*Original Article*

# Outcome and Recurrence Rate for Ligation of Intersphincteric Fistula Tract at Maharaj Nakorn Chiang Mai Hospital

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***Objective:*** To assess the efficacy of ligation of intersphincteric fistula tract (LIFT) procedure as the treatment for fistula-in-ano.

***Materials and Methods:*** Between July 2011 and June 2012, 36 patients with the diagnosis of fistula-in-ano underwent surgery. The LIFT procedure was performed in all the patients included in the present study. An observational study on the results of the treatment was collected during the follow up.

***Results:*** Post-operative follow up showed that the fistula-in-ano healed in all 36 patients. The mean time of wound healing was 3.5 weeks with 4.5 days (three to seven days) being the average range of hospital stay. Six patients had recurrence of the fistula after primary healing, demonstrating an 83 percent success rate in the present study. None of these patients had problems with incontinence. The cases with recurrence returned with a simple fistula that could be easily corrected with any procedure.

***Conclusion:*** Although the LIFT was a new technique created by Arun Rojanasakul, a colorectal surgeon, the results of his technique are very impressive when it is performed by another surgeon. The LIFT have a very high success rate of 83% with a low complication rate. Incontinence, which is the complication that has been reported from other surgical procedures, was not reported in the present study. Therefore, the authors concluded that a very good early outcome occurred with the LIFT procedure.

***Keywords:*** Ligation of intersphincteric fistula tract, Outcome

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Fistula-in-ano is the chronic phase of anorectal infection[1], which may present with pustule discharge from the perianal area or intermittent pain. This condition does not spontaneously heal due to two main reasons[2]. First, feces still pass through the internal opening, which causes infection. Second, the tract between the external and internal opening is compressed by the sphincters, which make this a closed space and causes the infection process to continue.

Surgical treatment is still the main treatment in this disease. However, recurrence of this condition can still be found in many cases. The overall recurrence rates and rates of incontinence following the surgery have been reported in the range of 0% to 32% and 0% to 63%, respectively[3-5].

In 2006, a new surgical technique called ligation of intersphincteric fistula tract or LIFT had been proposed by Rojanasakul et al[2,3]. This new technique was designed based on the principle of closure of the internal opening to eliminate the infection area between the internal and external opening. This technique has become the new hope for the cure of fistula-in-ano and has been used in many countries. Some of these countries have reported a very high success rate and low complication rates. The procedure is safe, easy to learn, and easy to perform[6,7].

The authors used this method to benefit the patients with fistula-in-ano. As there has been no study regarding LIFT in Chiang Mai, the authors decided to use this method as the treatment for the patients and followed up to study the results.

## Rationale

The principles for treatment of fistula-in-ano are 1) identify the internal and external openings, 2) classify the type of fistula, 3) close the internal opening and remove the infected tissue, and 4) prevent recurrence but also preserve the function of the sphincter.

Many treatments have been developed to treat fistula-in-ano, but surgery is currently the most effective treatment. However, there is still no standard

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procedure. Several procedures have been developed based on the principles of treatment mentioned above. They are different in both the results and complications. The procedures are: 1) Fistulotomy, which claims to be the most effective procedure for getting rid of infection with a very low recurrence rate but it destroys the anal sphincter, which causes incontinence in the future. 2) Advancement flap, which consists of closure of the internal opening and removing of the tract outside of the external sphincter. The outcome is quite impressive, but the procedure is complicated and difficult. Complications have also been reported such as itching sensation around the anus due to the seeping of mucous and anal stricture. 3) Fibrin plug/fibrin glue which has not been reported much. Finally, 4) LIFT, which is a new technique, based on the principles of treatment. The procedure consisted of, first, making the incision at the intersphincteric groove, dissecting between the internal and external sphincters muscles, identifying the tract and then tying it off, and curetting the infected tissue. According to the pilot study, this method showed very good results. Many hospitals worldwide have performed this procedure and show varied results. However, recurrence rates have not been reported.

According to the previous results on incontinence[8-12], the authors decided to study the results of the LIFT procedure in our unit and focus on healing time, recurrence rate, and incontinence, which affected the quality of life.

## Materials and Methods

Research methodology was considered and permitted by the Ethical Committees, Faculty of Medicine, Chiang Mai University (Study code Number SUR-11-742-EX, Approval Number 496/2011). Study Design was a prospective observational study. The estimated sample size was 32 patients.

### *Sample size estimation*

The present study sample was calculated using the healing wound (94.4%) from a study by Rojanasakul et al[2].

$$n = \frac{Z^2_{1-\alpha/2}\, p(1-p)}{d^2}$$

The output of the sample size calculation from studies:

Proportion (p) of healing wound = 0.94
Error (d) = 0.08
Alpha (α) = 0.05, Z (0.975) = 1.96
Estimated required sample size: n = 32

### *Inclusion criteria*

The authors included all the patients age 17 to 75 years old diagnosed with fistula-in-ano at Maharaj Nakorn Chiang Mai Hospital between June 2011 and June 2012.

### *Exclusion criteria*

The following patients were excluded, 1) patients that had other co-disease such as colitis with fistula-in-ano, 2) patients whom the surgeon could not identify the internal opening during the operation, and 3) patients whom the surgeon decided to convert to another procedure.

The informed consents were signed, before proceeding with the operative plan.

### *Pre-operative preparation*

The patients were admitted in the surgical unit the day before the surgery for blood tests and bowel preparation. The physical examination for the lesion (per rectal examination) was performed again before the surgery, both to confirm the opening and to evaluate the pre-operative status of the sphincters functions. The patients received nothing by mouth after midnight.

### *Intraoperative*

The operation was performed under spinal block. The internal and external opening was identified again under anoscopy and if unidentified, hydrogen peroxide injection or probing was utilized. The incision was made at the intersphincteric plane and dissected down to the tract, then the tract was tied off, close to the internal opening with vicryl 3/0 and divided.

### *Post-operative*

Regular diet was prescribed after the surgery. Laxative and pain medication were prescribed. The patient was discharged the next day, if there were no complications.

### *Follow up*

First appointment was one week after the surgery. The appointments continued every week until the wound was healed.

### *Patients demographic data*

Age, sex, type of fistula (Park's classification)[13], location of the external opening, imaging study (if present), and treatment history were recorded.

### *Perioperative data*

Operative time, postoperative diagnosis, length of hospital stay, and post-operative complications were recorded.

### *Wound grading*[2]

The wound grading was based on four grades. Grade 1 was complete epithelialization, grade 2 was healed with granulation tissue, grade 3 was granulation tissue with purulent discharge, and grade 4 was non-healing wound when the wound did not heal at ten weeks or re-operation was needed.

### *Sphincter function evaluation and assessment of clinical continence*

The clinical continence grading[11] was divided into four categories. Category A was continence of solid and liquid stools and flatus (i.e., normal continence), category B was continence of solid and usually liquid stools but not flatus (no fecal leakage), category C was acceptable continence for solid stool but no control over liquid stool or flatus (intermittent fecal leakage), and category D was continued fecal leakage.

### *Recurrence rate*

All recurring cases were documented (within one year postoperatively[14,15]).

### *Statistical analysis*

The authors presented frequency, percentage, mean, and range.

## Results

Thirty-six patients were enrolled in the present study (32 males and four females). The average age was 41.3 years old (18 to 69). There were 25 new cases and 11 recurring cases (Table 1). According to Park's classification[13], there were eight inter sphincteric fistulas (22%), 19 trans-sphincteric fistulas (53%), eight complex (22%), and one supra-sphincteric fistula (3%) (Table 2). The external opening was found anteriorly in 23 patients (56%), and posteriorly in 18 patients (44%). The average operative time was 75.5 minutes (ranging from 50 minutes to 145 minutes). The mean length of hospital stay was 4.5 days (to heal three to seven days).

During the follow up period, we found 13 cases (36%) with grade 1 wound healing (complete epithelialization), eight cases (22%) with grade 2 (healed with granulation tissue), 14 cases (39%) with grade 3 (granulation tissue with purulent discharge), and one case (3%) with grade 4 (non-healing) (Table 3).

**Table 1.** Patients demographic data

| Patients demographic data (n = 36) | n (%) |
|---|---|
| Sex: male | 32 (89) |
| Age (years), mean (range) | 41.3 (18 to 69) |
| Recurrence cases | 11 (31) |

**Table 2.** Fistula type (Park classification)

| Fistula type (Park classification) (n = 36) | n (%) |
|---|---|
| Intersphincteric | 8 (22.22) |
| Transphincteric | 19 (52.78) |
| Suprasphincteric | 1 (2.78) |
| Extrasphincteric | 0 (0.00) |
| Complex | 8 (22.22) |

**Table 3.** Wound grade at first follow up

| | n (%) |
|---|---|
| Wound grade at first follow up (n = 36) | |
| Grade 1 | 13 (36) |
| Grade 2 | 8 (22) |
| Grade 3 | 14 (39) |
| Grade 4 | 1 (3) |
| Result (n = 36) | |
| Recurrent | 6 (17) |
| Incontinent | 0 (0) |

The average time to heal was 3.5 weeks (from one to eight weeks). There was no incontinence after the LIFT procedure. Six cases (17%) were found with recurrence of fistula-in-ano after the procedure.

## Discussion

Currently, there is still no single technique appropriate for all types of fistula-in-ano[3]. The LIFT procedure[2,3], created by Rojanasakul, ideally divides the tract, and removes infection without dividing the sphincters. Therefore, the sphincter functions can be preserved.

In our out-patient unit, the success rate after a year follow up was 83% (primary healing 30 patients from 36 patients) and the mean time to heal was 4.5 weeks.

There was no report of incontinence after the surgery. The authors also collected the data from the failure group. It showed six failures from the surgery. The most common recurrence sites were at the surgical site, which occurred in five patients. Surgical site recurrence causes a simple fistula, which in the present series, two patients underwent re-surgery with fistulotomy, two went for LIFT, and one underwent re-surgery by flap. There was no report of recurrence after the second procedure, except for one patient who was lost to follow-up. As the study concluded, one patient

**Table 4.** Details of recurrence cases

| Case | Age | Sex | Case | Type | Post-op complication | Recurrence site | Correction | Results |
|---|---|---|---|---|---|---|---|---|
| 1 | 46 | Male | New | Intersphincteric fistula | No | Sx site | LIFT | Healed |
| 2 | 26 | Male | Recurrent | Intersphincteric fistula | Infection | Sx site | Fistulotomy | Healed |
| 3 | 29 | Male | New | Transphincteric fistula | No | Sx site | Fistulotomy | Healed |
| 4 | 53 | Male | Recurrent | Transphincteric fistula | No | Sx site | Flap | Healed |
| 5 | 24 | Male | Recurrent | Complex fistula | No | Same | LIFT | Lost follow up |
| 6 | 29 | Female | Recurrent | Intersphincteric fistula | No | Sx site | Waiting | Waiting |

Sx site = surgical site; LIFT = ligation of intersphincteric fistula tract

was waiting for re-surgical intervention. The causes of recurrence could be from both surgical technique and infection after the surgery (Table 4).

There were also some limitations in the present study. Since three surgeons performed this operation, the individual surgical technique could not be controlled.

As proposed in the pilot study, which revealed the same results as in the present study, LIFT's advantages were in 1) sphincter preservation, 2) shorter healing time, 3) small scar, 4) the procedure can be done in previously-operated patients, 5) the procedure will not compromise any need for re-operation in case of recurrence, 6) recurrence rate is acceptable, 7) inexpensive since no specialized material is required and finally, 8) LIFT is easy to learn.

## Conclusion

Although the LIFT was a new technique created by Rojanasakul, the results of his technique are very impressive even when it is performed by another surgeon. The LIFT had a very high success rate of 83% with a low complication rate. Incontinence, which is the complication reported from other surgical procedures, was not seen in the present study. Therefore, the LIFT procedure has a very good early outcome.

## What is already known on this topic?

Fistula-in-ano is one of the common anorectal conditions that may present with pustule discharge from the perianal area or intermittent pain. One of the effective treatments is the LIFT technique. This new technique was designed based on the principle of closure of the internal opening to eliminate infection between the internal and external opening.

## What this study adds?

From this study, the primary healing had an 83 percent success rate, 17 percent recurrence rate, and no incontinence. LIFT is a safe and effective procedure for the treatment of fistula-in-ano. In the recurrent cases, the patient could be treated with LIFT procedure again or another technique can be used. Two patients had recurrence at the site of incision (intersphincteric recurrence) that can be treated with simple fistulotomy.


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## Potential conflicts of interest

The authors declare no conflict of interest.

## References


1. Whiteford MH, Kilkenny J 3rd, Hyman N, Buie WD, Cohen J, Orsay C, et al. Practice parameters for the treatment of perianal abscess and fistula-in-ano (revised). Dis Colon Rectum 2005;48: 1337-42.
2. 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.
3. Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. Tech Coloproctol 2009;13:237-40.
4. Garcia-Aguilar J, Davey CS, Le CT, Lowry AC, Rothenberger DA. Patient satisfaction after surgical treatment for fistula-in-ano. Dis Colon Rectum 2000;43:1206-12.
5. Garcia-Aguilar J, Belmonte C, Wong WD, Goldberg SM, Madoff RD. Anal fistula surgery. Factors associated with recurrence and incontinence. Dis Colon Rectum 1996;39:723-9.
6. 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.
7. Bleier JI, Moloo H, Goldberg SM. Ligation of the intersphincteric fistula tract: an effective new technique for complex fistulas. Dis Colon Rectum 2010;53:43-6.
8. Pescatori M, Anastasio G, Bottini C, Mentasti A. New grading and scoring for anal incontinence. Evaluation of 335 patients. Dis Colon Rectum 1992;35:482-7.
9. Jorge JM, Wexner SD. Etiology and management of fecal incontinence. Dis Colon Rectum 1993;36: 77-97.
10. American Medical Systems. Fecal incontinence scoring system. Minnetonka, MN: American Medical Systems; 1996.
11. Browning GG, Parks AG. Postanal repair for neuropathic faecal incontinence: correlation of clinical result and anal canal pressures. Br J Surg 1983;70:101-4.
12. Miller R, Bartolo DC, Locke-Edmunds JC, Mortensen NJ. Prospective study of conservative and operative treatment for faecal incontinence. Br J Surg 1988;75:101-5.
13. Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. Br J Surg 1976; 63:1-12.
14. Vasilevsky CA, Gordon PH. Results of treatment of fistula-in-ano. Dis Colon Rectum 1985;28: 225-31.
15. Mazier WP. The treatment and care of anal fistulas: a study of 1,000 patients. Dis Colon Rectum 1971; 14:134-44.