POLSKI
PRZEGLĄD CHIRURGICZNY
2014, 86, 11, 532–536

10.2478/pjs-2014-0094

DE GRUYTER
OPEN

EFFICACY OF LIFT (LIGATION OF INTERSPHINCTERIC FISTULA TRACT) FOR COMPLEX AND RECURRENT ANAL FISTULAS – A SINGLE-CENTER EXPERIENCE AND A REVIEW OF THE LITERATURE

MICHAŁ ROMANISZYN, PIOTR JULIAN WALEGA, WOJCIECH NOWAK

3rd Department of General Surgery, Jagiellonian University Collegium Medicum in Cracow
Kierownik: prof. dr hab. *W. Nowak*

Ligation of intersphincteric fistula tract in treatment of anal fistulas (LIFT) is being said to have satisfactory results in short and long follow up, with low risk of complications. This study was designed to evaluate the results in patients with complex and recurrent fistulas in comparison with simple transsphincteric anal fistulas.

The aim of the study was to present a single-center experience in LIFT procedure in treatment of both simple and complex anal fistulas, including recurrent fistulas, in comparison with a review of current literature.

Material and methods. A series of 17 patients were qualified to LIFT procedure. 5 patients were treated for simple transsphincteric, 6 for complex fistulas, 6 with fistulas recurrent after fistulotomy. Median age was 47, most of the patients were male (16/17). Mean follow up was 11 months.

Results. Mean operating time was 55 minutes counting from surgical site disinfection to final dressing of the wound. Of the 17 patients the overall success rate was 53%. As expected, best results were achieved in patients with simple fistulas (80% success rate), then complex (50%), and recurrent fistulas (only 33%). There were no early nor late complications of the surgery.

Conclusion. As expected, in simple transsphincteric fistulas the results were satisfactory, taking into account low complication rate. Complex and recurrent fistulas seem to be risk factors of LIFT failure. The results are consistent with data published by other authors, based on the review of the current literature, and it seems there is still room for improvement, so further research is required.

Key words: fistula-in-ano, anal fistula, ligation of intersphincteric fistula tract, LIFT, fistulotomy

LIFT (Ligation of the Intersphincteric Fistula Tract) is nowadays a very popular method of treatment of transsphincteric fistulas. The procedure consists of opening and dissection of the intersphincteric space and identification of the fistula tract crossing that space. The tract is then ligated and cut, leaving both internal and external sphincter intact (1). This is to minimise the risk of fecal incontinence, which is associated with surgical treatment of anal fistulas. Based on systematic reviews it varies from 10% up to 57%, depending on the method chosen (2).

According to current research, the method offers decent healing rate, with low risk of complications (2). However, as in most of the techniques utilised to treat perianal fistulas the results vary, depending on how complex the fistula is in each patient. Many publications report promising results both in simple transsphincteric (3) and complex fistulas (4, 5). There is however no consistent definition of „complex fistula", since various authors define „complexity" of fistulas in different way. Many authors by „complex fistula" define a fistula consisting of a minimum of two tracts with at least one tract connecting the anal canal and the skin in the vicinity of anus. This type of fistula is sometimes associated with „Extrasphincteric fistulas" in classification of Parks, Gordon, and Hardcastle (6, 7). Other authors widen the definition, considering „complexity" of the fistula as „difficulty in managing" – therfore some authors by complex fistulas mean also recurrent fistulas, or fistulas originating from certain localisations (8).

In this study, for the sake of homogenicity of the groups, the term „complex fistula" is associated with a fistula with multiple (at least two) tracts, which originate from the same anal crypt, or have common outer orifice. Other tracts may be blind or have additional orifices in the anal canal or on skin.

The LIFT procedure was introduced in the 3rd Department of General Surgery Jagiellonian University Collegium Medicum in 2010 and currently majority of patients is treated with this method. In 2012 a prospective observational study was designed to evaluate the results of the procedure in the Department. From that timepoint all patients who underwent the LIFT procedure were closely monitored.

The aim of the study was to present a single-center experience in LIFT procedure in treatment of both simple and complex anal fistulas, including recurrent fistulas, in comparison with a review of current literature. In particular, the study aimed at assessment of healing rates, complications and satisfaction from the procedure.

MATERIAL AND METHODS

Data of 17 consecutive patients was gathered for analysis. Longest follow-up time was 17 months, minimum follow-up was 7 months. Mean follow-up time was 8 months. The group consisted of 13 male and 1 female patient, mean age was 45.9 years (25-65 years, median 47). All patients underwent standard colorectal examination and endoanal ultrasound (EAUS) examination prior to qualification. During the EAUS examination the fistula tract was filled with hydrogen peroxide for better visualisation of the tract and it's potential branches. Among the patients, 5 had simple transsphincteric fistulas, 6 had complex fistulas (in 4 patients the fistulas had additional branches, in most cases running along the rectum's wall towards the levators ending blindly, one case with an additional branch ending with subcutaneous abscess at the base of the scrotum). Another 6 patients had a failed fistulectomy in the past, with active recurrent transsphincteric fistula. None of the patients had any significant co-morbidities (tab. 1).

Table 1. Study group demography and fistula qualification

Initials	Age	Gender	Fistula type
LR	55	M	recurrent
DW	47	M	simple transsphincteric
BM	41	M	complex transsphincteric
BM	57	M	complex transsphincteric
SA	25	F	complex transsphincteric
SS	54	M	simple transsphincteric
MA	55	M	complex transsphincteric
MD	44	M	recurrent
KJ	34	M	simple transsphincteric
JK	30	M	simple transsphincteric
PR	65	M	recurrent
KJ	47	M	recurrent
RK	35	M	complex transsphincteric
JR	51	M	recurrent

The patients were qualified to the LIFT procedure. In each case surgery was performed under spinal anesthesia, in lihtotomy position. The fistula tract and internal opening was identified carefully using a thin probe. Skin was cut circumferentially in the intersphincteric groove, over the fistula tract. The intersphincteric space was dissected, and the fistula tract isolated (fig.1a). The probe was then removed from the lumen of the fistula, the fistula tract was ligated in the intersphincteric space (near the internal and external sphincter) and cut between ligations (fig. 1b). The internal opening was covered with rectal mucosa using a „figure-of-eight" resorbable suture, and the external tract (lateral from the external sphincter) and all it's branches were cut out, as in LIFT-Plus modification. The wound in the intersphincteric groove was sutured using interrupted absorbable sutures, the wound after excised lateral tracts and branches was left unsutured (fig. 1c). Patients were attending regular follow-up visits, weekly for a month, then every 2 weeks. Mean follow up was 11 months (7-17 months).

Meanwhile, a selection of publications about the LIFT technique was gathered – a PUBMED and OVID search was conducted using keywords „LIFT fistula", „ligation of intersphincteric fistula tract", „anal fistula treatment", „fistula-in-ano treatment". The search included all papers between January 2007 and November 2014.

RESULTS

Mean operation time was 55 minutes (25-75 minutes counting from disinfection of the field

to final dressing). Mean hospital stay was 3 days (2-5). None of the 17 patients had any complications during or after surgery. After mean time of 11 months of follow up the overall success rate was 53% (9/17). Complete healing of the wounds in this group took on average 28 days. Of the 8 failed procedures 7 cases were persistent fistulas (failed to heal), whereas one case was a recurrent fistula after initial healing. The recurrence was 4 months after healing.

As expected, best results were achieved in patients with simple fistulas – primary healing was achieved in 4 of 5 patients, which gives a 80% success rate. Concerning complex fistulas, the success rate was 50% (3 of 6 cases) – mean healing time was longer (37 days). The remaining three cases in this group failed to heal (persistent fistula), In the group of patients who underwent the LIFT procedure because of fistula recurrence after primary fistulotomy in the past, only 2 of 6 patients (33%) achieved healing (mean time 30 days). The remaining 3 patients in this group failed to heal (persistent fistula) and in one case the fistula recurred after initial healing. Summary of the results is presented in tab. 2.

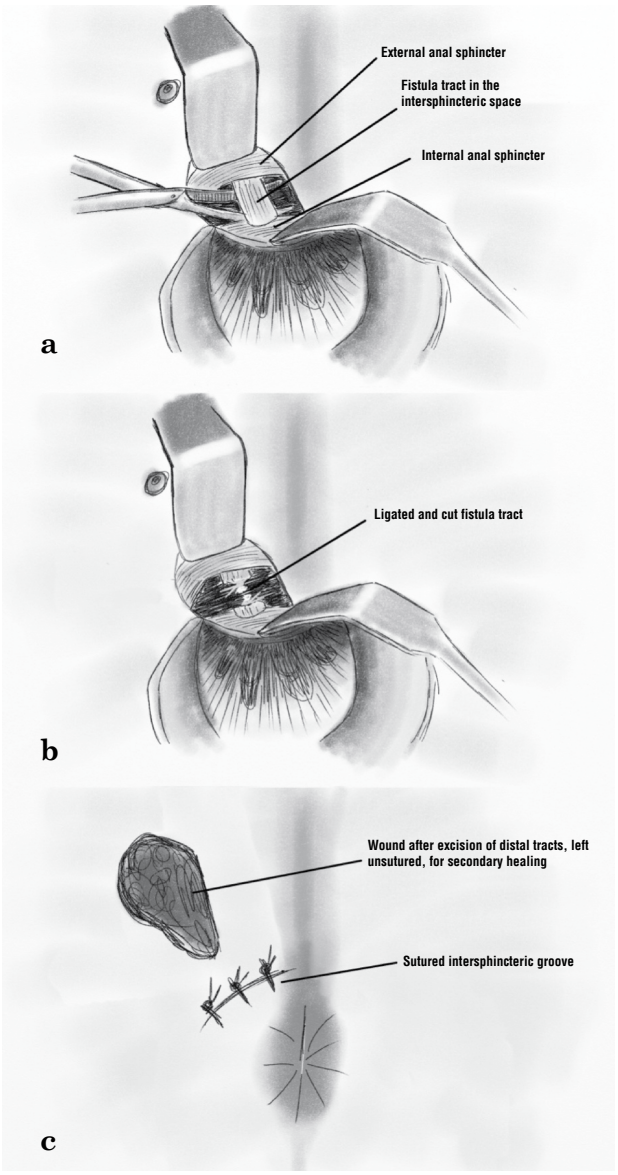

Fig. 1. LIFT technique (Lift-Plus modification): a) preparation of the fistula tract in the intersphincteric space, b) ligated and cut fistula tract, c) wounds after the procedure

DISCUSSION

First paper concerning the LIFT technique (using that name of the technique) was published in 2007 by Rojanasakul et al. and reported impressive healing rates (over 94%) with no complications (9). A detailed description of the technique was published two years later by the same author (1). Since then there have been many papers published by several authors. In 2010 Bleier et al reported less impressive healing rates (57%), however their group was more heterogenic – it included patients who had failed surgical treatment at least once before (10). A paper by Wallin et al, published in the same year, reported even lower healing rates (40%) (11). In the following years various other studies showed varying results, from very optimistic 83-86% (3, 5, 12) to 62-68% in studies, where groups were more heterogenic concerning past surgeries (13–16). The authors reported that the results vary, depending whether the patient had been operated before. Therefore comparative studies started emerging. Abcarian et al clearly noted the difference in results of the procedure depending on past surgeries – overall healing rate reported was 74%, but those operated for the first time had a healing rate of 90%. In contrast, the patients with one previous surgery had a healing rate of 75%, and the patients with two or more previous surgeries had a success rate of 65% (14). Lehmann et al researched a group consisting solely of patients with two or more failed surgeries – healing rates of 65% were reported (17). Recent reviews gathered data from several publications to point the same correlation (15, 18). Vergara-Fernandez et al analyzed 18 publications and

came to clear conclusion, that LIFT procedure gives best results in patients who hadn't had any surgical treatment before (15). Nevertheless, overall long term follow-up success rates reported so far vary from 62% to 73% (4, 19, 20) Some authors modify the technique with implantation of plugs, meshes, or using fibrin glue (Bio-LIFT, LIFT-Plug, LIFT-Plus), but there is not enough evidence that variants in the surgical technique achieve better outcomes (15, 21–24). There is however some evidence, that a two-step approach (preliminary seton drainage prior to the LIFT procedure) enhances the LIFT's healing rates (13, 25), but not all studies report using setons, so the results are hard to compare.

The data from our department seem to be consistent with results reported by other authors. Even in such small group, the difference between simple and recurrent fistulas is very evident. What's more, in our group there are even differences between patients who hadn't been operated previously, depending on the complexity of the fistula tract (simple vs complex). Any additional branches or fluid collections seem to worsen the prognosis. This might be due to the fact that even with the transsphincteric tract ligated and cut, the remnants of branches leading deep into soft tissues of the perisphincteric area cause persitent or recurrent fistulas – we didn't observe recurrences in form of „downstaging" (transsphincteric to intersphincteric fistulas) after LIFT (described by other authors). This might be a clue, that for complex fistulas the LIFT-Plus procedure may give better results – this requires further comparative studies on larger groups. Regardless from the complexity of the fistula, there were no complications, and none of the patients reported problems with continence, so it seems that even though overall success rates of the LIFT procedure are not too impressive, low risk of complications give it an advantage over 'the gold standard' – fistulectomy (7).

CONCLUSIONS

As expected, in simple transsphincteric fistulas the results were satisfactory, taking into account low risk of complications. Complex and recurrent fistulas seem to be risk factors of LIFT procedure's failure. The results are consistent with data published by other authors, based on the review of the current literature, and it seems there is still room for improvement, so further research is required, especially on LIFT-Plus in complex, multi-tract fistulas.

As the patients are still being enrolled to the study group, we hope to gather more informatìon, since the analyzed group is still small. Future analysis should give more detailed information which may be the basis for proper indications for the Ligation of Intersphincteric Fistula Tract procedure.

Table 2. Summary of results in study groups

Initials	Age	Gender	OP time	Hospital stay (days)	Follow up time (months)	Result
simple transsphincteric						
DW	47	M	01:20	3	14	healed
SS	54	M	00:25	2	9	healed
JK	30	M	00:55	4	5	healed
KJ	34	M	01:08	5	6	persistent
recurrent						
PR	65	M	00:45	5	5	healed
KJ	47	M	00:35	2	5	healed
MD	44	M	00:45	2	7	persistent
JR	51	M	01:25	4	4	persistent
LR	55	M	00:45	4	14	recurrence
complex transsphincteric						
BM	41	M	01:15	3	12	healed
BM	57	M	00:58	3	11	healed
MA	55	M	00:50	3	8	healed
SA	25	K / F	01:06	4	11	persistent
RK	35	M	01:00	2	5	persistent

REFERENCES

1. *Rojanasakul A:* LIFT procedure: a simplified technique for fistula-in-ano. *Tech Coloproctology* 2009 Sep; 13(3): 237-40.
2. *Jacob TJ, Perakath B, KeighleyMRB:* Surgical intervention for anorectal fistula. *Cochrane Database Syst Rev* 2010; (5): CD006319.
3. *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 Jan; 53(1): 39-42.
4. *Sileri P, Giarratano G, Franceschilli L* et al.: Ligation of the Intersphincteric Fistula Tract (LIFT): A Minimally Invasive Procedure for Complex Anal Fistula: Two-Year Results of a Prospective Multicentric Study. *Surg Innov* 2013 Nov 6.
5. *Sileri P, Franceschilli L, Angelucci GP* et al.: Ligation of the intersphincteric fistula tract (LIFT) to treat anal fistula: early results from a prospective observational study. *Tech Coloproctology* 2011 Dec; 15(4): 413-16.
6. *Parks AG, Gordon PH, Hardcastle JD:* A classification of fistula-in-ano. *Br J Surg* 1976 Jan; 63(1): 1-12.
7. *Abcarian H:* Anorectal Infection: Abscess-Fistula. *Clin Colon Rectal Surg* 2011 Mar; 24(1): 14-21.
8. *Seow-Choen F, Nicholls RJ:* Anal fistula. *Br J Surg* 1992 Mar; 79(3): 197-205.
9. *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 Thail Chotmaihet Thangphaet* 2007 Mar; 90(3): 581-86.
10. *Bleier JIS, Moloo H, Goldberg SM:* Ligation of the intersphincteric fistula tract: an effective new technique for complex fistulas. *Dis Colon Rectum* 2010 Jan; 53(1): 43-46.
11. *Wallin UG, Mellgren AF, Madoff RD, Goldberg SM:* Does ligation of the intersphincteric fistula tract raise the bar in fistula surgery? *Dis Colon Rectum* 2012 Nov; 55(11): 1173-78.
12. *Tan K-K, Tan IJ, Lim FS* et al.: The anatomy of failures following the ligation of intersphincteric tract technique for anal fistula: a review of 93 patients over 4 years. *Dis Colon Rectum* 2011 Nov; 54(11): 1368-72.
13. *Tan K-K, Alsuwaigh R, Tan AM* et al.: To LIFT or to flap? Which surgery to perform following seton insertion for high anal fistula? *Dis Colon Rectum* 2012 Dec; 55(12): 1273-77.
14. *Abcarian AM, Estrada JJ, Park J* et al.: Ligation of intersphincteric fistula tract: early results of a pilot study. *Dis Colon Rectum* 2012 Jul; 55(7): 778-82.
15. *Vergara-Fernandez O, Espino-Urbina LA:* Ligation of intersphincteric fistula tract: What is the evidence in a review? *World J Gastroenterol WJG* 2013 Oct 28; 19(40): 6805-13.
16. *Ooi K, Skinner I, Croxford M* et al.: Managing fistula-in-ano with ligation of the intersphincteric fistula tract procedure: the Western Hospital experience. *Colorectal Dis Off J Assoc Coloproctology G B Irel* 2012 May; 14(5): 599-603.
17. *Lehmann J-P, Graf W:* Efficacy of LIFT for recurrent anal fistula. *Colorectal Dis Off J Assoc Coloproctology G B Irel* 2013 May; 15(5): 592-95.
18. *Alasari S, Kim NK:* Overview of anal fistula and systematic review of ligation of the intersphincteric fistula tract (LIFT).*Tech Coloproctology* 2014 Jan; 18(1): 13-33, Epub 2013 Jul. 27.
19. *Liu WY, Aboulian A, Kaji AH, Kumar RR:* Long-term results of ligation of intersphincteric fistula tract (LIFT) for fistula-in-ano. *Dis Colon Rectum* 2013 Mar; 56(3): 343-47.
20. *Hong KD, Kang S, Kalaskar S, Wexner SD:* Ligation of intersphincteric fistula tract (LIFT) to treat anal fistula: systematic review and meta-analysis. *Tech Coloproctology* 2014 Aug; 18(8): 685-91.
21. *Han JG, Yi BQ, Wang ZJ* et al.: Ligation of the Intersphincteric Fistula Tract Plus Bioprosthetic Anal Fistula Plug (LIFT-Plug): a New Technique for Fistula-in-Ano. *Colorectal Dis Off J Assoc Coloproctology G B Irel* 2012 Oct 16.
22. *Ellis CN:* Outcomes after repair of rectovaginal fistulas using bioprosthetics. *Dis Colon Rectum* 2008 Jul; 51(7): 1084-88.
23. *Ellis CN:* Outcomes with the use of bioprosthetic grafts to reinforce the ligation of the intersphincteric fistula tract (BioLIFT procedure) for the management of complex anal fistulas. *Dis Colon Rectum* 2010 Oct; 53(10): 1361-64.
24. *Sirikurnpiboon S, Awapittaya B, Jivapaisarnpong P:* Ligation of intersphincteric fistula tract and its modification: Results from treatment of complex fistula. *World J Gastrointest Surg* 2013 Apr 27; 5(4): 123-28.
25. *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 Sep; 204(3): 283-89.

Received: 28.10.2014 r.
Adress correspondence: 31-202 Kraków, ul. Prądnicka 35/37
e-mail: m.romaniszyn@mp.pl