

Ligation of Intersphincteric Fistula Tract (LIFT): Outcome and Continence Issues in Complex Anal Fistula

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Abstract

Intruduction: Ligation of the intersphincteric fistula tract (LIFT) is a new sphincter-sparing procedure for anal fistula. The success rate is comparable with other sphincter-preserving techniques. The objective of the study is to evaluate the results of LIFT in the management of transsphincteric and suprasphincteric anal fistula and to assess any change in continence after the procedure.

Methods: One hundred and ten patients with transsphincteric and suprasphincteric anal fistula were included in the study. Assessment of continence and anal manometry were performed before and after the procedure. Primary outcome measure was complete healing. Minimum follow-up was one year following the procedure.

Results: Primary healing occurred in 83.63% patients. The average healing time was seven weeks. None of the patients reported any change in continence after the procedure. There was no significant difference in resting and maximal anal pressures before and after the procedure.

Conclusion: The results of the LIFT technique are very promising. This technique has the potential to become the gold standard for transsphincteric and suprasphincteric anal fistula.

Keywords: Anal Fistula; LIFT.

Introduction

The incidence of perianal fistula in men and women is 12.3 per 100,000 and 5.6 per 100,000, respectively [1]. The disease presents predominantly in the 3rd and 4th decades of life [2].

Most perianal fistulae are thought to arise as a result of cryptoglandular infection. According to the cryptoglandular hypothesis, intersphincteric anal gland infection is the initial event in the development of perianal fistula [3]. Intersphincteric abscess may spread caudally between the internal and external sphincters resulting in perianal abscess and subsequently intersphincteric fistula. The infection may spread to the ischiorectal space and drain over the skin leading to transsphincteric fistula. A transsphincteric fistula may be low or high depending on the part of external sphincter crossed by the tract (subcutaneous, superficial or deep) [3]. Less frequently infection spreads in a cephalad direction above the levator space producing a supralelevator abscess. A supralelevator abscess may spread to the ischioanal space and drains through the skin leading to a suprasphincteric fistula. A deep postanal abscess may spread to one or both ischioanal fossae and results in horseshoe abscess and fistula. The internal opening in horseshoe fistula is single and usually located at posterior midline. The extrasphincteric fistula is rare and the internal opening is located above the pectinate line. This is not a consequence of cryptoglandular infection but possibly the result of downward spread of pelvic infection. In anal fistulas of cryptoglandular origin, the tract connects the primary opening in the anal canal at the pectinate line to the secondary opening over the skin [4].

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Despite many techniques, there is no gold standard procedure for all types of perianal fistulae and new techniques continue to evolve. Ligation of the intersphincteric fistula tract (LIFT) is a new sphincter-sparing procedure. In this procedure the fistulous tract is disconnected from the internal opening by dividing and ligating the tract in the intersphincteric plane. The success rate is comparable with other sphincter-preserving techniques. The purpose of this study is to evaluate the results of LIFT procedure in transsphincteric and suprasphincteric anal fistula and assess any change in continence.

Methods

One hundred and ten patients of transsphincteric and suprasphincteric anal fistulae were included in the study. Patients were assessed clinically by thorough physical examination including digital examination and proctoscopy. MRI was performed to distinguish between high transsphincteric and suprasphincteric fistula. Patients with intersphincteric and extrasphincteric fistula were not included in the study. Patients with active infection and in whom internal opening could not be identified, were also not included in the study. Patients with evidence of inflammatory bowel disease, tuberculosis or malignancy were also excluded from the study. Clinical assessment of continence was done by questionnaire. Anal manometry was performed to record resting and maximal anal pressures. The study was approved by the institutional ethical committee. Informed and written consent was taken from all the patients.

Clinical Continence Grading [5]

- Grade A: continent of solid and liquid stools and flatus.
- Grade B: continent of solid and liquid stool but not flatus.
- Grade C: continent of solid stool but not of liquid stool or flatus.
- Grade D: continued faecal leakage.

Operative Technique

The procedure is performed under spinal anesthesia. Patients with anterior or anterolateral external opening were operated in lithotomy position and patients with posterior or posterolateral external opening in prone Jack-knife position. The internal

opening is identified by injection of water or methylene blue through the external opening or gently probing the fistula tract. A small curvilinear incision is given over the intersphincteric groove corresponding radially to the internal opening. Meticulous dissection is carried out to identify the fistula tract. The tract is hooked using a small right-angled clamp. The tract is ligated close to the internal and external sphincters with polyglactin suture of size 3-0. The tract is divided between the ligations and a small piece of tissue from the tract is removed for histopathological study. Water is again injected through the external opening to confirm that the tract is correctly divided. The remaining fistulous tract is curetted through the external opening. The last step is closure of the incision with interrupted sutures.

Most of the patients were discharged the day after surgery. The patients were followed at three, six and twelve weeks and then every six weeks up to one year.

Assessment and Grading of Wound Healing [6]

Grade 1: Complete epithelialisation of the wound.

Grade 2: Healing wound with granulation.

Grade 3: Granulation with purulent discharge.

Grade 4: Non-healing: the wound did not heal at ten weeks.

Assessment of continence and anal manometry was again performed six months after the procedure. The primary end point was grade 1 healing and absence of discharge for one year.

Results

One hundred and ten patients were included in the study. The majority of the patients were male (83 males, 27 females), aged between 22 to 70 years (mean age 37.6 years). Mean duration of illness was seven months (three months to five years). Sixty two patients (56.36%) had been treated previously. Of these, thirty nine patients had undergone drainage or fistulotomy and twenty three patients were treated by seton. Grade B incontinence was present in seventeen (15.45%) patients. Mean resting anal pressure was 59.37 mmHg and mean maximal anal pressure was 120.87 mmHg. Forty eight patients (43.63%) had low transsphincteric, fifty five (50%) had high transsphincteric and seven patients (6.36%) had suprasphincteric anal fistula as evidenced by MRI. Ninety one patients had single external opening (Figure 1) while nineteen patients had two or more

external openings (Figure 2). Ten patients had horseshoe fistulae (Figure 3). All patients had a single internal opening. The most common site of the internal opening was posterior midline.

Mean operative time was 25 minutes (range from 15 to 45 minutes). Mean length of hospital stay was 26 hours (range from 14 to 36 hours). Most of the patients (91.81%) required analgesics in the early postoperative period.

At three weeks grade 1 primary healing occurred in 13.63% patients. The number of patients with grade 1 healing increased to 56.36% at six weeks and

80.90% at twelve weeks. Three patients showed primary healing of external opening but continued to discharge from the site of incision of LIFT. These patients showed conversion of a transsphincteric fistula to intersphincteric fistula (medialization of tract). These patients were managed by fistulotomy, which followed complete healing.

At twenty four weeks, grade 1 healing (both external opening and site of incision of LIFT) was present in 92(83.63%) patients. Eighteen patients had persistent or recurrent discharge and were considered as failure of treatment. No more recurrences were

Table 1:

Category of healing	3 weeks (n=110)		6 weeks (n=110)		12 weeks (n=110)		24 weeks (n=110)	
	No.	%	No.	%	No.	%	No.	%
Category I	15	13.63	62	56.36	89	80.90	92	83.63
Category II	81	73.63	33	30	0	0	0	0.0
Category III	14	12.72	15	13.63	6	5.45	0	0.0
Category IV	0	0.0	0	0	15	13.63	18	16.36

Table 2:

	Before LIFT	After LIFT	'P' value
Resting anal pressure(Mean)	59.37 mm of Hg (Range 24-78) SD=16.95	57.37 mm of Hg (Range 22-76) SD=17.31	*P=0.07
Maximal anal pressure(Mean)	120.87 mm of Hg (Range 64-156) SD=27.70	118.8 mm of Hg (Range 62-154) SD=28.20	**P=0.06

*p=0.07 (From baseline: Paired t-test), ** p=0.06 (From baseline: Paired t-test)

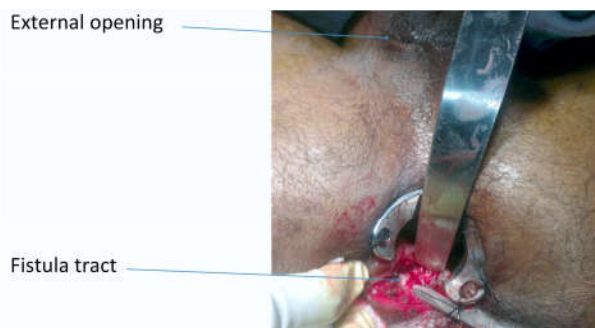


Fig. 1:

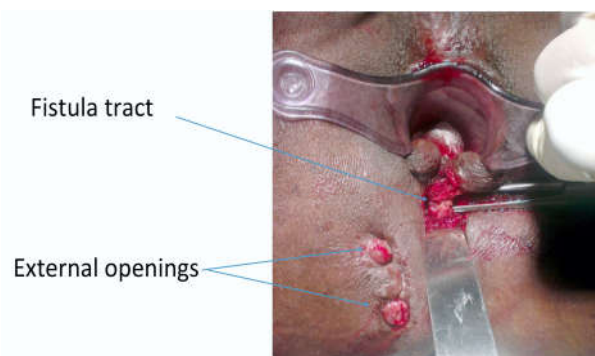


Fig. 2:

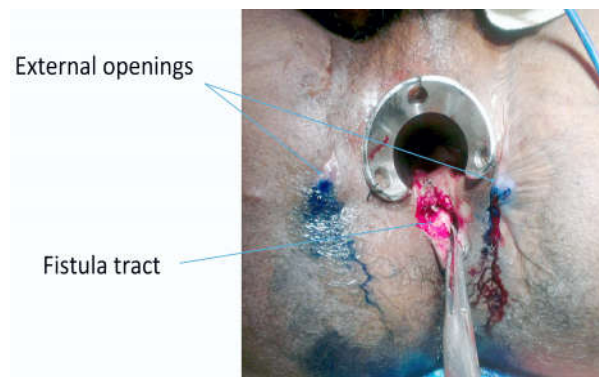


Fig. 3:

reported in complete one year follow up (Table 1).

Assessment of continence and anal manometry was again performed, six months following the procedure. No significant change in the continence was reported by any patient. There was no significant difference in resting and maximal anal pressures.

Statistical analysis was performed using statistical package for the social sciences (SPSS-version 14). The results were expressed as mean ± SD or frequency.

The average resting and maximal anal tone was stable ($p > 0.05$) six months after surgery (Table 2).

Discussion

Fistula-in-ano has been a troublesome pathology to both the patient and physician throughout the history. The goals of surgery for fistula-in-ano are permanent healing and preservation of continence. Traditional surgical techniques, namely fistulotomy and seton technique, sever the internal anal sphincters and may damage the external anal sphincters. The recurrence rate of lay-open fistulotomy has been reported between 2-9 percent with functional impairment ranging from 0 to 17 percent [7,8]. Cutting setons have been used in an attempt to slowly divide the sphincters while allowing scarring to occur and limit disruption of the muscular ring, with recurrence rates from 22-39 percent [9,10]. Changes in continence have been reported in greater than 60% of patients [11].

The endorectal mucosal advancement flap has a healing rate of 55-98 percent with the minor and major incontinence of 31 and 12 percent respectively [12-15]. The anocutaneous advancement flap procedure has a healing rate of 78 percent [16]. Direct closure of the internal opening has a 22.5 percent recurrence rate and 6 percent minor incontinence [17]. Other sphincter preserving approaches are the application of fibrin glue and fistula plug. The healing rate after debridement and fibrin glue injection ranged from 14-60 percent [18-20]. Anal fistula plug is a simple, sphincter-sparing technique, but very expensive and with reported success rates ranging between 29 to 87 percent [21]. At present there is no single technique appropriate for all types of anal fistulas [5].

The LIFT technique is based on the principle of a secure closure of the tract near the internal opening and the reported healing rates range from 57 to 94.4 percent [5,22,23].

In the current study primary healing was observed in 83.63 percent patients with an average healing time of 7 weeks. Arun Rojanasakul reported primary healing in 94.4 percent patients with an average healing time of 4 weeks [5]. Armen et al reported primary closure rate of 69 percent [24]. Other studies by Shanwani et al [25] reported 82.2 percent and Bleier et al [23] reported 57 percent of success rates.

No significant change in continence was reported by any patient in our study. Seventeen patients had grade B incontinence before the procedure. There was no deterioration of continence in this group of patients. Anal manometry did not show any significant change

in resting and maximal anal pressures after the LIFT procedure. In the study by A. Rojanasakul, there was no change in continence in all patients [5]. No patient reported any subjective decrease in continence after the procedure in the study by Bleier et al [23]. No case of incontinence was reported by Armen et al in their series [24].

LIFT was performed as the primary procedure in all the patients. However, 62 patients (56.36%) had received treatment earlier and of these 23 (20.90%) were treated by seton. None of these patients had a seton at the time of LIFT procedure. Patients with active infection in the form of abscess were not included in the study. In the study by Shanwani et al, none of their 45 patients had a seton at the time of LIFT procedure [25]. A preLIFT draining seton does not seem to confer any added benefit in terms of success [26]. If the fistula tract is mature and stable, without signs of active infection, LIFT can be performed as the primary procedure.

In three patients, the transsphincteric tract had converted into intersphincteric tract, with the opening at the incision site that was made during the LIFT procedure (medialization of tract). These patients were managed by fistulotomy which resulted in complete healing. Medialization of the tract occurred in one patient in the series of Armen et al [24]. The LIFT procedure may convert a difficult to treat transsphincteric fistula into an easier to manage intersphincteric fistula [27].

Conclusion

In most patients of perianal fistula, the fistula is simple (intersphincteric or low transsphincteric) and can be treated satisfactorily by laying open the primary tract. However, the treatment of complex anal fistulas (high transsphincteric, horseshoe and suprasphincteric) has always been a challenge for clinicians. There was need of a new surgical technique which could become the standard of care for majority of patients. This procedure offers an opportunity to treat complex fistulas with minimal morbidity, reasonable safety and satisfactory results. The author concluded that LIFT procedure has the potential to become gold standard for transsphincteric and suprasphincteric anal fistula.

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