

The effectiveness of the ligation of intersphincteric fistula tract technique in the treatment of simple trans-sphincteric anal fistula

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Received: 30 September 2020

Revised: 5 November 2020

Accepted: 15 November 2020

Published: 18 May 2021

The Egyptian Journal of Surgery 2021,
40:167–173

Background

The best cure for anal fistula, while maintaining the anal sphincter complex and complete continence, should remove inflammation and facilitate healing of the tract. The primary cure for anal fistula is surgery. There have been several surgical techniques mentioned. Intersphincteric fistula tract [ligation of the intersphincteric fistula tract (LIFT)] ligation, with the benefit of reducing anal incontinence, is a novel surgical technique. The low probability of an impaired sphincter function is one of the key benefits of the procedure.

Aim

To analyze the success rate of LIFT for patients with anal fistulas.

Patients and methods

From December 2017 to June 2019, 20 patients were added to this longitudinal study. Patients were treated with intersphincteric fistula (LIFT) technique, and effects were observed and reported, including recurrence rate, incontinence rate, and other postoperative complications. A follow-up cycle of up to 12 months has been completed.

Results

A total of 20 patients have been examined. The mean operation time was 39 min (range, 25–55 min), and there were no intraoperative complications. The average full healing rate was 90% and the recurrence rate was 10%. No patients have experienced incontinence.

Conclusions

LIFT technique is an effective method in the treatment of anal fistula with reduced risk of recurrence and anal incontinence.

Keywords:

anal fistula, anal incontinence, fistula-in-ano, ligation of the intersphincteric fistula tract procedure

Egyptian J Surgery 40:167–173

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1110-1121

Introduction

Anal fistula is a complicated condition that doctors have been grappling with since the time of Hippocrates [1]. Anal fistula is an epithelial pathway that links the rectum or anal canal to the perianal region. The frequency of fistula is estimated at 2 : 1 in 8.6/100 000 male majority populations. During the third and fifth decades of life, the disease is more severe. The source of the fistula is cryptoglandular infection in up to 90% of cases. Crohn's disease, trauma, malignancy, or radiotherapy may result in fistula in ~10% of patients [2].

Anal fistulae arise from the anal glands; this is according to Parks' cryptoglandular hypothesis. In most cases, infection occurs in the anal glands found in the intersphincteric area, from which infection travels, tracking toward other spaces between the internal and exterior anal sphincter and draining into the anal canal. If the outlet of these glands is blocked, the abscess may develop and eventually spread to the surface of the skin [3].

Several surgical operations, including the use of seton, fibrin adhesive, collagen plugs, rectal progression flaps, sphincter replacement fistulotomy, and fistula re-routing, have been documented. Depending on the particular clinical features of the lesion, the correct choice of technique is the most critical surgical method necessary for proper diagnosis and to mitigate the risk of relapse or incontinence. Recently, a number of different approaches have been tried and suggested for the defense of the sphincter, all with the fundamental goal of preventing damage to the anal sphincter and enhancing the efficacy of the procedure [4].

Intersphincteric fistula ligation has been shown to be a simple, safe, and cost-effective treatment choice [5]. Intersphincteric fistula ligation [ligation of the

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intersphincteric fistula tract (LIFT)] is a novel therapy for the protection of sphincters for the management of transsphincteric fistulas with an approximate cure rate of 94.4%. The technique is to open and dissect the intersphincteric space and to find the fistula that reaches the area. The tract is then ligated and removed, leaving intact the inner and outer sphincter [6].

Patients and methods

This prospective research was performed on 20 patients who had undergone transsphincteric anal fistula and had obtained LIFT treatment at the Department of General Surgery, Beni-Suef University Hospital, from December 2017 to June 2019.

The patients received informed consent after sufficient research information (research characteristics, benefits, and potential complications) was presented. The research protocol was accepted by the Institutional Human Ethical Committee of the Faculty of Medicine of the University of Beni-Suef.

Inclusion criteria

The following were the inclusion criteria:

- (1) The patients' age varies from 18 to 65 years.
- (2) Patients with simple transsphincteric fistula.

Exclusion criteria

The following were the exclusion criteria:

- (1) Patients with recurrent fistulas.
- (2) Patients having Crohn's disease, as well as anal or distal rectal cancers.
- (3) History of pelvic radiotherapy.
- (4) Fistula where internal opening cannot be localized.

Initial study information was given to the patients where the decision to participate in the study was made or not. We obtained the following information:

- (1) Full history taking to exclude the previous exclusion criteria in selected cases.

- (2) Thorough clinical examination including inspection, palpation, digital rectal examination, and proctoscopic evaluation. Digital rectal examination and endoanal ultrasonography were performed to assure the diagnosis and specify the type of fistula.

The status of patients in the sample was measured by the Wexner Incontinence Scoring Scale. The degree of incontinence, the type of incontinence (solid stool, liquid, or gas). The use of the pad and the effect on daily life are taken into account in the measure. Patients with a score below 8 had mild incontinence; 9–14, severe incontinence; and 15–20, serious incontinence (Table 1). Scale ratings vary from 0 to 20.

Preoperative preparation

Nil per os was maintained in the patient for 6 h before the operation. With the induction of anesthesia, prophylactic antibiotics were administered and continued for the entire following week. One day before the surgery, patients were admitted to the hospital and received enema.

Surgical technique

All patients were admitted to the hospital at least 1 day before surgery. The anal region was shaved. On the morning of the operation, the rectum was evacuated with the aid of a disposable enema. All patients were operated upon under general anesthesia after antibiotic prophylaxis with cefotaxime 1 g intravenously and metronidazole 500 mg intravenously at the time of induction.

While the patient was in the lithotomy position, the external opening was examined and established, and the internal opening was detected by proctoscopy. Methylene blue was injected into the external opening to identify the internal opening site. In the outer opening, a probe was passed to define the path of the fistula tract to the inner opening and to classify the fistula according to the classification of Park. Just outside the intersphincteric groove, a curvilinear

Table 1 The Wexner score

Type of incontinence	Frequency				
	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, less than 1/month; sometimes, less than 1/week, 1/month; usually, less than 1/day, 1/week; always, 1/day. 0, perfect; 20, complete incontinence.

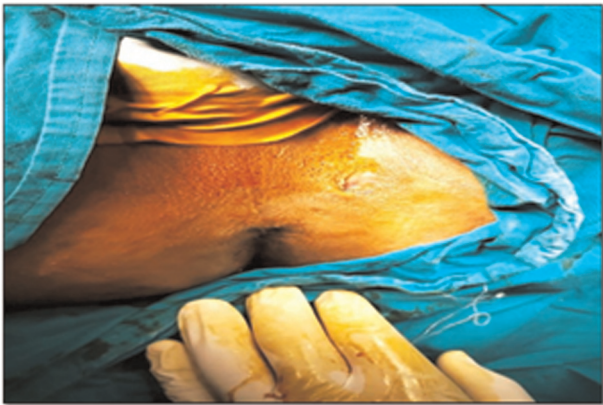
incision was made. In the intersphincteric plane, dissection was carried on until the fistula track was encountered. After the isolation, the probe was removed, and the track was ligated near the internal anal opening with absorbable sutures (3/0 Vicryl). Then the track was transected between the two points of ligation. The wound was loosely closed. Subsequently, to remove any granulation tissue, both

external and inner openings were gently curetted and then left open for drainage (Figs 1–3).

Postoperative care was as follows: antibiotics were administered to the patient on day 1 postoperatively (intravenous 1 g cefotaxime) and continued for the entire following week. They were instructed to follow a soft diet and bath room hygiene after every motion with warm water. Patients were discharged 1–2 days postoperatively. Postoperative analgesia was administered as narcotic analgesic, Nalbuphine (20 mg), up to the second postoperative day, and thereafter with NSAIDs (diclofenac sodium). The analgesic doses required were recorded and analyzed as a marker for pain severity. All patients completed the study to the end.

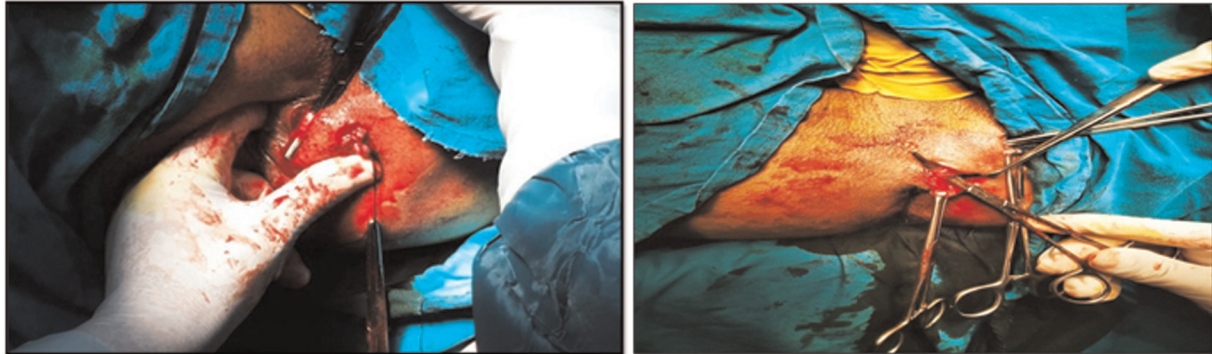
Follow-up was done as follows: after hospital discharge, patients were invited to attend follow-up visit on weeks 1, 2, and 6, and also at months 3, 6, and 12 postoperatively. Postoperative assessment included pain, bleeding, incontinence, and urinary retention. The patients were considered cured when they denied leaking stool through the wound. Those in

Figure 1



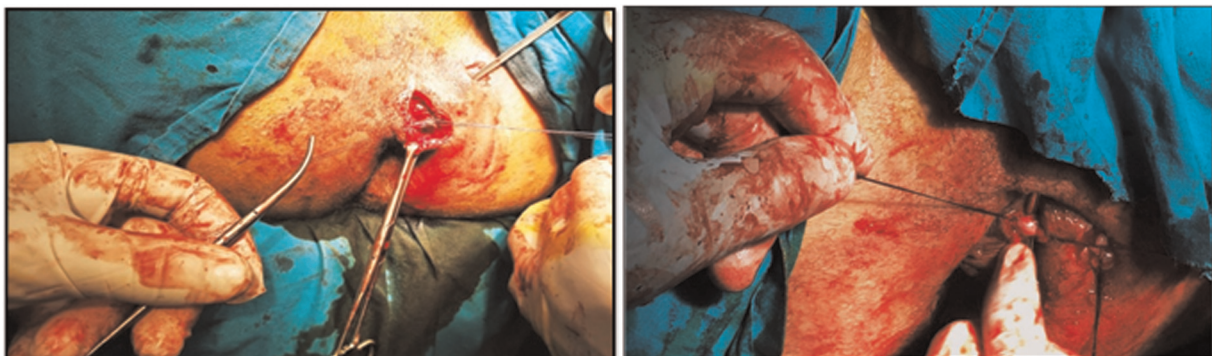
Identification of the external opening.

Figure 2



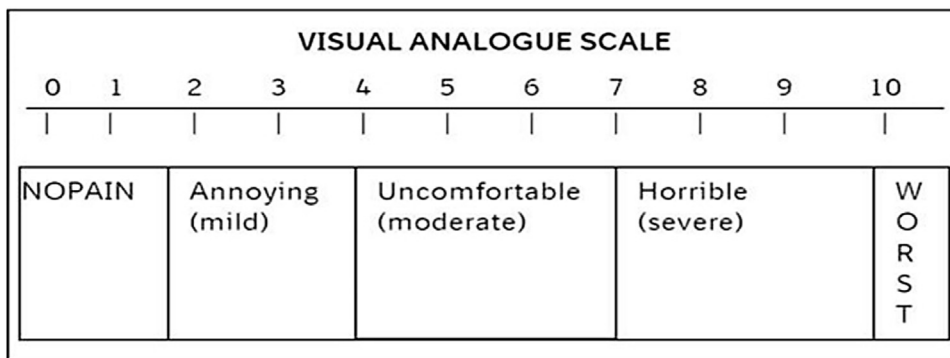
Isolation of the intersphincteric tract.

Figure 3



Ligation of intersphincteric fistula tract.

Figure 4



Visual analog scale.

Table 2 Demographic and clinical characteristics of the patients

	Mean±SD	Minimum	Maximum	Median
Age (years)	47.3±6.44	35	59	47.5
Patients [n (%)]			20 (100)	
Sex [n (%)]		Male		16 (80)
		Female		4 (20)
Complaint [n (%)]		Discharge		20 (100)
		Pain		11 (55)
		Pruritus		9 (45)

the second assessment who still had symptoms of anal fistula were instructed to maintain the basic care of postoperative proctologic operations and invited to consult within 30 days (Fig. 4). Postoperative pain was assessed using a visual analog scale (VAS). This score scale is scored from 0 to 10, where VAS 0=no pain, VAS 1–3=mild pain; VAS 4–6=moderate pain, and VAS 7–10=severe pain. Patients were asked to rate their pain on postoperative days 1, 3, 5, and 7. Follow-up was performed in the outpatient clinic and by telephone after an overnight stay in the hospital.

The patients were considered as having recurrence when after the third assessment they still had symptoms of anal fistula, failure of complete healing, or recurrence of fistula tract within 1 year. For these cases, it was proposed that a new surgical procedure would be done, which may or may not be LIFT again. The presence of perianal abscess in any of the postoperative assessments was considered as complication, and its treatment was recommended by the use of quinolone for 14 days and subsequently.

Fecal incontinence was considered in patients who were continent before the operation, but had postoperatively obvious injury of sphincter function. Fecal incontinence was assessed by Wexner score of continence, as shown in Table 1. Patients who were discharged were instructed to return for assessment in case of reappearance of symptoms.

Results

Table 2 summarizes the demographic characteristics of the patients included in our study. This study included 20 patients with fistula-in-ano. Patients’ age ranged from 35 to 59 years old, and the mean age (mean±SD) was 47.3±6.44 years. A total of 16 (80%) patients were males and only four (20%) were females.

All patients experienced discharge from the external opening. Nine (45%) of these patients had pruritus, and the other 11 (55%) patients experienced pain.

The operative time in the study ranged from 25 to 55 min, and the mean operative time was 39±9.26 min. There were no complications during operations (Table 3).

Postoperative pain is measured using the VAS ranking. The optical analog scale (VAS) ranged from 1 to 5, and the mean was 2.45±1.19. Sodium diclofenac was required to control postoperative pain.

Postoperative follow-up

Table 4 summarizes the postoperative follow-up of the patients. All patients experienced neither bleeding nor incontinence postoperatively. Three patients had postoperative urine retention that was treated with urinary catheter insertion. Four patients presented with local wound infection (drainage of pus from the surgical wound) and were managed conservatively.

Table 3 Operative results of the patients

	Mean±SD	Minimum	Maximum	Median
Operative time (min)	39±9.26	25	55	37.5
Postoperative pain (visual analog scale)	2.45±1.19	1	5	2
Patients [n (%)]		20 (100)		
Complication during operations [n (%)]		No	20 (100)	
		Yes	0	

Table 4 Postoperative follow up of the patients

Patients [n (%)]		20 (100)		
Postoperative complications	No complication		13 (65)	
	Urine retention		3 (15)	
	Wound infection		4 (20)	
	Bleeding		0	
	Incontinence		0	
Recurrence	No		18 (90)	
	Yes		2 (10)	
	Mean±SD	Minimum	Maximum	Median
Healing time (weeks)	4.55±1.19	3	7	4

A total of 18 (90%) patients achieved complete fistula healing, whereas only two (10%) patients developed recurrence through the wound (intersphincteric fistula), and they were managed 3 months later by fistulotomy, with complete resolution. The mean healing time ranged from 3 to 7 weeks (mean, 4.55 ±1.19 weeks).

Discussion

A persistent irregular contact between the epithelialized surface of the anal canal and (usually) perianal tissue is the anal fistula, or fistula-in-ano. In individuals with a history of anal abscesses, anal fistulas are normal. Anal fistulae can be very uncomfortable and can be annoying owing to pus drainage (formed stools may even be moved through the fistula). Furthermore, persistent abscesses can lead to severe short-term pain morbidity and, significantly, provide a point of starting systemic infection [7].

In the form of surgery, care is considered necessary to allow drainage and to prevent infection. To date, however, because of their recurrence rates and incontinence, none of the different alternatives for the treatment of anal fistulas are considered the technique of choice [8].

A modern, revised approach to the treatment of fistula-in-ano via the intersphincteric plane is the LIFT technique. The LIFT technique relies on the secure closure of the internal opening and removal via the intersphincteric technique of infected cryptoglandular tissue [9].

The three main factors used to assess fistula surgery success or failure are recurrence, delayed recovery, and incontinence. A variety of new methods for sphincter survival have been developed and suggested, all with the shared purpose of reducing damage to the anal sphincters and maximizing the clinical recovery [4].

LIFT was a valuable sphincter-preserving procedure in the management of simple transsphincteric anal fistulas. One of the main merits of this procedure is the low possibility of a defective sphincter function [10].

The original study explaining the LIFT technique consisted of 17 patients with a 94.4% primary cure rate; with the same LIFT technique, one patient was subsequently subject to reoperation. Incontinence was not identified in this study [11].

A total of 20 participants with an average age of 47.3 years (range, 35–59 years), comprising 16 males and four females, were included in our sample. Discharge from the external opening was witnessed by all patients. Nine of these patients had pruritus, and discomfort was endured by the other 11 patients. The mean operating time (range, 25–55 min) was 39 min. No intraoperative complications occurred.

In our study, a primary healing rate of 90% was observed after LIFT operations.

Our results are in agreement with a previous study, which reported a cure rate of 82% in their sample [12]. In a prospective sample of 18 patients, the recovery rate was 83% with just three recurrences – alternative treatment was fistulotomy in one condition and two

other endorectal progressions – accompanied by full fistula healing. There were no incontinence cases in this study, as well [13].

In line with the previous report, a series of 30 patients (25 men) who underwent LIFT had a mean age of 36.5 years and showed a full cure rate of 90%; one patient had an abscess 6 months after the initial treatment, and three had a recurrence. No cases of incontinence have occurred [14].

The overall success rate of the LFT technique is around 71% in a systematic analysis of 13 papers, including 438 patients with fistula [12]. Long-term success rates record healing rates of 40–95% for LIFT from studies with a long-term follow-up duration [15].

This demonstrates that the healing rates obtained in our study were within the expected.

Although most LIFT recurrences were early, some occurred after 6 and 12 months after the initial surgery. Follow-up studies currently published report recurrence ranging from 5 to 9 months, but several authors have discovered that late recurrences will occur 7–8 months after the surgical technique. Even if the external and internal orifices are healed, incomplete closure is still necessary, probably with the risk of recurrence. This argument can be identified by follow-up extended to 2 or more years [16].

Rojanasakul *et al.* 2007 [16] reported a mean healing time with the use of the LIFT technique of 4 weeks. Several studies have shown a wide range of healing time from 26.6 days to 8 weeks [17].

Our study showed that the mean healing time was 4.55 weeks (range, 3–7 weeks).

This is in line with previous studies. Ooi and colleagues and Shanwani and colleagues reported a mean healing time of 6 and 5 weeks, respectively.

A prospective study that included 45 patients treated with the LIFT procedure was carried out by Shanwani and colleagues. The hospital stay was 2.5 days on average (range, 2–5 days). The mean time for operations was 67.5 min. After an average follow-up duration of 9 months, they announced that the healing rate was 82.2%, and 7 weeks was the average healing time. The rate of recurrence was 17.8%, which took place between 3 and 8 months after surgery. There were no cases of incontinence or morbidity.

In this study, postoperative urine retention occurred in three (15%) patient and was treated with urinary catheter insertion. This condition occurred temporarily in the operative day and relieved soon after analgesics and hot bath. One of the main advantages of this operation is a low or even zero possibility of a defective sphincter function.

A systematic review assessed 435 patients and reported that the incidence of postoperative complications was 1.8%, in the form of purulent discharge, persistent anal pain, anal fissure, and secondary bleeding. Moreover, these could be treated successfully [18].

In the current study, all patients experienced neither bleeding nor incontinence to stool postoperatively.

Conclusions

LIFT technique is an effective method in the treatment of transsphincteric anal fistula with reduced risk of recurrence and anal incontinence.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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