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Comparative Evaluation of Ligation of Intersphincteric Fistula Tract (Lift) Technique and Conventional Fistulotomy in the Management of Fistula in Ano: A Prospective Comparative Study

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ABSTRACT

Background: Fistula in ano is a common anorectal condition associated with significant morbidity and recurrence. Conventional fistulotomy remains the standard surgical treatment; however, concerns regarding postoperative pain, delayed wound healing, and impairment of continence have led to the development of sphincter-preserving techniques such as the Ligation of Intersphincteric Fistula Tract (LIFT) procedure. This study compared the clinical outcomes of LIFT and conventional fistulotomy in the treatment of fistula in ano.

Materials and methods: This prospective comparative study consists a total of seventy-four patients diagnosed with fistula in ano were enrolled and divided into two groups group A (n=37) and group B (n=37). Outcomes assessed included operative time, postoperative pain, hospital stay, wound healing time, postoperative complications, anal continence, and recurrence rates. Patients were followed for six months postoperatively.

Results: The mean operative time was significantly longer in the LIFT group than in the fistulotomy group (41.2±8.4 vs. 28.6±6.3 minutes; p<0.001). However, patients undergoing LIFT experienced significantly shorter hospital stay (2.1±0.7 vs. 3.8±1.1 days; p<0.001), lower postoperative pain scores (3.8±1.2 vs. 6.4±1.4; p<0.001), and faster wound healing (4.8±1.1 vs. 7.3±1.5 weeks; p<0.001). Postoperative anal incontinence was significantly lower following LIFT (2.7%) compared with fistulotomy (18.9%) (p=0.026). Recurrence rates were comparable between the two groups (8.1% vs. 5.4%; p=0.642).

Conclusion: LIFT is a safe and effective sphincter-preserving alternative to conventional fistulotomy. Although it requires a longer operative time, it offers superior postoperative outcomes, including reduced pain, shorter hospitalization, faster healing, and better preservation of anal continence, with recurrence rates comparable to fistulotomy.

Keywords: Fistula in ano, LIFT, Fistulotomy, Anal fistula, Sphincter preservation, Continence, Recurrence.

INTRODUCTION

Fistula in ano is a common anorectal condition characterized by an abnormal epithelialized tract connecting the anal canal to the perianal skin. The majority of cases arise from cryptoglandular infection of the anal glands, resulting in anorectal abscess formation followed by persistent fistulous communication between the anal canal and the perineal skin surface. Although the condition is not associated with high mortality, it causes considerable morbidity due to chronic purulent discharge, pain, recurrent infections, perianal irritation, and significant impairment in quality of life. The disease predominantly affects young and middle-aged adults and demonstrates a higher prevalence among males than females (1).

The management of fistula in ano continues to pose a significant surgical challenge because the ideal treatment should eradicate the fistulous tract, prevent recurrence, promote rapid healing, and preserve anal sphincter function. Surgical intervention remains the cornerstone of treatment, with several operative techniques described over the years. Conventional fistulotomy is widely regarded as the standard treatment for simple and low anal fistulas because of its high success and healing rates. The procedure involves laying open the fistulous tract, allowing healing by secondary intention. Despite its effectiveness, fistulotomy may be associated with prolonged wound healing, postoperative pain, larger wound size, and varying degrees of anal incontinence due to sphincter division (2, 3).

To overcome these limitations, various sphincter-preserving procedures have been developed. Among them, the Ligation of Intersphincteric Fistula Tract (LIFT) procedure, first introduced by Rojanasakul et al. in 2007, has gained considerable attention. The technique involves identification, ligation, and division of the fistulous tract within the intersphincteric plane, thereby eliminating the source of infection while preserving both the internal and external anal sphincters. This sphincter-saving approach aims to reduce postoperative morbidity and minimize the risk of fecal incontinence while maintaining satisfactory healing rates (4).

Several studies and systematic reviews have reported encouraging outcomes with the LIFT procedure, demonstrating healing rates ranging from 70% to 90% and low rates of continence disturbance (5-7). Comparative studies between LIFT and conventional fistulotomy have shown variable results regarding operative time, hospital stay, wound healing, recurrence, postoperative pain, and functional outcomes (8, 9). While fistulotomy remains highly effective in achieving fistula cure, LIFT offers the theoretical advantage of sphincter preservation and improved postoperative quality of life.

Therefore, the present study was undertaken to compare the clinical outcomes of the LIFT technique and conventional fistulotomy in patients with fistula in ano, with particular emphasis on operative parameters, wound healing, recurrence, and postoperative anal continence.

MATERIALS AND METHODS

This prospective comparative observational study was conducted in the Department of General Surgery, at MNR Medical College and Hospital, Sangareddy, Telangana, India from December 2024 to March 2026 after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all participants. A total of 74 patients attended to the General Surgery outpatient and inpatient departments with a diagnosis of fistula in ano and requiring surgical intervention were screened for eligibility.

Inclusion criteria: Patients aged between 18-70 years, diagnosed with cryptoglandular fistula-in-ano, with low transsphincteric or intersphincteric fistulas suitable for either procedure and willing to participate and provide informed consent.

Exclusion criteria: Recurrent fistula in ano, complex fistulas including suprasphincteric and extrasphincteric fistulas, fistulas associated with Crohn's disease, tuberculosis, malignancy, radiation injury, inflammatory bowel diseases, pregnancy, with pre-existing anal incontinence and immunocompromised patients and those unfit for surgery.

The study participants were randomly allocated into two groups. Group A (n=37) patients underwent Ligation of Intersphincteric Fistula Tract (LIFT) procedure and group B (n=37) patients underwent conventional fistulotomy.

A detailed history was obtained regarding duration of symptoms, pain, discharge, swelling, previous anorectal abscess, and prior interventions. Clinical examination included inspection of the perianal region, digital rectal examination, and proctoscopy. Routine laboratory investigations, electrocardiogram and chest radiograph were performed. The fistulous tract was assessed using clinical examination and imaging modalities such as magnetic resonance imaging (MRI) Fistulogram and transrectal ultrasonography whenever required to determine the course of the tract and identify the internal opening.

Surgical technique

All procedures were performed under spinal or general anesthesia with the patient in lithotomy position.

Group A (LIFT procedure): After identification of the external and internal openings, a curvilinear incision was made over the intersphincteric groove. The intersphincteric plane was carefully dissected to identify the fistulous tract. The tract was ligated close to the internal sphincter and divided. The intersphincteric portion of the tract was excised, and the external tract was curetted thoroughly. The wound was irrigated and closed with absorbable sutures.

Group B (Conventional fistulotomy): Following identification of the fistulous tract using a probe, the tract was laid open throughout its entire length. Granulation tissue and debris were curetted. Haemostasis was secured, and the wound was left open to heal by secondary intention. Appropriate dressing was applied.

Postoperative follow-up of patients was conducted at 1 week,2 weeks, 1 month, 3 months, and 6 months. At each visit, wound healing, complications, recurrence, and continence status were documented. Complete healing was defined as complete epithelialization of the wound without discharge.

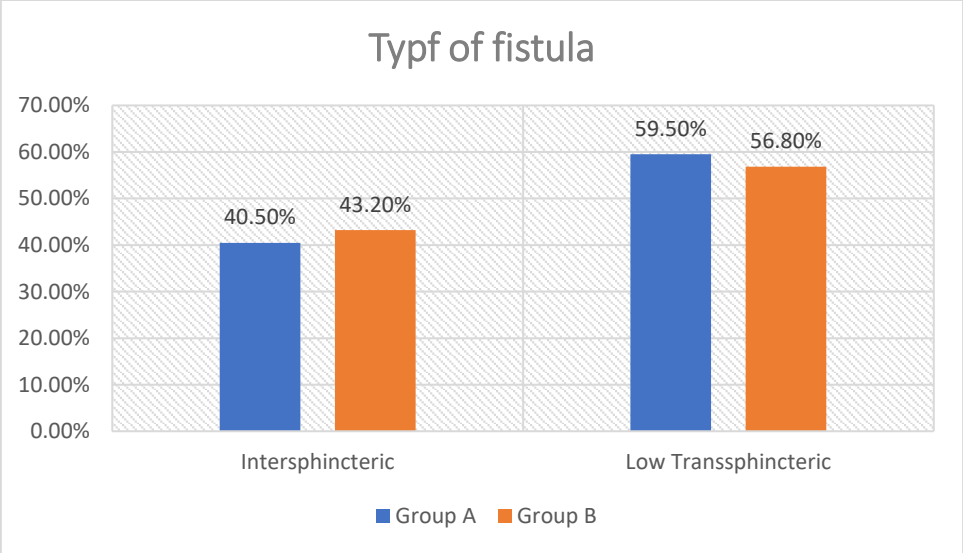
Statistical Analysis

The collected data was extracted into Microsoft Excel sheet and analyzed using SPSS v.25.0. Categorical variables as frequencies and percentages and continuous variables were expressed as mean and standard deviation. comparisons between groups were performed using Independent Student's t-test for continuous variables and chi-square test for categorical variables. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic characteristics of study population (n=74)

Variable	Group A (n=37)	Group B (n=37)	p-value
Mean age (years)	41.8 ± 11.2	43.1 ± 10.8	0.612
Gender			
Male	30 (81.1%)	29 (78.4%)	0.768
Female	7 (18.9%)	8 (21.6%)	
BMI (kg/m²)	24.8 ± 3.2	25.1 ± 3.4	0.684
Diabetes Mellitus	6 (16.2%)	5 (13.5%)	0.744
Smoking History	8 (21.6%)	9 (24.3%)	0.783



Graph1: Distribution of fistula type.

Table 2: Operative outcomes

Variable	Group A	Group B	p-value
Duration of surgery(minutes)	41.2 ± 8.4	28.6 ± 6.3	0.001
Duration of hospital stay (days)	2.1 ± 0.7	3.8 ± 1.1	0.001
Postoperative pain score (day-1)	3.8 ± 1.2	6.4 ± 1.4	0.001

Table 3: Wound healing outcomes.

Variable	Group A	Group B	p-value
Healing Time (weeks)	4.8 ± 1.1	7.3 ± 1.5	0.001
Complete Healing at 6 weeks	30 (81.1%)	18 (48.6%)	0.004
Complete Healing at 12 weeks	36 (97.3%)	35 (94.6%)	0.554

Table 4: Postoperative profile among study groups.

Postoperative profile	Group A	Group B	p-value
Complication			
Bleeding	1 (2.7%)	3 (8.1%)	0.304
Wound Infection	2 (5.4%)	5 (13.5%)	0.233
Urinary Retention	1 (2.7%)	2 (5.4%)	0.556
Delayed Healing	2 (5.4%)	8 (21.6%)	0.041
Anal continence outcomes			
Normal Continence	36 (97.3%)	30 (81.1%)	0.026
Minor Gas Incontinence	1 (2.7%)	5 (13.5%)	
Minor Stool Incontinence	-	2 (5.4%)	
Recurrence at 6-month follow-up			
No Recurrence	34 (91.9%)	35 (94.6%)	0.642
Recurrence	3 (8.1%)	2 (5.4%)	

DISCUSSION

Fistula in ano remains one of the most challenging benign anorectal disorders encountered by surgeons because successful treatment requires eradication of the fistulous tract while preserving anal sphincter function and minimizing recurrence. Conventional fistulotomy has traditionally been regarded as the gold-standard treatment for simple fistulas because of its high healing rates; however, concerns regarding postoperative pain, prolonged wound healing, and impairment of continence have encouraged the development of sphincter-preserving techniques such as the Ligation of Intersphincteric Fistula Tract (LIFT) procedure (10,11).

In the present study, the demographic characteristics of patients in both groups were comparable, with a predominance of male patients and a mean age in the fourth decade of life. Similar demographic trends have been reported by Parks et al., Rojanasakul et al., and Emile et al., who observed that fistula in ano occurs more frequently in young and middle-aged men (2, 4, 6). This male predominance has been attributed to a higher incidence of anorectal gland infections and associated risk factors among men.

The mean operative time was significantly longer in the LIFT group compared with the fistulotomy group. This finding is expected because the LIFT procedure requires meticulous dissection of the intersphincteric plane, identification of the fistulous tract, ligation, and secure closure of the tract. Similar observations were reported by Han et al. and Tan et al., who demonstrated longer operative durations for LIFT compared with conventional fistulotomy (8, 12). Despite the longer operative time, the additional surgical effort may be justified by improved postoperative outcomes.

Hospital stay was significantly shorter in the LIFT group. Patients undergoing LIFT experienced less postoperative discomfort and required less extensive wound care than those undergoing fistulotomy. These findings are in agreement with studies by Vergara-Fernandez and Emile et al., who reported earlier recovery and shorter hospitalization following sphincter-preserving procedures (5, 6). The smaller wound associated with LIFT contributes substantially to faster mobilization and discharge.

A major finding of the present study was the significantly shorter healing time observed in patients treated with LIFT. The mean healing duration in the LIFT group was considerably lower than that in the fistulotomy group. This may be explained by the limited tissue injury and primary wound closure achieved during LIFT, whereas fistulotomy results in a larger open wound healing by secondary intention. Similar findings have been reported by Aboulian et al. and Liu et al., who demonstrated accelerated wound healing following LIFT procedures (14, 15). Faster wound healing improves patient comfort and facilitates earlier return to routine activities.

Postoperative pain was significantly lower in the LIFT group. Reduced tissue trauma and preservation of the anoderm likely contribute to lower pain scores. Previous studies by Bleier et al. and Wallin et al. similarly reported less postoperative discomfort in patients undergoing sphincter-preserving procedures compared with conventional fistulotomy (9, 16). Reduced postoperative pain has an important impact on patient satisfaction and quality of life.

Preservation of continence remains one of the principal advantages of the LIFT procedure. In the present study, postoperative continence disturbances were significantly lower in the LIFT group than in the fistulotomy group. Only a small proportion of patients in the LIFT group experienced minor gas incontinence, whereas continence impairment was more frequent following fistulotomy. These findings are consistent with systematic reviews by Emile et al. and Narang et al., which demonstrated that LIFT preserves sphincter integrity and significantly reduces the risk of postoperative faecal incontinence (6, 7). Since sphincter division is avoided during LIFT, functional outcomes are generally superior, particularly in transsphincteric fistulas.

Recurrence remains a concern after any fistula surgery. In the present study, recurrence rates at six months were slightly higher in the LIFT group, although the difference was not statistically significant. Comparable recurrence rates between LIFT and fistulotomy have been reported by Han et al., Liu et al., and several meta-analyses (8, 15, 17). While fistulotomy continues to demonstrate excellent long-term cure rates, modern evidence suggests that LIFT provides comparable efficacy while offering superior continence preservation. Recurrence following LIFT may be influenced by factors such as failure to identify the internal opening, secondary tracts, or persistent sepsis.

CONCLUSION

The present study demonstrated that both LIFT and conventional fistulotomy are effective surgical options for the treatment of fistula in ano. While fistulotomy required a shorter operative time, the LIFT procedure provided significant advantages in terms of reduced postoperative pain, shorter hospital stay, faster wound healing, and superior preservation of anal continence. Recurrence rates were comparable between the two techniques, indicating similar effectiveness in disease control. Given its sphincter-preserving nature and favorable functional outcomes, LIFT may be considered a preferred treatment option, particularly in patients where maintenance of continence and postoperative quality of life are important considerations.

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