

Efficacy of Ligation of Inter-sphincteric Fistula Tract technique for fistula-in-ano: A prospective observational study

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Abstract

Background: Fistula-in-ano is one of the commonest diseases presented to the surgical outpatient department that affects the patient physically and psychologically. As the disease is known for recurrence, the ideal technique for fistula repair is still undetermined. **Materials and Methods:** We hereby report 85 patients diagnosed clinically and radiologically having fistula-in-ano who underwent the Ligation of Inter-sphincteric Fistula Tract (LIFT) procedure at a tertiary care center. **Results:** The median time for the LIFT procedure was 32.5 minutes (range 25-40 minutes), and the median time taken for healing of the wound was around eight weeks. The majority of patients (95.4%) had no recurrence, and only 4 (4.6%) had a recurrence on follow-up within one year. None of the patients presented with stool or flatus incontinence. **Conclusion:** The LIFT technique can be the preferred treatment option for fistula-in-ano that are having simple straight tract, single opening lying posteriorly, and having either trans-sphincteric or inter-sphincteric variety with lower complication rates and preserving continent anal sphincter allowing patients to return early to their routine activities normal daily activities.

Keywords: Inter-sphincteric, fistula tract, anal canal, perianal abscess

Introduction

Anal fistula is an abnormality between the perianal skin and anal canal epithelium. It is described in “*Corpus Hippocratum*” in a treatise named “On Fistula” in 460 before Christ (BC)⁽¹⁾. About 65% of patients with a perianal abscess will develop into chronic or recurrent anal fistula with or without treatment⁽²⁾. The ideal technique of fistula repair should have no recurrence or incontinence after surgery with complete healing. Many techniques have evolved to treat the disease over a period. About 75-80% of fistulas are inter-sphincteric that can be treated with predictable results. In all, 20-25% of fistulas are trans-sphincteric fistula, supra-sphincteric or extra-sphincteric; those are complex and pose chances of recurrence after treatment. In India, anal fistula constitutes approximately 1.6% of all surgical admissions⁽²⁾.

Surgery for fistula-in-ano can be done either by sphincter sparing or sphincter sacrificing. Sphincter-sacrificing surgeries like fistulectomy and fistulotomy with or without repair of the internal sphincter have good chances of healing but more chances of fecal incontinence and hence less favored. Fibrin application, plug placement, Endorectal Advancement Flap (ERAF), Video-assisted Anal Fistula Treatment (VAAFT), Ayurvedic seton (*Ksharsutra*) placement, etc., carry less chances of fecal incontinence and

hence are more favored. The risk of incontinence associated with these treatments ranges from 10% to 57%⁽²⁾. Most of the above-described methods require precision and advanced instruments.

In 2007, Dr. Arun Rojanasakul⁽³⁾, Department of Colorectal Surgery, Bangkok, Thailand, developed the technique called Ligation of the Inter-sphincteric Fistula Tract (LIFT), where the inter-sphincteric fistula tract was ligated and excised which occluded the entry of fecal particles in the fistula tract from internal opening and eliminated the septic focus at the inter-sphincteric plane. The results were encouraging, with a high healing rate (94%), perseverance of continence, and low recurrence rate (5.6%) for 18 inter-sphincteric treated cases.

A review of 18 studies, with 592 enrolled patients, concluded that the LIFT procedure is primarily effective for trans-sphincteric fistulas with an overall fistula closure of 74.6% and a low impact on fecal continence⁽⁴⁾. The mean follow-up period and the mean healing time was 42.3 weeks and 5.5 weeks respectively. The patient satisfaction rates ranged from 72% to 100%. As LIFT is a promising technique for achieving a good healing rate without incontinence, the present study was planned to re-evaluate the effectiveness of this technique with an aim to study the demographic factors related to fistula-in-ano and to study the efficacy of the LIFT technique

with respect to complete wound healing, incontinence, and recurrence.

Material and Methods

The present study included 85 patients aged between 18-75 years, clinically and radiologically [Magnetic Resonance Imaging (MRI)] diagnosed cases of fistula-in-ano admitted under a surgical unit between August 2017 to August 2019 at a tertiary care center in India. The patients with Diabetes Mellitus, recurrent fistulae, or fistulae secondary to Koch's disease, Crohn's disease, and malignancy were excluded from the study.

All patients with fistula-in-ano underwent LIFT surgical procedure after obtaining fitness for surgery and taking informed consent under spinal anesthesia by the same team of surgeons. The steps of the LIFT procedure were:

1. Incision at the Inter sphincteric groove.
2. Identification of the inter-sphincteric tract.
3. Ligation of the inter sphincteric tract close to the internal opening.
4. Removal of inter sphincteric tract.
5. Scrapping out all granulation tissue in the rest of the fistulous tract.
6. Suturing of the defect at the external sphincter muscle.

Operating time was recorded from incision to completion of the procedure. Postoperatively, all patients were prescribed injectable antibiotics (Injection Ceftriaxone 1gm IV 12 hourly and Injection Metronidazole 500mg IV 8 hourly) and analgesics (Injectable Diclofenac Aqueous 50mg IV 8 hourly) for three days, followed by oral antibiotics (Tablet Ofloxacin 500mg+Ornidazole 200mg) and analgesics (Tablet Serratiopeptidase 10mg + Diclofenac 50mg) for next three days. Patients were advised of a Sitz bath from the first post-operative day, and wound healing was assessed during daily dressings.

Anal incontinence was recorded as per Browning and Parks's Incontinence scale:

Grade 1 - Normal continence (i.e., continent for solids, liquids stools, and flatus)

Grade 2 - Continent for solid and liquid stools but not for flatus

Grade 3 - Continent for solid stools only. Usually presented with fecal leakage

Grade 4 - Complete incontinence.

Statistical analysis

Analysis of data was done by Microsoft and IBM Statistical Package for Social Sciences (SPSS) version 25.0, United

States of America (USA). The quantitative data were expressed in terms of mean and standard deviations. Data is described as numbers and proportions.

The approval was taken from Institutional Ethics Committee.

Results

A total of 85 patients were operated on using the LIFT technique and followed for one year. Wound healing, loss of continence, and recurrence in one year was recorded.

Most 39 (45.9%) patients were in the age group of 40 to 50 years, 59 (69.4%) were male, and only 26 (30.6%) were female. Perianal discharge was the most common complaint in 75 patients (88.2%), followed by perianal swelling in 18 patients (21.1%) and perianal pain in 5 patients (5.9%). Majority patients (91.7%) patients had a single perianal opening, and 7 (8.3%) had more than one opening. Seventy-one (83.5%) patients had an external opening posteriorly, while 14 (64.5%) had an anteriorly placed opening. About 89% of patients had a low fistula, and 10.6% had a high fistula as described as tract above or below the levator ani muscle level.

The median time for the LIFT procedure was 32.5 minutes (range 25-40 minutes), and the median time taken for healing of the wound was around eight weeks.

The average hospital stay was around four days, and after discharge, patients were called to follow-up on a postoperative day 7, and then at regular intervals of seven days to assess complete wound healing, stool and flatus continence, and recurrence.

Eighty-one (95.4%) had no recurrence and only 4 (4.6%) had recurrence on follow-up within one year. None of the patients presented with stool or flatus incontinence as measured with Browning and Parks's incontinence scale (Table 1).

Table 1: Complications of LIFT procedure after one year of follow-up

Complications	n (%)
Non-recurrence	81 (95.4)
Recurrence	4 (4.6)
Stool Incontinence	0 (0)
Flatus Incontinence	0 (0)

Discussion

Many techniques are used to treat fistula with varying success rates. The success rate of fistulotomy, which is done for simple inter-sphincteric fistula, ranges from 87% to 94%. Another simpler treatments include use of fibrin glue injection. However, the success rate of these treatment modalities is lower (16-25%)⁽⁶⁾. Draining Ayurvedic seton, also called "ksharsutra" is a simple technique used for complex fistula. However, healing time with this technique

may be 3-9 months. Other complicated procedures include endoanal advancement flaps and core out fistulectomy. These may have high success rates as 86-97%.

LIFT is a relatively new technique where only the fistula tract between two sphincters is cut without sphincter damage. In our study, most patients were in the age group of 40-50 years (45.9%) with a median age of 42 years. It shows that the disease was more common in middle age population, causing a loss of productive working hours. This might be because the rate of cryptoglandular infection is more common in this age group⁽⁸⁾. The results are comparable with a study conducted by Tomiyoshi et al. in 2014⁽⁹⁾ and other studies^(10,11), while one study mentions the median age as 37.18 years⁽¹²⁾. In our study, the ratio of disease occurrence in males to females is 2.26:1, comparable with studies conducted by Shanwani et al.⁽¹³⁾ and Chen et al.⁽¹¹⁾. Male preponderance is attributed to the abundance of anal glands in males⁽¹⁴⁾. Perianal discharge is the most common symptom observed in 75 patients (88.2%), which is comparable with the study done by Kamal et al.⁽¹⁵⁾ and Uraiqat et al.⁽¹⁶⁾.

About 92% of patients had a single external opening, while 8.24% had more than one opening. This is comparable with a study by McGregor et al.⁽¹⁷⁾ where 92% of patients had a single external opening. The postoperative results of the LIFT procedure are more favorable in patients with single external openings⁽¹⁸⁾. In the present study, 16.47% of patients had anteriorly placed external openings, while 83.53% had posteriorly placed external openings. The results were comparable with the study conducted by Bhatti et al.⁽¹⁹⁾. It has been found that patients having anteriorly placed external openings have more post-operative anal incontinence, as compared to posteriorly placed external openings. There is a due risk of injury to the perineal body, especially in females⁽¹⁸⁾. In the present study, 89.41% of patients had low fistula-in-ano, which has a favorable outcome following the LIFT procedure as compared to high fistulae⁽¹⁸⁾.

Our study's mean operative time for the LIFT procedure was approximately 30 minutes. In a similar study conducted by Lo et al.⁽²⁰⁾ the mean operative time of 39 minutes. In the present study, the median time of wound healing after the LIFT procedure was eight weeks. Eighty percent of patients required eight weeks for complete healing, and 15.3% required ten weeks for wound healing. The results varied with studies by Tan et al.⁽²¹⁾ that showed a wound healing time of 4 weeks. Whereas a study by Bleier et al.⁽²²⁾ showed a healing time of 10 weeks. Many factors play a role in proper wound healing, like operative technique, age, diet, medication, local hygiene, and comorbid conditions like diabetes mellitus and anemia which is responsible for a varied timeline of wound healing. Sirikurnpiboon et al.⁽²³⁾ stated that the LIFT group and

the LIFT plus group had healing in 81% and 85% of patients, respectively, in four weeks period (median wound healing time).

In the present study, 4.6% of patients developed recurrence, whereas a study conducted by Abouljian et al.⁽²⁴⁾ showed 12% recurrence. It implies that the LIFT technique is associated with minimum recurrence compared to other treatment modalities for fistula in ano⁽²⁵⁾. Out of four patients who developed recurrence in our study, three had a high anal fistula, and two had multiple external openings. This shows that recurrence is more common with high anal fistula and multiple external openings.

In our study, no patient developed incontinence either for stool or flatus, comparable to the studies conducted by Huda et al.⁽²⁵⁾, Sileri et al.⁽²⁶⁾, and Makhlof et al.⁽²⁷⁾. Thus, the LIFT procedure is an effective surgical technique for the treatment of fistula-in-ano. The limiting factor in our study was the study being non-randomized with a small sample size. Randomization with a larger sample size will concrete the beneficial effects of the LIFT procedure in managing patients with fistula-in-ano.

Conclusion

LIFT technique can be the preferred treatment option for fistula-in-ano that are having simple straight tract, single opening lying posteriorly, and either trans-sphincteric or inter-sphincteric variety with lower complication rates and preserving continent anal sphincter allowing patients to return early to their normal daily activities.

Conflict of Interest: Nil

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