Ligation of intersphincteric fistula tract technique in the management of anorectal fistula

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Background and aims
Anorectal fistula is one of the most common problematic anal conditions in daily surgical practice. Many treatment modalities are used. This study evaluates the ligation of intersphincteric fistula tract procedure on the basis of its postoperative outcomes.
Patients and methods
This study was carried out on 25 patients. Participants of either sex diagnosed with anal fistula (transsphincteric fistula, either high or low) were included in the study between April 2016 and May 2018. Patients with recurrent fistulas, Crohn's disease, and anal or distal rectal cancers were excluded from the study.
Results
The mean age group of the study participants was 36.6±8.34. The sex distribution showed a higher number of men (n=17) compared with women (n=8). The mean operative time was 35.46±3.6 min and the mean healing time was 6 weeks. Anal incontinence was not observed (0%). A total of two (8%) participants developed recurrence.
Conclusion
The Ligation of intersphincteric fistula tract procedure is an effective and sphincter-preserving technique for fistula-in-ano with a shorter healing time and a lower incidence of recurrence.

Keywords:
anal incontinence, ligation of intersphincteric fistula tract procedure, transsphincteric fistula

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Introduction

Anal fistula, or fistula-in-ano, is a chronic abnormal communication between the epithelialized surface of the anal canal and (usually) the perianal skin. Anal fistulae commonly occur in individuals with a history of anal abscesses. They can form when anal abscesses do not heal properly [1].

Anal fistulae originate from the anal glands; this is according to the cryptoglandular theory of Parks. In most cases, infection develops in the anal glands present in the intersphincteric space, from which infection spreads, tracking to other spaces, which are located between the internal and external anal sphincter and drain into the anal canal. If the outlet of these glands becomes blocked, an abscess can form, which can eventually extend to the skin surface [1–4].

Anal fistulae can be very painful and can be irritating because of the drainage of pus (it is also possible for formed stools to be passed through the fistula). In addition, recurrent abscesses may lead to significant short-term morbidity from pain and, importantly, create a starting point for systemic infection [3].

Treatment, in the form of surgery, is considered essential to allow drainage and prevent infection. Treatments include fistulotomy, core-out fistulectomy, seton placement, endorectal advancement flap, injection of fibrin glue, insertion of a fistula plug, video-assisted anal fistula treatment, and ligation of the intersphincteric fistula tract (LIFT) [5].

However, among the various alternatives for the treatment of anal fistulas, to date, none of them is considered the technique of choice because of their recurrence rates and incontinence.[6].

The LIFT technique is a novel modified approach through the intersphincteric plane for the treatment of fistula-in-ano. The LIFT procedure is based on secure closure of the internal opening and removal of infected cryptoglandular tissue through the intersphincteric approach [7].

This study aimed to evaluate the LIFT procedure in the treatment of transsphincteric fistula on the basis of its postoperative outcomes (healing time, healing rate,

recurrence, continence, morbidity, and postoperative pain).

Patients and methods

Patients

This was a prospective observational study that was carried out on 25 patients who presented with transsphincteric anal fistula and were treated with the LIFT technique in the Department of General Surgery, Zagazig University Hospitals, from April 2016 to May 2018. Informed consent was obtained from the patients after they were provided adequate information about the study (the characters of the study, benefits, and possible side effects). The study was approved by the Institutional Review Board (IRB) and the ethical committee of Zagazig University hospitals (IRB #: 2016-3-362). The patients' ages ranged from 18 to 65 years. Inpatient, we registered patients neither with recurrent fistulas, Crohn's disease, anal or distal rectal cancers, receiving anticoagulant and immunosuppressive drugs nor pregnant females. Digital rectal examination and endoanal ultrasonography were performed to confirm the diagnosis and detect the type of fistula.

Patient preparation

The patient was kept Nil per os (NPO) for 6 h before the procedure. Prophylactic antibiotics (intravenously 500 mg of metronidazole) were administered with the induction of anesthesia and continued for the entire following week. Patients were admitted to the hospital on the day of the operation and received a Fleet enema before the operation.

All patients fulfilled the criteria of the American Society of Anaesthesiology for suitability for surgery and anesthesia. Surgery was performed under either the spinal anesthesia technique or general anesthesia according to the preference of the anesthetist.

Surgical technique

In the operative theater, the patient was placed in the lithotomy position. First, we identified the internal opening, and then a curvilinear incision was made at the intersphincteric groove, followed by dissection through the intersphincteric plane to find the intersphincteric fistula tract. Double-suture LIFT were performed. The medial ligation at the lateral aspect of the internal anal sphincter obliterated the internal opening. The fistula tract between the two suture ligations was then excised. The external opening was then widened to facilitate drainage and allow adequate curettage of the fistula tract. The external and internal sphincters were approximated. The skin was closed with 3/0 interrupted suture.

Postoperative care

Antibiotics were administered to the patient on 1 day postoperatively (intravenous 1 g cefotaxime). They were instructed to follow a soft diet, bathroom hygiene after every motion with warm water, and to avoid exercises, lifting weights, and sexual activities for 2 weeks postoperatively. Patients were discharged 1–2 days postoperatively.

Follow-up

Follow-up was performed on weeks 1, 2, and 6, also at months 3 and 6 postoperatively. The last patient underwent an operation on November 2017, and the last follow-up visit was in May 2018. We assessed postoperative pain, bleeding, incontinence, and urinary retention. Postoperative pain was evaluated using a visual analog scale (VAS). This scoring system is graded from 0 to 10, where 0=none or 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. Postoperative analgesia was administered as a narcotic analgesic, Nalbufen (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.

Results

Between April 2016 and May 2018, 25 patients were included in the study and were treated with the LIFT technique. The mean age of the patients was 36.6±8.34 years and ranging from 18 to 65 years. The majority of patients were men (68.0%) (Table 1).

All patients experienced discharge from the external opening. Ten of these patients (40.0%) had pruritus and the other 15 (60.0%) patients experienced pain (Table 1).

All patients had transsphincteric fitulas, either low or high. Ten (40%) of 25 patients presented with high perianal fistula and 15 (60%) patients presented with low perianal fistula (low trans-sphincteric fistula is defined as a track that passes between or just above the subcutaneous external anal sphincter [4]) (Table 1).

Table 1 Demographic data of patients

Demographic data	*n* (%)
Number of patients	25
Male sex	17 (68.0)
Age (years) (mean±SD)	36.6±8.34
Symptoms	
Discharge	25 (100)
Pruritus	10 (40)
Pain	15 (60)
VAS score	2.2±0.4
Type of fistula	
High transsphinectic	10 (40)
Low transsphinectic	15 (60)

VAS, visual analog scale.

Table 2 Operative and postoperative results

Variables	Value (%, range or mean±SD)
Operative time (min)	
Mean	35.46±3.6
Range	25–50
Postoperative pain (VAS)	
First day	3.8±0.5
Third day	3.4±0.3
Fifth day	2.3±0.6
Seventh day	2.1±0.4
Postoperative required dose of diclofenac sodium (dose/mg)	
Third day	100
Seventh day	50
14th day	25
Postoperative complications	
Bleeding	(0.0)
Urinary retention	4 (16)
Wound infection	2 (8)
Incontinence	(0.0)
Recurrence	2 (8)
Hospital stay (days)	
Mean	1.2±0.5
Range	1–2
Wound healing (weeks)	
Mean	6±2.2
Range	4–8
Follow-up (weeks)	6

VAS, visual analog scale.

The mean operative time in the study group was 35.46 ±3.6 min and ranged from 25 to 50 min (Table 2).

The postoperative pain was assessed using the VAS scores. As shown in Table 2, the required Diclofenac sodium doses needed to control postoperative pain decreased with time (Table 2).

All patients experienced neither significant bleeding nor Incontinence postoperatively. Four patients had postoperative urine retention that was treated with urinary catheter insertion. Two patients presented with local Wound infection (drainage of pus from the surgical wound) and were managed conservatively. Twenty-three (92.0%) patients achieved complete fistula healing, whereas two (8%) patients developed recurrence through the wound (intersphincteric fistula) and they were managed 3 months later by fistulotomy, with complete resolution (Table 2).

The mean hospital stay was 1.2±0.5 days and ranged from 1 to 2 days. The mean healing time was 6±2.2 weeks and ranged from 4 to 8 weeks (Table 2).

Discussion

Anal fistula is the chronic fate of anorectal suppuration and characterized by chronic purulent drainage or cyclic pain associated with acute relapse of the abscess, followed by intermittent spontaneous decompression. Perianal fistulas have a troublesome pathology. The incidence of fistula following an abscess is nearly 33% [8].

Surgical techniques involve two broad categories, including sphincter sacrificing procedures, such as fistulotomy, fistulectomy and cutting seton, and sphincter-preserving procedures, such as fibrin glue injection, fistula plug, rectal advancement flap, video-assisted anal fistula treatment, and LIFT. In general, sphincter sacrificing procedures have high success rates, but are associated with high rates of fecal incontinence [3].

The initial study describing the technique included 17 patients and the primary cure rate was 94.4%; one out of 17 patients had a recurrence. The patient had an operation by LIFT technique and completely cured. No incidence of incontinence was reported in this study [1,2].

Huda and Ashok [1] reviewed the initial publication to establish more rigid inclusion criteria to identify patients who may benefit from the operation for fistula repair by the LIFT technique and achieved 100% success in fistula closure after the first procedure; no patient experienced anal incontinence.

Sileri *et al.* [4] reported in a prospective study of 18 patients that the healing rate was 83%, with three cases of recurrences. The complementary treatment was fistulotomy in one patient and endorectal advancement flap in the other two cases, with subsequent complete healing of the fistula. There were no cases of incontinence in this study.

Madbouly *et al.* [9] conducted a prospective randomized trial for high transsphincteric anal

fistulas treated by the LIFT procedure, and reported a success rate of 74.3% after 1 year of follow-up.

A systematic review assessed 19 original reports on the LIFT procedure, and stated that LIFT is a safe procedure that provides a healing rate of 70.6% (432 of 612), with no reports of impairment of anal sphincter function [10].

Rojanasakul *et al*. [3] 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 [11,12]. Our study showed that the mean healing time was 6 weeks (ranging from 4 to 8 weeks).

Tan *et al*. [13] carried out a retrospective study on 93 patients treated by the LIFT procedure, and reported a median healing time of 4 weeks (range: 1–12 weeks). The median healing time in Ooi *et al*.'s [14] study was 6 weeks.

Shanwani *et al*. [11] carried out a prospective study that included 45 patients treated with the LIFT procedure. The average hospital stay was 2.5 days (range: 2–5 days). The mean operative time was 67.5 min. They reported after an average follow-up period of 9 months that the healing rate was 82.2% and the average healing time was 7 weeks. The recurrence rate was 17.8%, which occurred between 3 and 8 months postoperatively. No incontinence or morbidity was reported.

A recent review, including 18 studies between 2003 and 2009, suggested that the mean healing time was 5.5 weeks for the LIFT technique [15].

Two prospective randomized trials suggested that LIFT has the advantage of less postoperative pain compared with a mucosal advancement flap [16].

The best surgical treatment of anal fistulas is to cure the disease and prevent recurrences without any risk of fecal incontinence. LIFT has achieved a high success rate with preservation of anal continence. Most studies have shown no postoperative impairment in continence [17]. In the current study, no incontinence was reported; thus, the LIFT technique was effective as a sphincter-preserving procedure for the treatment of anal fistulas.

It has been suggested that the insertion of a draining seton into the fistula tract for 8–12 weeks before an operation would promote tract maturation, decrease the incidence of infection, and make the operation much easier, with excellent outcomes [18]. In the current study, we did not use the draining seton for any patient before the LIFT procedure. Also, the LIFT procedure was easy to perform and to find the tract at the intersphincteric space.

Tsunoda *et al*. [19] and Aboulian *et al*. [20] suggested that a drainage seton did not play a protective role in the prevention of fistula recurrence and believe that there is no need for seton insertion before the LIFT procedure. To date, there is no clear evidence of any advantage of using the seton drainage before the LIFT procedure [21].

LIFT procedure is safe in the current study. We observed no intraoperative complications. The postoperative complications reported in our study were two cases of wounds infection and two recurrent cases that were treated successfully. The two recurrent cases were intersphincteric and occurred by 4 and 5 months postoperatively.

A systematic review assessed 435 patients, and reported that the incidence of postoperative complications was 1.8% (eight patients), in the form of purulent discharge, persistent anal pain, anal fissure, and secondary bleeding. Also, these could be treated successfully [22].

Conclusion

LIFT is a safe and effective procedure in the treatment of anal fistulas. LIFT led to less postoperative pain, shorter healing time, and a low incidence of recurrence, and was also a sphincter-preserving procedure.

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Conflicts of interest

There are no conflicts of interest.

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