

Comparison between Ligation of Intersphincteric Fistula Tract (LIFT) Technique and Conventional Fistulotomy in the Treatment of Fistula-in-Ano at Hat Yai Regional Hospital

Sakda Alapach MD*
Araya Khaimook MD*

*Department of Surgery, Hatyai Hospital, Hat Yai, Songkhla, Thailand

Abstract

Background and objective: Treatment of fistula-in-ano remains challenging. The conventional fistulotomy has acceptable healing rate but may result in a large open wound and incontinence. The ligation of the intersphincteric fistula tract (LIFT), a new sphincter-saving technique, was devised in 2009 for the treatment of transsphincteric or horseshoe fistula-in-ano. The objective of the present study was to compare outcomes between the LIFT technique and conventional fistulotomy for the treatment of fistula-in-ano at Hatyai Hospital.

Materials and Methods: A retrospective analysis was performed on data collected at the Department of Surgery, Hatyai Hospital, from January 2009 to September 2013.

Results: There were 85 patients of whom 48 underwent the LIFT technique, and 37 underwent conventional fistulotomy. The average operative time for fistulotomy was significantly shorter at 21.4 minutes, compared with 35.1 minutes for LIFT ($p < 0.001$). The median follow up time was 41 weeks in the LIFT group, and 52 weeks in the fistulotomy group. The average healing time for LIFT was 2 weeks vs. 6 weeks for fistulotomy ($p < 0.01$), and the proportion of postoperative anal incontinence was 2.1% vs. 16.2% ($p < 0.01$) for the LIFT vs. fistulotomy, respectively. The healing rates were similar for both groups (79% and 78%, $p = 0.93$, for LIFT and fistulotomy groups, respectively).

Conclusion: Fistula-in-ano can be treated successfully by the LIFT technique, with shorter healing time, and lower incidence of postoperative anal incontinence.

Keywords: fistula-in-ano, ligation of intersphincteric fistula tract, fistulotomy

INTRODUCTION

Fistula-in-ano is the chronic phase of anorectal infection¹, a common condition but a potentially complex disease process. A fistula can be encountered in 26% to 38% of all anorectal abscesses^{2,3}, and is characterized by chronic purulent drainage or cyclical

pain associated with abscess re-accumulation followed by intermittent spontaneous decompression⁴. The majority are of cryptoglandular origin^{5,6}. Fistula-in-ano is more common in men than women^{7,8}.

Surgery remains the only effective treatment for fistula-in-ano. The effective eradication of current and

Correspondence address: Sakda Alapach, MD, Department of Surgery, Hatyai Hospital, 182 Rattakarn Road, Hat Yai, Songkhla 90110, Thailand; Telephone +66 7427 3100; Fax: +66 7424 6600; E-mail: drman@me.com

recurrent septic foci, as well as the preservation of anal continence, are the goals of surgical management. No single surgical technique achieves these aims for all anal fistulas. The ligation of the intersphincteric fistula tract (LIFT) technique was recently described by Rojanasakul et al from Thailand⁹. The LIFT procedure is based on the secure closure of the internal fistula opening, and removal of infected cryptoglandular tissue through the intersphincteric approach. This procedure does not sever the anal sphincters and postoperative anal function remains intact. The healing rate from the first report was 94.4% among 18 patients, with no anal incontinence^{9,10}.

Since then several studies on LIFT have been published, reporting the fistula healing rate ranging from 40% to 94.4%¹¹. The aim of the present study was to retrospectively compare the outcomes of treating transsphincteric or horseshoe fistula-in-ano, between the LIFT technique and conventional fistulotomy, at a tertiary care hospital.

MATERIALS AND METHODS

The study protocol was approved by the Research Ethics Committee (REC) of Hatyai Hospital. Medical records of transsphincteric or horseshoe fistula-in-ano patients who underwent treatment by the LIFT technique or conventional fistulotomy from January 2009 to September 2013 were reviewed.

The collected data included demographic information, type of fistula, type of surgery, operative time, follow-up time, success of treatment, healing time, and postoperative anal incontinence. Patients were included if they: 1) were more than 18 years of age; 2) had transsphincteric or horseshoe fistula of cryptoglandular origin. Patients were not included if they had: 1) superficial fistula; 2) rectovaginal fistula; 3) fistula other than cryptoglandular in origin; 4) sinus tract abscess.

The LIFT technique was performed according to Rojanasakul et al⁹ with some modifications. Preoperative rectal enema was carried out the night before the surgery. The procedure was performed with the patient in the prone jackknife position, with the buttocks taped widely apart, under spinal anesthesia. The steps of the procedure were as follows: The internal

opening was identified by injection of hydrogen peroxide at the external opening. An incision was created near the internal opening parallel to the anal verge at the intersphincteric groove, then dissection was done deep into the intersphincteric plane with scissors and cautery, to identify the fistula tract. The tract was ligated with 3-0 polyglactin suture, as close to the internal sphincter as possible to leave a minimal remnant of tract connected to the internal opening, and divided. Normal saline was injected into the external opening to confirm that the correct tract has been divided. The external opening was left open to drain after curettage. The incision was closed with 3-0 polyglactin suture. All operations were performed by one of the authors (SA).

Fistulotomy was performed in same position under spinal anesthesia. After identification of internal opening, an incision was created longitudinally through the sphincteric muscle. The tract was curetted and the wound left opened, and packed with saline-soaked gauze.

Patients were discharged the following day with oral analgesic drugs and stool softeners. Before being discharged, they were shown how to clean their wounds with tap water. All patients were scheduled for follow-up examination at the first week, and every two weeks thereafter until the wound was healed. Successful wound healing for the LIFT group was defined as closure of the external fistula opening with no drainage or infection, and for the fistulotomy group, complete closure of the wound. At each visit anal continence was assessed using the Wexner Incontinence Score (WIS)^{12,13}. For patients who did not show up for follow-up, telephone enquiries were made concerning the wound and incontinence status.

The student t-test was used to compare age and operative time between groups. Similarly, chi-square and Fisher's exact test were used to compare sex, type of fistula, and success of healing, and Mann-Whitney U test was used to compare follow-up time and healing time between groups. The probability of successful healing was estimated according to the Kaplan-Meier method. Statistical analyses were performed with the use of SPSS for windows version 17 (SPSS Inc., Chicago Ill). The level of statistical significance was set at $p < 0.05$.

Table 1 Patient demographics and primary outcomes, compared between groups.

	LIFT Group (n = 48)	Fistulotomy Group (n = 37)	p-value
Mean age, year $\pm$ SD	40.4 $\pm$ 10.9	40.0 $\pm$ 11.7	0.86 ^a
Sex, number	0.05 ^b		
Men	36	34	
Women	12	3	
Type of fistula, number			0.66 ^c
Transsphincteric	37	27	
Horseshoe	11	10	
Mean operative time, min $\pm$ SD	35.1 $\pm$ 13.2	21.4 $\pm$ 13.7	< 0.01 ^a
Median follow-up time, weeks (range)	40.5 (16 to 162)	52 (12 to 160)	0.35 ^d
Successful healing (%)	38 (79)	29 (78)	0.93 ^c
Median healing time, weeks (range)	2 (2 to 7)	6 (3 to 9)	< 0.01 ^d
Postoperative anal incontinence (%)	1 (2.1)	6 (16.2)	0.02 ^{*b}
Median anal incontinence score (range)	2 in 1 pt	4 (2 to 6) in 6 pts	NA

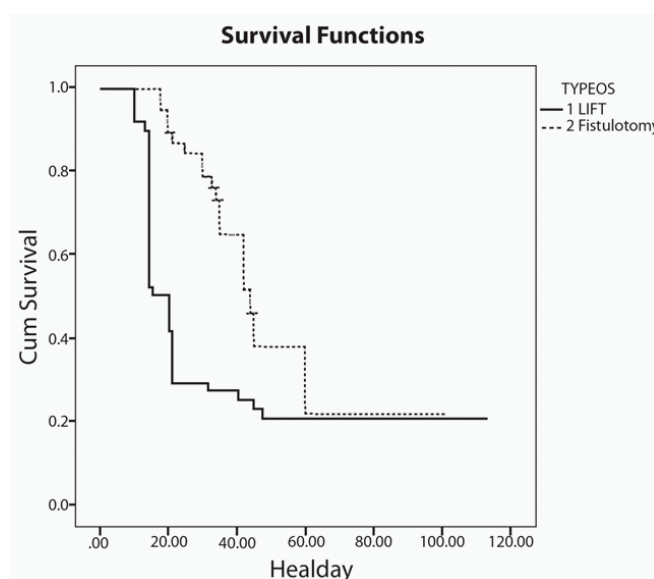
^at-test, ^bFisher's exact test, ^cchi-square test, ^dMann-Whitney U test; min = minutes; NA = not applicable; pt = patient

RESULTS

There were 85 patients of whom 48 underwent the LIFT technique, and 37 underwent conventional fistulotomy, for the treatment of fistula-in-ano. The mean age (standard deviation) was 40.2 years (11.2 years), with a range of 22 years to 71 years. There were no significant differences in age, sex ratio, and type of fistula between both groups. The average operative time of conventional fistulotomy was significantly shorter than that of the LIFT technique (21.4 minutes and 35.1 minutes, respectively). The median follow-up times were 41 weeks and 52 weeks in LIFT and fistulotomy groups, respectively, which were not significantly different.

The LIFT technique had a healing time of 2 weeks, compared with 6 weeks for fistulotomy ($p < 0.001$), and postoperative anal incontinence rates were 2.1% and 16.2% for the LIFT and fistulotomy groups, respectively, also a significant difference ($p < 0.001$). Proportions of successful healing were 79% and 78% for the LIFT and fistulotomy groups, respectively; this was not significantly different ($p = 0.93$), as shown in Table 1.

The Kaplan-Meier plot demonstrated more rapid healing in LIFT group, as shown in Figure 1. One in 48 (2.1%) cases in the LIFT group reported abnormal anal sphincter function according to WIS, with the score of 2, compared with 6 in 37 (16.2%) cases in the fistulotomy group, in whom various degrees of

**Figure 1** Kaplan-Meier plot showing rapid healing in LIFT group

postoperative anal incontinence were reported, with scores ranging from 2 to 6 ($p = 0.02$).

DISCUSSION

The LIFT technique is a novel approach through the intersphincteric plane for the treatment of fistula-in-ano. The present authors have adopted the LIFT technique since 2009. Proportions of successful healing in the present study were 78% and 79%, lower than the 94.4% reported by Rojanasakul et al⁹. A review of

previous publications on the LIFT technique revealed a wide range of fistula healing rates, with the lowest healing rate of 40%¹¹. Previous studies were, of course, heterogeneous and the number of patients in each was small.

In the present study, the average operative time was significantly longer for the LIFT technique, due to the need for meticulous dissection. Several studies reported median operative times ranging from 10 to 68 minutes^{14,15}, with the average of 39 minutes¹⁶. However, the primary wound healing time was significantly shorter at two weeks for the LIFT technique, compared with the much longer time of six weeks for conventional fistulotomy. In the literature, the median healing time varied from 2 to 24 weeks^{17,18}, with an average of 8.15 weeks¹⁹.

The advantages of the LIFT technique included: 1) a secure ligation of the fistula tract; 2) removal of infected granulation tissue by curettage, which is less time-consuming and more practical than total excision of the tract and primary repair¹⁰. The most serious complication of the treatment for fistula-in-ano is postoperative anal incontinence, with reported incontinence rates ranging from 0 to 40%²⁰. In the present study very few patients reported anal incontinence (2.1%) among the LIFT group, significantly less than those in the conventional fistulotomy group.

CONCLUSION

The LIFT technique for fistula-in-ano is simple, less invasive, with satisfactory outcomes in the short term. The LIFT procedure converts the fistula-in-ano from a difficult-to-manage problem into a much more "tractable" one.

REFERENCES

- Whiteford MH, Kilkenny J III, Hyman N, et al. Practice parameters for the treatment of perianal abscess and fistula-in-ano (revised). *Dis Colon Rectum* 2005;48:1337-42.
- Ramanujam PS, Prasad ML, Abcarian H, Tan AB. Perianal abscesses and fistulas. A study of 1023 patients. *Dis Colon Rectum* 1984;27:593-7.
- Vasilevsky CA, Gordon PH. The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration. *Dis Colon Rectum* 1984;27:126-30.
- Whiteford MH, Kilkenny J III, Hyman N, et al. American Society of Colon and Rectal Surgeons. Practice parameters for the treatment of perianal abscess and fistula-in-ano (revised). *Dis Colon Rectum* 2005;48:1337-42.
- Parks AG. Pathogenesis and treatment of fistula-in-ano. *Br Med J* 1961;1:463-9.
- Eisenhammer S. The internal anal sphincter and the anorectal abscess. *Surg Gynecol Obstet* 1956;103:501-6.
- Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. *Ann Chir Gynaecol* 1984;73:219-24.
- Abcarian H. Anorectal infection: abscess-fistula. *Clin Colon Rectal Surg* 2011;24:14-21.
- Rojanasakul A, Pattanaarun J, Sahakitrungruang C, Tantiphlachiva K. Total anal sphincter saving technique for fistula-in-ano; the ligation of intersphincteric fistula tract. *J Med Assoc Thai* 2007;90:581-6.
- Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. *Tech Coloproctol*. 2009;13:237-40.
- Murugesan J, Morb I, Fullham C, Hitosda K. Systematic review of efficacy of LIFT procedure in cryptoglandular fistula-in-ano. *J Coloproctol* 2014. <http://dx.doi.org/10.1016/j.jcol.2014.02.008>
- Jorge JMN, Wexner SD. Etiology and management of fecal incontinence. *Dis Colon Rectum* 1993;36:77-97.
- Vaizey CJ, Carapeti E, Cahill JA, Kamm MA. Prospective comparison of faecal incontinence grading systems. *Gut* 1999;44:77-80.
- Mushaya C, Bartlett L, Schulze B, Ho Y-H. Ligation of intersphincteric fistula tract compared with advancement flap for complex anorectal fistulas requiring initial seton drainage. *Am J Surg* 2012;204:283-9.
- Shanwani A, Nor AM, Amri N. Ligation of the intersphincteric fistula tract (LIFT): a sphincter-saving technique for fistula-in-ano. *Dis Colon Rectum* 2010;53:39-42.
- Alasari S, Kim NK. Overview of anal fistula and systematic review of ligation of the intersphincteric fistula tract (LIFT). *Tech Coloproctol* 2014;18:13-22.
- Cui J, Wang Z, Zheng Y, Han J, Yang X. (Ligation of the intersphincteric fistula tract plus bioprosthetic anal fistula plug (LIFT-plug) in the treatment of transsphincteric perianal fistula). *Zhonghua Wei Chang Wai Ke Za Zhi* 2012;15:1232-5.
- Aboulian A, Kaji AH, Kumar RR. Early result of ligation of the intersphincteric fistula tract for fistula-in-ano. *Dis Colon Rectum* 2011;54:289-92.
- Alasari S, Kim NK. Overview of anal fistula and systematic review of ligation of the intersphincteric fistula tract (LIFT). *Tech Coloproctol* 2014;18:13-22.
- Rizzo JA, Naig AL, Johnson EK. Anorectal abscess and fistula-in-ano: evidence-based management. *Surg Clin North Am* 2010;90:45-68.