groove, and artery forceps is used to dissect the internal sphincter from the mucosa and separating it from the external sphincter, muscle cutting by diathermy performed. We had 2 subgroups:

Group 1: seventeen patients with fissure length 3 cm so, the cut was 1.5 cm (50% of fissure length).
 Group 2: Fourteen patients with fissure length 2 cm so, the cut was 1cm (50% of fissure length). (The length of the fissure and length of cutting all measured by ruler) Followed by sustained pressure for 5 min to stop bleeding.

Postoperatively, All patients were given soft foods after the postoperative sixth hour. All patients were given metronidazole 500mg TID orally with analgesic amp. IM O.D. All cases were examined for pain using pain scale showing in Fig 3(on postoperative Days 1, 7, 14, 28, and then monthly), bleeding, hematoma and bruises. All patients were discharged at home under the cover of metronidazole 500mg TID for 7 – 10 days, laxative, analgesia with anal bath. (povidoneiodine), and follow up after 7days, 2 weeks, 4 weeks, and then they continued monthly for incontinence using wexner score as shown in table (1). Mean follow-up period was 6 months. Postoperative digital rectal examination 4 weeks later was done that reveals relieved hypertonia in all cases.

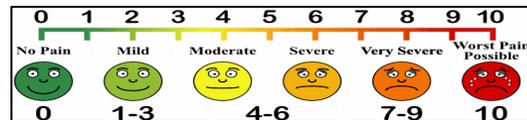


Fig (3): Pain scale chart

Table (1) showing wexner score

Type of incontinence	Never	Rarely	Sometimes	Usually	Always
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

Never, 0; rarely, <1/month; sometimes, <1/week, ≥1/month; usually, <1/day, ≥1/week; always, ≥1/day.

- 0, perfect; 20, complete incontinence.

RESULTS

Group A: Twenty five patients (80.6%) showed complete fissure healing within 4 weeks. Six cases comprising (19.35%) showed delayed wound healing within 6 weeks. nine patients (29%) had transient incontinence to flatus . one

patient (3%) had recurrence after 6 months follow up

Group B: Twenty patients (64.5%) showed complete fissure healing within 5 weeks. Eleven cases comprising (35.5%) showed delayed wound healing within 6 weeks. two patients (6%) had transient incontinence to flatus . two patients (6%) had recurrence after 6 months follow up.

Table 2. Age in both groups.

Variable	Group A N = 31	Group B N = 31	P value
Mean age in years	34.1 + 8.2 years 25 – 55	41.8 + 9.05 years 23 – 65	0.499869.(NS)

Table 3: time required for pain relief postoperatively in both groups

Pain relieved In (days)	Group (A) N = 31	Group (B) N = 31	P value
Mean \pm SD	2.1 \pm 0.86 (1-3)	3.8 \pm 0.79(3-5)	0.02468552

Table 4.preoperative clinical symptoms and signs in both groups.

	Group A N = 31	Group B N = 31	Total N= 62	P value
Presenting symptoms				
Pain during defecation	30 (96.7 %)	29 (93.5 %)	59 (95.1 %)	0.499869. (NS)
Spots blood	11 (35.5 %)	10 (32.2 %)	21 (33.9 %)	
Itching or scratching	9 (29 %)	10 (32.2 %)	19 (30.6 %)	
Discharge	5 (16.1 %)	3 (9.7 %)	8 (12.9 %)	
Clinical signs				
Sentinel piles or skin tag	23 (74.1%)	25 (80.6%)	48 (77.4 %)	0.5667. (N S)
Hypertrophied papillae	14 (45.1%)	12 (38.7%)	26 (41.2 %)	
Exposed (IAS) fibers	9 (29.03%)	7 (22.5 %)	16 (25.8 %)	
Duration of symptoms (months) previous pelvic trauma or operation	7.5 + 2.5 (4-12) 8.5 + 3.5 (5-13)	7.3 + 1.9 (4-11) 6.8 + 1.5 (3-9)		0.635917 (NS) 0.645116 (NS)
Dress score	14 pt (3) 15 Pt (4) 2 Pt (5)	12 pt (3) 15 Pt (4) 4 Pt (5)	26 pt (3) 30 Pt (4) 6 Pt (5)	

Table 5: healing in both group

Healing	Group A N 31	Group B N :31	P value
Early healing	25 (80.65 %)	20 (64.5 %)	0.15865387.
Late healing	6 (19.35 %)	11 (35.5 %)	

Table (6): Recurrence and Incontinence in both groups.

Variables	Group A N 31	Group B N 31	P value
Recurrent fissure	1 (3.2 %)	2 (6.4 %)	1
Incontinence to flatus (transient)	9 (29 %)	2 (6.4)	0.02

All cases of flatus incontinence were treated by medical and conservative measures within 6 weeks without need of surgery.

DISCUSSION

Anal fissure is a common anorectal disorder affecting any age and sex. It commonly affects young or middle age groups, with acute form (< 8 weeks) and chronic forms (not responding to medical treatment > 8 weeks). Anal fissure is attributed mainly to constipation, straining during bowel movements or child birth trauma.^[7]

In this study we are concerned with chronic anal fissure in females as they are liable to obstetric anal sphincter trauma. In contrast to lateral internal anal sphincterotomy in males, division of the internal anal sphincter in most females tends to be more extensive than expected. This is probably related to their short and weak anal canal. In some females, lateral internal anal sphincterotomy may compromise sphincter function and precipitate fecal incontinence, particularly in the presence of other sphincter disorders or injury. Care should be exercised especially in the presence of previous obstetric trauma, as internal sphincter division may further compromise sphincter function Spasm. Women are nearly twice as likely as men to report fecal incontinence and it is well known that vaginal birth can cause significant trauma to the internal anal sphincter.^[8]

However, it is well known that many women with sphincter injuries are continent and some women with intact sphincters have fecal incontinence as another causes. The most common site for typical anal fissure is the posterior midline because of the elliptical arrangement of the external sphincter posterior, which leads to little support for the anal canal. The cardinal symptom of chronic anal fissure is sharp, cutting pain with defecation that may persist for minutes to hours after defecation. The

pain may be associated with scanty amount of bright red blood and pruritis ani.^[8] Acute anal fissure can be managed by nonsurgical treatment, but chronic anal fissure mostly requires surgical intervention in the form of lateral internal sphincterotomy (LIS).

In comparison to other surgical and medical treatment modalities, sphincterotomy remains the most successful method of management in patients with chronic anal fissure. Although lateral internal sphincterotomy (L.I.S) is the gold standard and the ideal treatment for chronic anal fissure, but it has an annoying disadvantage which is incontinence, either to stool or to flatus if excess internal sphincter is divided. Assessment of anal sphincter tone is a critical part of anorectal examination pre and postoperative (L.I.S).In this study we weren't supplied with anal manometry, so we replaced it by the Digital Rectal Examination Scoring System (DRESS) which is the basic anorectal muscle examination for any patient with anal surgery^[9] mild degree of fecal incontinence may be associated with chronic anal fissure at presentation rather than that occurs as a result of internal sphincterotomy.The extent of internal sphincterotomy remains debatable Performing sphincterotomy to the fissure apex allows fissure healing but increasing the risk of incontinence, performing a shorter sphincterotomy corresponding to 50% of fissure length reduces the risk of anal incontinence. Furthermore, a more conservative division could lead to different healing rate by the time of outpatient follow-up[10] So, this study was done to compare results of lateral internal sphincterotomy up to the fissure apex versus to 50% of fissure length for healing, pain relieve and continence to stool/flatus.

In this study, we have 62 female patients with chronic anal fissure randomly divided in two groups...Group (A); in which lateral internal sphincterotomy was done up to the fissure apex ; and group (B) In which lateral internal

sphincterotomy was done to 50% of fissure length. In group (A), the patients' ages ranged from 25 - 55 years old with mean age 34.1 years. While in group (B) ages ranged from 23 - 65 years old with mean age 41.8±9.05 years. With p-value (0.4998.) indicating that there is no statistical significant difference. Our study revealed that healing was faster in group (A) Where Internal Sphincter divided up to the fissure apex with (25) patients had complete re-epithelization of the fissure within 3- 4 weeks, 6 patients only had delayed healing (more than 6 weeks), compared to (20) patient in group (B) had complete re-epithelization within (4 -5) weeks, 11 patients of delayed healing in group (B) where internal sphincter divided up to 50% of fissure length. Lateral internal sphincterotomy (LIS) reduces the resting tone of the anal sphincter and allows healing of the fissure, so, healing was more rapid in group (A) with more division of the internal sphincter than in group (B). healing means that patient had no pain or bleeding during defecation and clinically by the absence of sphincter spasm and tone[11] many studies revealed that patients with lateral internal sphincterotomy may be needs up to (8) weeks for complete fissure healing^[12] division of the internal anal sphincter up to fissure apex results in adequate fissure healing compared with sphincterotomy to the dentate line the safe extent of division is about 25% of the total sphincter length, which in women corresponds to 50% of fissure length^[12] In our study , no patient had incontinence to stool , but 9 patients had incontinence to flatus in group (A) compared to 2 patients only in group (B).

Only one patient had recurrent anal fissure after one month in group (A) compared to two patients complained from recurrent anal fissure after three months in group (B). Anal incontinence after LIS usually occurs mildly (soiling or flatus incontinence) and lasts only for weeks up to 6 months; even so some authors had reported persistent fecal incontinence for 12 months after LIS surgery reported^[16] Timing of post-sphincterotomy incontinence is still controversy, in our study, transient incontinence occurred after surgery and lasting for 4-6 days only. One study reported incidence of fecal incontinence immediately after surgery, the overall incidence of incontinence due to LIS was (10.3%) (Low) right after surgery but did not

change in the long term follow up^[13] Another novel reported that gas or liquid incontinence were seen in 1.9% of LIS surgery (8 patients) and 4 patients with gas incontinence resolved without any surgical intervention after eight months. However, other three patients had permanent liquid incontinence^[14] another study reported immediate post-operative pain reliever , with three patients needed less than one week for pain relieve and two patients only had severe pain not relieved in the first week , which was attributed to the procedure failure which was repeated again^[15] some reported that Sphincterotomy up to the dentate line provided faster pain relief and faster anal fissure healing rate, but it was associated with a significant postoperative increased fecal incontinence rate than was sphincterotomy up to fissure apex.^[17]

Our study revealed that division the internal sphincter up to the fissure apex allowing rapid fissure healing and decrease time needed for post-operative pain relief but increasing incidence of transient flatus incontinence compared to division the sphincter up to 50% of fissure length from anal verge.

CONCLUSION

In females with chronic anal fissure with hypertonic anal sphincter, division of internal sphincter up to 50% of fissure length and not reach apex of the fissure is sufficient to preserve the internal sphincter function and prevent incontinence either to stool or flatus.

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