Ligation of the Intersphinteric Fistula Tract (LIFT) Procedure and its Modification

Systematic Review and Metanalysis

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No conflicts of Interest

Anal fistula, fistula-in-ano, or perianal fistula is a hollow tract lined with granulation tissue, connecting a primary opening inside the anal canal or rectum to a secondary opening in the perianal skin.

A Disease of Antiquity...



"...surgeons have so often lost their reputation by performing an operation for this complaint at improper time....."

Forsyth 1826

The ideal way to treat anal fistula is to: Cure the disease without any risk of *fecal incontinence*.



Rojanasakul and coworkers (2007) described a technique for treating fistula-in-ano aimed at total sphincter preservation. They called it The Ligation of Intersphincteric Fistula Tract (LIFT) technique

Case Report

Total Anal Sphincter Saving Technique for Fistula-in-Ano; The Ligation of Intersphincteric Fistula Tract

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1-Neal et al. 2010, 2-van Onkelen et al. 2012, 3-Sirikurnpiboon et al. 2013, 4-Han et al. 2013



Review Article

Ligation of the intersphincteric fistula tract procedure and its modifications



Aim

To identify the following rates of the original LIFT procedure and compare them with those of LIFT modification described in literatures.

- Primary healing,
- Overall healing,
- Failure,
- Recurrence,
- Incontinence,
- Other complications (wound dehiscence, hematoma, secondary bleed, and purulent discharge)

Methods

PubMed, the **Cochrane** database and **Ovid** were searched from **January 2007** to **June 2017**.

Studies which applied LIFT procedure and its modifications for the treatment of anal fistulae of **cryptogenic** origin which were in **English**, **fully published**, **peer-reviewed**, **follow-up of median 12 months** were eligible.

Uncompleted studies, case reports, reviews, abstracts, letters, short communication, comments, and studies which did not fulfill inclusion criteria were excluded.

Methods cont.

- Abstracts were initially reviewed for potential inclusion;
- Selected articles were then:
 - reviewed,
 - categorized as meeting or not meeting the inclusion criteria, and
 - scored according to the *level of evidence* using the *Oxford Centre for Evidence-Based Medicine* 2011 Levels of Evidence system.

Methods cont.

- Meta-analysis was done using the open source software.
- The modified LIFT included more than one modification of the operation, we used "pooled estimate"
- We used the 95% confidence interval for both the <u>fixed effect</u> and <u>random effect</u> models.
- A test of homogeneity of the outcomes was performed and when proved statistically significant the random effect model estimates should be used, otherwise the fixed effect model is satisfactory.

Results



- **22** studies were identified.
- Only **10** studies meeting criteria of inclusion.
- Original LIFT was performed in **5** studies with a population of **199 patients.**
- The remaining 5 studies used four different LIFT modifications with a total number of 147 patients.

Table 1 – Original LIFT data 🛛	y author, type of study, procedure,	, type of fistula, etc.
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Author	Period of study	Year published	Type of study	Procedure (n)	Type of fistula (%)	1ry healing (%)	Follow-up, months (n)	Continence evaluation	OC-EBM level ^a
Tan ¹¹	April 2006–July 2011	2012	R	Original LIFT (24 vs. ERAF (31)) Transsphincteric (100%)	62.5%	13.0	Clinical	4
Mushaya ¹²	December 2007–February 2011	2012	RCT	Original LIFT (25 vs. ARAF (14)) Transsphincteric (100%)	68.0%	19.2	CCF-FI	2
Madbouly ¹³	July 2011–February 2013	2014	Р	Original LIFT (33 vs. MAF (35)) Transsphincteric (100%)	94.2%	12	WIS	3
Wallin ¹⁴	March 2007–September 2011	2012	R	Original LIFT (93) Transsphincteric (77%), complex (16%)	66%	19	CCF-FI	4
Dalbem ¹⁵	May 2012–September 2013	2014	Ρ	Original LIFT (22) Transsphincteric (100%)	: 77%	14	Clinical	4

R, retrospective; RCT, randomized controlled; P, prospective; LIFT, ligation of intersphincteric tract; ERAF, endorectal advancement flap; ARAF, anorectal advancement flap; MAF, mucosal advancement flap; CCF-FI, Cleveland Clinic Florida Fecal Incontinence score; NR, not reported; WIS, Wexner Incontinence Score; OCEBM, Oxford Centre for Evidence-based.

Table 7 – LIFT modifications data by author, type of study, procedure, type of fistula, etc.									
Author	Period of study	Year published	Type of study	Procedure (n)	Type of fistula (%)	1ry healing (%)	Follow-up, months (n)	Continence evaluation	OCEBM level
Onkelen ¹⁶	June 2009–March 2012	2012	Ρ	LIFT with partial coreout fistulectomy (22)	Low transsphincteric fistula	82%	19.5	RFISI	4
Feng Ye ¹⁷	June 2012 - March 2013	2014	R	LIFT with partial coreout fistulectomy (39)	High transsphincteric	87.2%	15	WIS	4
Onkelen ⁶	June 2009–December 2010	2012	р	LIFT with partial coreout fistulectomy and TAFR (41)	High transsphincteric fistula	51.0%	15	RFISI	4
Han ⁴	December 2010–March 2011	2012	Р	LIFT-plug (21)	Transsphincteric	95.0%	14	WIS	4
Tsunoda ¹⁸	March 2010–August 2012	2012	р	LIFT with partial coreout fistulectomy and Seton (20)	Low transsphincteric (60%), complex (40%).	95.0%	18.0	Manometry, RFISI, clinical	4

R, retrospective; P, prospective; LIFT, ligation of intersphincteric tract; TARA, transanal advancement flap; RFISI, Rockwood Fecal Incontinence Severity Index; WIS, Wexner Incontinence Score; OCEBM, Oxford Centre for Evidence-Based.





94% Trans sphincteric, 5.4% Complex fistula

Primary Healing:

- In the original LIFT was 73.95% (95% CI 60.3-85.6)
- In the modifications was 82.3% (95% CI 64.8–94.7)









Failure:

- In the original LIFT was 17.9% (95% CI 4.9–36.5)
- In the modifications was 17.7% (95% CI 5.3–35.2)



Table 6 – Showing anatomy of failure recurrence of original LIFT.							
Author	Time to recurrence	Failure n (%)	Recurrence n (%)	Treatment of failure			
Tan ¹¹ Mushaya ¹² Madbouly ¹³ Wallin ¹⁴	NA 4 months 3.5 months 7.0 months	9 (37.5%) 0 2 (5.7%) 32 (34.4%)	0 2 (8%) 7 (20%) 24 (25.8%)	Incision and drainage1 Fistulectomy 4 Seton 4 ERAF 2 LIFT 1 NA 9 intersphincteric by fistulectomy 2 transsphincteric by fistulectomy 20 by Seton 13 by LIFT 2 by PLUG 1 by advancement flap			
Dalbem ¹⁵	NA	5 (23%)	0	5 intersphincteric by fistulectomy			

Table 11 – Anatomy of failure and recurrence in LIFT modifications.

Author	Time to recurrence	Failure	Recurrence	Treatment of failure
Onkelen ¹⁶	NA	4 (18%)	No recurrence	4 intersphincteric by fistulectomy
Feng Ye ¹⁷	NA	5 (1.2%)	No recurrence	5 intersphincteric fistula and fistulectomy
Onkelen ⁶	NA	49%	No	8 intersphincteric fistula by fistulectomy
		20 pts	recurrence	4 by TARF
				8 by Seton
Han ⁴	NA	1(5%)	No recurrence	NA
Tsunoda ¹⁸	NA	1 (5%)	No recurrence	NA
NA, not given.				

Recurrence :

- In the original LIFT was **9.7%** (95% CI 1.7–23.2)
- In the modifications there was **no** recurrence

Other Complications:

- Wound dehiscence and surgical site infection or discharge, appeared in **18** patients of 340;
- All patients resolved with proper dressing, wound care and sometime antibiotics, with **no** further intervention.

Preoperative Seton insertion ?!!

Result was irrelevant and did not promote better healing. Nevertheless, **one** study included preoperative Seton to enforce or enhance fibrosis in the tracts to make them well defined.

Bias:

- Funnel plots for all estimates of original LIFT showed equal balanced distribution of the estimates of different studies around the pooled estimate.
- However, Funnel plots of the modified LIFT showed some bias toward higher values around the estimates.

Conclusion

- LIFT is a feasible, minimally invasive, cheap, and relatively easy procedure, which is safe and effective at the same time.
- More studies should be conducted to compare results of different approaches of the procedure with longer follow-up and randomization of patients.
- A firm definitions for **failure** and **recurrence** are needed.

(*Failure*: unsuccessful achievement of primary healing *Recurrence*: failure after successful primary healing)

