RESEARCH ARTICLE

Ligation of intersphincteric fistula tract: A retrospective, single centre, individual surgeons' experience for the management of complex fistula in ano

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Abstract

Objective: To identify early treatment outcomes among patients having undergone ligation of intersphincteric fistula tract for complex fistula-in-ano in a tertiary care setting.

Method: The single-centre retrospective study was conducted at the Aga Khan University Hospital, Karachi, and comprised data from January 2016 to January 2021 of adult complex fistula-in-ano patients who underwent ligation of intersphincteric fistula tract procedure. All surgeries were done by a single surgeon. Pre- and post-operative Wexner continence scores were measured, and various factors, including change in continence, complete wound healing, postoperative infection and recurrence, were assessed. Data was analysed using SPSS 23.

Results: Of the 20 patients, 15(75%) were females and 5(25.0%) were males. The overall mean age was 38.4±13.8 years. The median duration of surgery was 65 minutes (interquartile range: 57-99 minutes). There were 2(10%) patients who showed a change in continence after surgery to flatus alone. Complete healing was noted in 11(55%) patients. Recurrence was noted in 8(40%) patients; trans-sphincteric fistula-in-ano in 2(10%) patients, and inter-sphincteric fistula in 6(30%). Body mass index had a significant association with the change in continence (p=0.028).

Conclusion: There was a comparable risk of recurrence after ligation of intersphincteric fistula tract surgery, but among those without recurrence, the post-operative outcomes were optimal and no faecal incontinence was noted.

Keywords: Rectal fistula, Recurrence, Faecal incontinence, Surgical wound infection. (JPMA 74: 1603; 2024)

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Introduction

Fistula-in-ano is one of the commonest anorectal diseases with an incidence of 8.6 to 10 per 100,000 population per year, with about twice as many males being affected compared to females.[1] Despite its benign nature, it is associated with significant distress on the part of the patient and the challenges for the managing surgeon.[2] Among individuals who undergo incision and drainage of a perianal abscess, one-third of the patients develop a fistula; perianal abscess is thus considered an initial stage for fistula-in-ano.[3] The reverse is also noted, with 30-70% of individuals having a pre-existing fistula when diagnosed with an anorectal abscess.[4]

The Park's classification is one of the most widely used and surgically accepted classifications for fistula-in-ano.[5] Anorectal fistulae may also be classified as simple and complex.[6] Complex fistulas are those where >30% of the external sphincter is involved, have multiple tracts, are recurrent or associated with predisposing factors, such as irritable bowel disease, radiation therapy and pre-existing faecal incontinence, or are placed anteriorly in a female.[7]

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There is a range of surgical options for the management of complex anorectal fistulas: setons (cutting and draining), fistulotomy or fistulectomy, endorectal advancement flap, anocutaneous advancement flap, fistula plug, fibrin glue, electrocauterisation of tract (fistula laser closure), ligation of intersphincteric fistula tract (LIFT), and video-assisted anal fistula treatment (VAAFT).[6,8] LIFT is a sphincter-preserving surgery first described in 2007.[9] Since then the surgical success rate of LIFT procedure has been reported to be 47-95%.[9] Despite the varying range of success, the clear advantage of this procedure is that is it associated with a low incidence of faecal incontinence.[10,11]

The current study was planned to identify the early treatment outcomes of patients having undergone LIFT by a single surgeon for complex fistula-in-ano, in a tertiary care setting.

Materials and Methods

The retrospective study was conducted at the Aga Khan University Hospital (AKUH), Karachi, a large privately-owned tertiary care facility in a low-and-middle-income country. After approval from the institutional ethics review committee, data was retrieved from January 2016, when the LIFT procedure was introduced at AKUH, to January 2021. The common surgical practice at AKUH is fistulotomy for simple fistulas and seton placement with seton tightening for complex or high perianal fistulas. LIFT is a comparatively novel surgical approach with limited

expertise of the procedure in Pakistan.

The data was gathered using consecutive non-probability sampling technique.

Data of all patients aged >18 years who had undergone LIFT for complex fistula-in-ano was included. Data of patients who had been lost to follow-up, or unable to be reached telephonically was excluded, and so was the case with data of patients with diagnosed cases of inflammatory bowel disease, intestinal tuberculosis (TB) or ano-rectal cancer. Informed consent was obtained from the patients telephonically, and those not willing were excluded. The data was recorded on a predesigned questionnaire on the basis of information from the medical records and telephonic interviews.

The fistula-in-ano was considered complex if any of the following conditions was met: the tract involved >1/3rd of the external sphincter as determined by the surgeon during physical examination, had multiple tracts, was recurrent, or was placed anteriorly in a female patient.

Before being exposed to LIFT, all patients had had an initial examination under anaesthesia (EUA), with placement of a draining seton to drain all infected collections, to lay-open secondary tracts, and to isolate the fistula. This was followed by the LIFT procedure after a minimum of 8 weeks. All patients had received oral antibiotics starting 3 days prior to the procedure, and an enema preoperatively to clear the distal rectum.

The procedure had been conducted under general anaesthesia (GA) with the patient in a prone jack-knife position. After infiltrating the area with a dilute adrenaline solution, the fistula tract was approached through a curvilinear incision in the intersphincteric groove, facilitated by a metal probe placed along the seton through the tract. The fistula tract was identified and circumferential dissection was performed. The tract was ligated at 2 points using absorbable sutures, and then divided in between the ligatures. Multiple sutures were placed in the surrounding tissues with the intent of buttressing the cut ends of the fistula and creating a barrier between the two ends. A leak test through the external

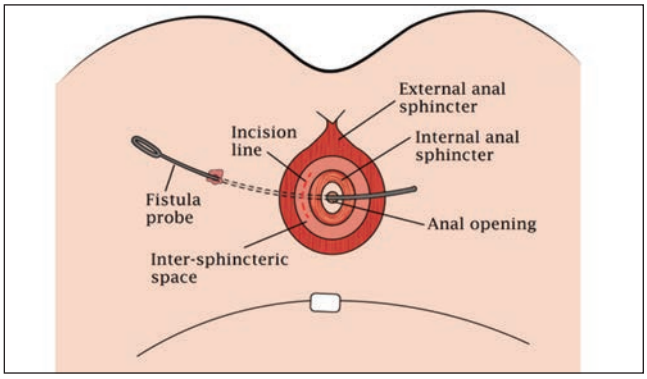

Figure-1B: Fistula tract identified with fistula probe and incision given in the inter-sphincteric space.

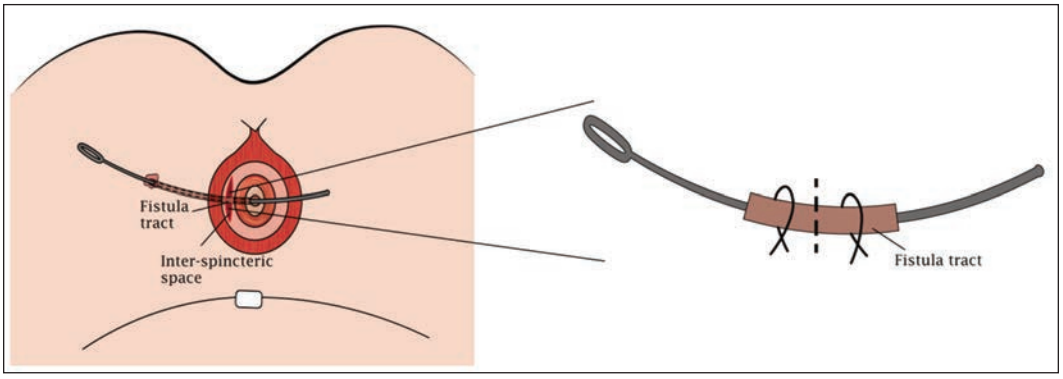

Figure-1 C: Fistula tract isolated in the inter-sphincteric space and tract ligated with absorbable suture. Fistula tract is then divided.

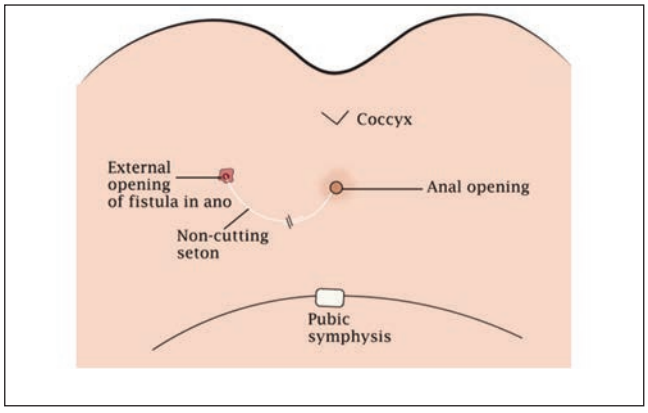

Figure-1 A: Prone Jack-knife position.

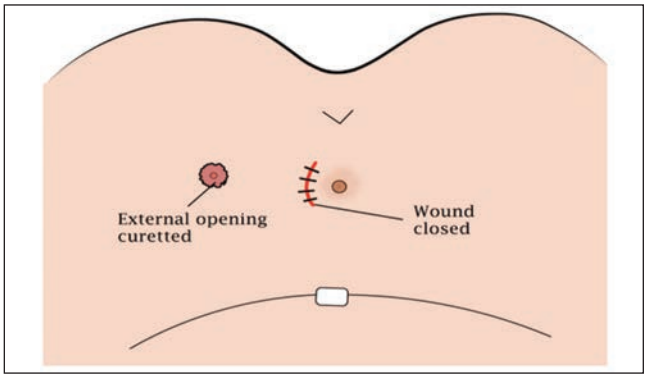

Figure-1 D: The inter-sphincteric space closed primarily. External opening of the fistula tract curetted.

opening was conducted with diluted hydrogen peroxide. Any leak was reinforced with sutures till a secure seal was established. The incision was closed with absorbable sutures with care to allow for drainage. The external opening and residual tract was curetted. Post-procedure, the patients received oral antibiotics for 5 days (Figure 1A-D).

Pre-operative and post-operative continence for solid, liquid and gas had been measured using the Wexner's score on a scale of 0-20, with 0 being normal continence, and 20 being maximum incontinence with severe effect on daily life.[12] Any change in continence status was documented. Complete wound healing was determined based on complete closure of wound with no recurrence of symptoms across 3 months of surgery.

Data was analysed using SPSS 23. Age, operative time, height, weight and body mass index (BMI) were reported as mean±standard deviation, while qualitative variables, like gender, co-morbidities, change in continence, complete healing and recurrence, were reported as frequencies and percentages. Since the sample size was too low to conduct multivariate analysis, significance testing was performed to determine the association of patient and surgical factors with the outcomes, like post-operative infection, recurrence and change in continence, using chi-square test. P<0.05 was considered statistically significant.

Table-1: Patient characteristics.

Patient characteristics and comorbid conditions	n (%)
Mean Age (years)	38.4±13.8
Gender	
Male	5 (25.0)
Female	15 (75.0)
Body mass index (BMI)	
Normal	1 (5.0)
Overweight	8 (40.0)
Obese	11 (55.0)
Diabetes mellitus (DM)	
Yes	3 (15.0)
Hypertension (HTN)	
Yes	4 (20.0)

Results

Of the 20 patients, 15(75%) were females and 5(25.0%) were males. The overall mean age was 38.4±13.8 years. Mean BMI was 28.3±4.5kg/m^2 (Table 1).

Table-2: Patient characteristics.

Surgical outcomes	n (%)
Number of previous surgeries	
1	11 (55.0)
>1	9 (45.0)
Number of tracts ligated	
1	17 (85.0)
>1	3 (15.0)
Preoperative incontinence (Wexner's score > 0)	
No	19 (95.0)
Yes	1 (5.0)
Postoperative incontinence (Wexner's score > 0)	
No	17 (85.0)
Yes	3 (15.0)
Change in continence	
Yes	2 (10.0)
Post-operative infection	10 (50)
Complete healing	11 (55.0)
Recurrence	
No	12 (60.0)
Yes	8 (40.0)
<3 months	2 (10.0)
3-6 months	3 (15.0)
6-12months	3 (15.0)

Table-3: Association of patient and surgical factors, and post-operative infection / Recurrence / Change in continence.

	Post-op infection [n (%)]			Recurrence [n (%)]			Change in continence [n (%)]		
	Yes	No	*p*-value	Yes	No	*p*-value	Yes	No	*p*-value
Gender									
Male	2 (20.0)	3 (30.0)	>0.999	3 (37.5)	2 (16.7)	0.347	0 (0)	5 (29.4)	0.539
Female	8 (80.0)	7 (70.0)		5 (62.5)	10 (83.3)		3 (100.0)	12 (70.6)	
Body mass index (BMI)									
Normal	1 (10.0)	0 (0.0)	0.580	0 (0.0)	1 (8.3)	0.056	1 (33.3)	0 (0)	0.028
Over-weight	4 (40.0)	4 (40.0)		1 (12.5)	7 (58.3)		0 (0)	8 (47.1)	
Obese	5 (50.0)	6 (60.0)		7 (87.5)	4 (33.3)		2 (66.7)	9 (52.9)	
Diabetes mellitus									
Yes	1 (10.0)	2 (20.0)	>0.999	1 (12.5)	2 (16.7)	>0.999	2 (66.7)	15 (88.2)	0.404
No	9 (9.0)	8 (80.0)		7 (87.5)	10 (83.3)		1 (33.3)	2 (11.8)	
Number of previous surgeries									
1	7 (70.0)	4 (40.0)	0.370	5 (62.5)	6 (50.0)	0.670	2 (66.7)	9 (52.9)	>0.999
>1	3 (30.0)	6 (60.6)		3 (37.5)	6 (50.0)		1 (33.3)	8 (47.1)	
Number of tracts ligated									
1	9 (90.0)	8 (80.0)	>0.999	6 (75.0)	11 (91.7)	0.537	2 (66.7)	15 (88.2)	0.404
>1	1 (10.0)	2 (20.0)		2 (25.0)	1 (8.3)		1 (33.3)	2 (11.8)	

There were 9(45%) patients with >1 perianal procedure for a perianal abscess or fistula-in-ano in the past, 2(10%) had a complex Y- shaped high fistula-in-ano with 2 internal openings and a single external opening.

The median duration of surgery was 65 minutes (interquartile range [IQR]: 57-99 minutes). There were 3(15%) patients who required ligation of >1 fistula tract, 1(5%) patient had a pre-operative Wexner's score of 2, which did not worsen post-procedure, 2(10%) patients had a change in continence after surgery to flatus alone (Wexner score 1 and 2, respectively) which improved with time. There were 2(10%) patients who showed a change in continence after surgery to flatus alone. Complete healing was noted in 11(55%) patients. Recurrence was noted in 8(40%) patients. Recurrence within the first 3 months post-surgery was noted in 2(10%) patients, within 3-6 months of surgery in 3(15%) and 6 months post-surgery in 3(15%).

Among the (40%) patients with recurrence, 6(30%) developed an inter-sphincteric fistula, which was identified on physical examination. Among them, 4(20%) opted to be managed conservatively, while 2(10%) underwent fistulotomy with resolution of symptoms. The other 2(10%) patients had a recurrence with a trans-sphincteric fistula. Of them 1(5%) had a complex Y-shaped fistula tracking to the right ischiorectal fossa. The patient underwent EUA with non-cutting seton placement. Also, 1(5%) patient had a recurrence of trans-sphincteric fistula, but opted for conservative management.

BMI had a significant association with the change in continence (p=0.028) (Table 3).

Discussion

Though a benign disease, fistula-in-ano is a distressing condition, with surgery being the only curative option.[13] Several surgical methods have been identified and proposed in literature as treatment options for fistula-in-ano, including the use of seton, fistulotomy, fibrin glue, video-assisted ablation of tracts, and rectal advancement flaps, all with varying success rates.[14] At AKUH, the routine practice has been the use of fistulotomy for low-lying fistula-in-ano, and the use of cutting seton for the management of complex anal fistulas.[15]

The LIFT technique has not been well reported in Pakistan. The traditional management of fistula-in-ano has remained the use of a cutting seton for complex anal fistulas, where periodic tightening has been performed and complete healing achieved at a mean of 11.2±5.7 weeks.[16] VAAFT has been reported from Pakistan as one of the various approaches for the management of fistula-in-ano. Zarin M. et al. reported that primary healing was noted in 20(50%) patients who were operated using VAAFT at 6 weeks.[17]

The greatest benefit offered by the LIFT technique is that no part of the anal sphincter complex is divided during the procedure, resulting in a very low incidence of incontinence.[18,19] This technique was introduced at AKUH in 2016 for the management of inter-sphincteric fistulas, and is employed for the management of complex fistulas. Recurrence rates associated with LIFT are varied, with a study reporting as high as 43%. Among these recurrences, 4 out of 39 patients had an inter-sphincteric recurrence, while 3 had trans-sphincteric recurrence.[20] The current study reported an overall recurrence rate of 40%, amongst whom 6 had inter-sphincteric recurrence.

Cianci et al. reported trans-sphincteric recurrence of fistula-in-ano in 4 of 28 patients who underwent LIFT, and were later treated with a seton.[21] The findings were comparable to those of the current study.

Risk factors associated with failure have been reported as obesity, smoking, multiple previous surgeries and the length of the fistula tract.[18] Among the current patients, the overall high recurrence rate could be attributed to several factors. Seven of the 8 patients who developed a recurrence were obese, with BMI >27.5kg/m^2, while 1 patient was overweight, with BMI >23.0kg/m^2. However, there was no significant association between BMI and post-operative infection or recurrence. This may be due to the small sample size of the current study.

None of the patients in the current study smoked. The study noted that post-operative infection resulted in early recurrence and failure of the procedure within 6 months of surgery. Recurrence was also noted among those individuals who had >1 fistula tract ligated. There was no significant association between recurrence and the number of tracts ligated (p=0.05).

The maintenance of continence post-LIFT was noteworthy. Only 2 patients experienced a change in continence post-procedure, and only for flatus, which improved over time. None of the patients experienced any faecal (liquid or solid) incontinence post-surgery which is comparable to the outcomes reported in literature.[18] Furthermore, patients who did not develop early recurrence had good functional outcome, and no recurrence was noted beyond the 1-year mark. There was a significant association between the change in continence and BMI (p=0.028).

The current study had limitations of a small sample size and its retrospective design. Recurrence revealed a possible significant association with BMI (p=0.056), but due to the small sample size it could not be determined with finality. To ensure completeness of the data, all individuals were contacted via telephone and interviewed about their symptoms and post-procedure outcomes. A very high level of satisfaction was noted among those who did not have

any recurrence. Prospective studies with larger sample sizes are needed to help determine the long-term outcomes of LIFT procedure and the risk factors associated with recurrence. Studies comparing fistulotomy and LIFT procedure in the light of outcomes, such as patient satisfaction, recurrence and post-operative change in continence, will help with the development of surgical practice in the country.

Conclusion

There was a comparatively high risk of recurrence after LIFT surgery, but, among those without recurrence, the post-operative outcomes were optimal, and no faecal incontinence was noted.

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Author Contribution:

SNV: Study design, data collection, analysis and revision.

SK: Study concept, design, data analysis, review, revision and final approval.