

## Original Research Article

# A prospective interventional study on ligation of intersphincteric fistula tract in patients with fistula-in-ano-as a tertiary care centre

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### ABSTRACT

**Background:** Fistula-in-ano is a very common condition encountered in proctology OPD. The treatment of fistula-in-ano is difficult due to potential risk of recurrence and fecal incontinence. Ligation of intersphincteric fistulous tract is new modality of treatment for the condition. LIFT is a sphincter preserving surgery, aim of our study to evaluate the effectiveness of LIFT surgery.

**Methods:** We did LIFT surgery in 35 cases of intersphincteric and transsphincteric types of fistula-in-ano during the period of December 2019 to July 2020. Standard investigation protocol was followed in all cases. Evaluation of effectiveness of procedure done in terms of anal incontinence, wound healing time, recurrence rate and wound infection rate.

**Results:** 35 patients (23 men, 12 women) were included with mean age of 40 SD 10.38 years. Most of study population have Inter sphincteric fistula (62.9%), and 37.1% participants have trans sphincteric fistula. Healing time was 10-15 days (42.9%) and mean healing time is 17 SD 4.25 days. We didn't see a single case of anal incontinence with LIFT in our study. 6 cases of recurrence were seen.

**Conclusions:** Result from our study showed that LIFT surgery is effective modality and fulfilling the outcome of sphincter preservation.

**Keywords:** Anal incontinence, Fistula-in-ano, Ligation of intersphincteric fistula tract

### INTRODUCTION

Perianal fistula is an abnormal tract or cavity that connects a primary opening inside the anal canal to a secondary opening in the Perianal skin.<sup>1</sup> It is a probably an inflammatory condition in which infection begins in anoglandular region. Presently, Parks classification is the most accepted system for fistula in ano, which divide it into intersphincteric, trans-sphincteric, supra-sphincteric and extra sphincteric.<sup>2</sup> There is no single technique is appropriate for the management of all fistula in ano, the surgeon's skill, experience and judgement must guide

treatment decisions.<sup>3</sup> Most of the anal fistulas are simple and can be treated easily by laying open the fistulous tract or fistulectomy.<sup>4</sup> While complex fistulas are less likely to see, various modalities are available, such as debridement and fibrin glue injection, endorectal advancement flap closure and the use of seton.<sup>5-8</sup>

One novel technique first time described in 2007, by Arun Rojanasukul, Thai colorectal surgeon developed this procedure for the first time. The healing percentages in the first report were 94% in 2007, the advantages of LIFT (ligation of intersphincteric fistula tract) technique

are anal sphincter saving, minimal tissue injury hence a shorter healing time and small scar.<sup>9</sup> Our study was a prospective interventional study to assess the outcomes of LIFT surgery in patients with Fistula in ano, at a tertiary care set up. Our primary Objective was to evaluate the effectiveness of LIFT in term of the postoperative complications like Anal incontinence, and assessment in terms of Wound Healing time, Recurrence rate, Wound infection rate.

## METHODS

Prospective interventional study at tertiary care set up includes patients admitted in the Department of General Surgery, Sawai Man Singh medical college and hospital during the period of December 2019 to July 2020 with Fistula in ano fulfilling the inclusion criteria. 35 patients had undergone LIFT as treatment of Fistula in ano in above giving time duration. Ethical approval taken from institution's ethics committee.

### Inclusion criteria

Inclusion criteria includes Patients with age more than 18 years having fistula-in-ano grade I and III st james university classification giving informed consent for the procedure

### Exclusion criteria

Exclusion criteria consists of Denial of consent, Patients less than 18 years of age, Perianal abscess, Immune compromised patients, Inflammatory Bowel Disease, TB and malignancy, Patients with comorbid conditions like diabetes, patients on steroids, Recurrent fistula and Patient who is having history of anal incontinence by previous surgery.

### Assessment

In our study, all patients gone through Standard investigation protocol i.e. CBC, LFT, RFT, electrocardiogram, complete urine examinations, chest x-ray, proctoscopy examination and MRI pelvis in all cases, bowel preparation in the form of enema was given on the prior day of surgery. All patients were operated under regional (spinal) anesthesia and we operated all cases in lithotomy position. During the operation, a record was kept regarding the time required for the surgery. Post operatively patients were asked to answer the questionnaire and patients were also observed for immediate postoperative complications like postoperative wound infection and bleeding per Rectum and late postoperative complications like Anal incontinence and recurrence.

### Operative technique

In this procedure firstly we did anal stretching in one direction, then we identify the internal opening by

injecting methylene blue dye through the external opening. Then we make an incision at the Intersphincteric groove and dissect along the Intersphincteric plane using artery forceps until the Intersphincteric fistulous tract is identified.

After the identification of fistulous tract hook out the Intersphincteric fistula tract. Suture ligate the tract using absorbable suture material, we used vicryl 2-0 in all cases and the fistula tract is removed. From the external opening curette is passed upto the ligature and curettage is done. External sphincter defect is identified and suture ligated by ethilon 2-0, Intersphincteric wound is closed. Anal packing done in all cases, and we removed this anal pack after 6 hours of postoperative period. Preoperatively all patients received Inj. Ceftriaxone 1 gm i.v stat. Postoperatively all patients received Inj. Ceftriaxone 1 gm i.v BD and Inj. Metronidazole 500 mg i.v TDS for 2 days, as antibiotics. All patient received analgesics in postoperative period. Patients discharged with oral antibiotics and oral analgesics.

Follow up of patients was done at 1 week, 1 month and 3 month and patients are asked to fill the questionnaire in each follow up. Data of patients were collected as per the proforma. Data analysis and the benefits in the treatment of Fistula in ano with LIFT was observed for, Anal incontinence, wound Healing time, Recurrence rate. And Wound infection rate.

### Statistical analysis

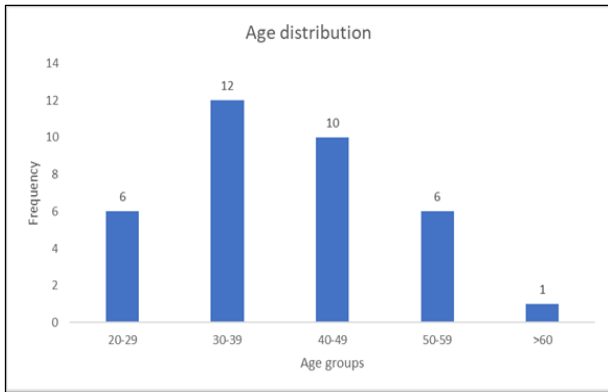
Data was entered in MS excel. Qualitative data was expressed in percentage and proportions and quantitative data was expressed in mean with standard deviation. Association between the variables was inferred by chi square test. For inference, p value less than 0.05 was considered significant.

## RESULTS

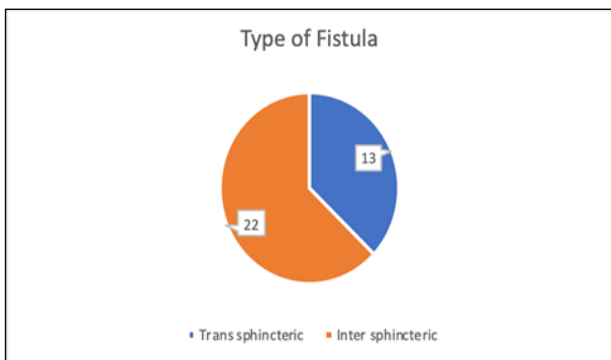
The study group consisted of 23 male (65.7%) and 12 females (34.3%). Maximum proportion of study population were of male. Male: Female ratio was 1.91. Maximum proportion of the study population were in the age group of 30-39 years (34.3%), followed by 40-49 years (28.6%) while least in the age group of >60 years (2.86%). Mean age was 40 SD 10.38 years (Figure 1).

Most of study population have Inter sphincteric fistula (62.9%), and 37.1% participants have trans sphincteric fistula. (Figure 2). As per St. James University classification we took grade 1 and grade 3 patients only for our study.

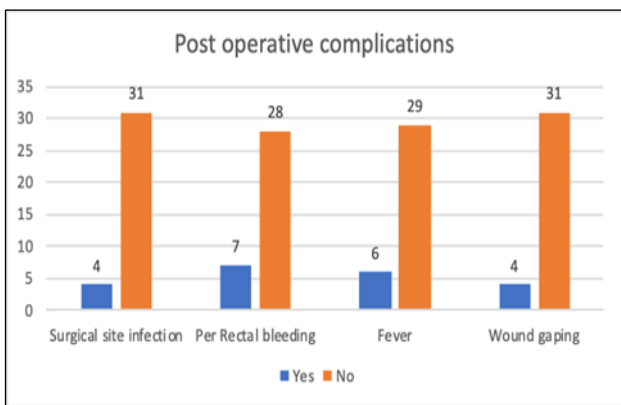
In present study, 28 (80%) patients stayed in hospital for 2 days and only 3 (8.5%) stayed for 3 days postoperatively. Mean duration of stay is 1.5 days with standard deviation of 0.71 days.



**Figure 1: Age distribution of study population.**



**Figure 2: Types of fistula in study population.**



**Figure 3: Postoperative complications.**

In 4 patients (11.4%) of study population surgical site infection was present, per rectal bleeding was seen in 7 (20%) patients of the study population, 6 (17.1%) patients complained of fever in post-operative period and wound gaping was seen in 4 (11.4%) patients (Figure 3).

In present study, Patients were followed up for 3 months, none of the study participants complained of anal incontinence. Recurrence of fistula was seen in 6(17.14%) patients of the study population and good wound healing was present in 31 (88.57%) patients. In present study, most of study participants healing time was

10-15 days (42.9%) and mean healing time is 17 SD 4.25 days.

In the present study, most of the study population belonged to 30-39 years age group, and recurrence was also high in this age group. The recurrence was almost equal among 20-29 and 40-49 age group. However, there was no significant difference in presence of recurrence among age group (P-value> 0.05). There was no association found between recurrence and age.

In the present study, cases of recurrence among male were 6 out of 23 while no case recurrence is seen among female. However, no significant difference in presence of recurrence among male and female (P-value> 0.05). In present study, most of the study population belonged to group which had 2 day stay duration, with good wound healing. The wound healing was poor with patients who stayed for 3 day.

There is significant difference in distribution of wound healing with duration of stay (P-value< 0.05). Association of wound healing with duration of stay in hospital was found with higher proportion in patients with 2 days of stay followed by 1 and 3 days of stay post-operatively.

## DISCUSSION

Fistula in-ano is a common disease that create problems to patients and poses challenges to surgeons. Proper management requires both knowledge of the etiology and an understanding of the relevant anatomy of perianal region. Till now, the available treatment modalities have not achieved the prime goals of prevention of recurrence and preservation of continence.

Many recently developed techniques, such as anoderm island flap, endorectal advancement flap, excision and closure of internal opening, fibrin glue, and fistula plug.<sup>7</sup> These are associated with a lower risk of anal incontinence despite some instances of recurrence. Presently, no single operative technique exists that is appropriate for all types of fistula-in-ano, whether simple or complex.

The following study was undertaken in to evaluate the outcomes of LIFT surgery in patients with Fistula in ano. In our study there were 23 male patients and 12 female patients, equating to 1.9:1. Male: female ratio in study by Aboulian A et al was 2.1:1 and in study by Ellis et al, it was 2.4:1.<sup>10,11</sup>

These were very similar with our study. The documented male-to-female ratio of FIA is 1.8:1, nevertheless this ratio can reach up to 9:1 as Eisenhammer has reported.<sup>12,13</sup> The male predominance of anal fistula is obvious in the many literature. Many literatures explained epidemiology of male predominance.

A few theories were proposed to explain this male predominance including the role of androgens and the strong tone of the external anal sphincter in males, this explained by that stronger anal tone leads to ductal obstruction and subsequently inflammation of the anal glands.<sup>14</sup>

Lunniss et al suggested that the differences in the sex hormones levels were the key to understand this male predominance.<sup>15</sup> In our study we also found male predominance. Median age was almost similar with other studies. Study done by Aboulian A et al comprised of patients with mean age of 39 years.<sup>10</sup> Another study by Ellis CN also showed median age of 42 years and 38 years in study by Koh et al.<sup>11,16</sup> According to P Sainio most of the fistula in ano occurred at the age of 20-40 years, with mean age at 38.3 years.<sup>17</sup> In our study 51.4% belongs to age of 20-40 years with the median age of 39 years.

Study conducted by Rojanasakul et al concluded median hospital stay of 1.25 days and Shanwani concluded about 2.5 days of hospital stay.<sup>9,18</sup> Hospital stay was somewhat between these two studies and concluding about 2 days in most of the patients. There was a strong correlation between recurrence and length of hospitalization. Patients who were discharged at or before 2 days post-operatively, suffered less from recurrence of disease. There were 32 (91.4%) cases discharged at or before 2 days and only 4 (11.4%) cases suffered from recurrence.

In contrast to, total 3 (8.5%) cases discharged at day 3 post-operatively, 2 (5.7%) cases suffered from recurrence. Fever, wound gaping and wound discharge were more common cause of late discharge (>3 days), in all such cases we put the patients on IV antibiotics and daily wound dressing. Chi-square = 6.169; Degree of freedom= 2; p value= 0.046. There was also strong correlation between wound healing and length of hospitalization. Patients who were discharged at or before 2 days post-operatively, suffered less from wound dehiscence, and good wound healing. There were total 32 (91.4%) cases discharged at or before 2 days and among them only 2 (5.7%) cases suffered from wound dehiscence. 3 (8.5%) cases were discharged on day 3 and 2 (5.7%) cases were suffered from poor wound healing. Chi-square= 10.067; Degree of freedom =2; p value =0.007

Study by Aboulian et al showed that in their study SSI was present in 8% of patients and in our study it was about 11.4%.<sup>10</sup> SSI were managed conservatively by oral antibiotics and sitz bath, followed by wound dressing.

Per rectal bleeding was present in 20% cases in our study and about 4% in study by Mushaya et al.<sup>19</sup> More PR bleed was encounter in our study because we also did lord's dilation after the procedure, which is usually

associated with mucosal injury and PR bleeding. PR bleeding was managed with anal packing with betadine and lignocaine soaked gauze. Packing was removed in evening on same post-operative day. No need of further intervention was needed in any case of PR bleed. Fever was present in 17.1% cases in post-operative day 1 and it was managed with oral paracetamol 500mg SOS. Fever subsided on day 1 and no recurrence occurred thereafter.

All patients were followed up for 3 months and there was no anal incontinence was observed in our study. Similar results were seen in other studies. LIFT surgery has this very important and characteristic advantage over other surgeries performed for fistula in ano. It is because of less invasive surgical approach, and we preserved sphincter in all cases.

Reported recurrence and incontinence range from 0 to 32% and from 0 to 63%, respectively.<sup>20,21</sup> Among the LIFT procedure, the recurrence rate was between 4% to 28% in various studies done with Fistula in ano.<sup>9-11,18</sup> In our study the recurrence rate was 17.14%, which was acceptable and within range. Recurrence cases were treated with either fistulotomy or fistulectomy. Further follow-up of cases having recurrence was beyond the criteria of study.

In our study 88.57% cases had good wound healing, which was due to aseptic procedure, antibiotics, sitz bath, wound dressing, postoperative care and good patient counselling. In other studies it was 68%. Patients with poor wound healing managed with dressing and antibiotics.

## CONCLUSION

Nowadays, surgeries for Fistula in ano are classified as sphincter sacrificing and sphincter sparing surgeries. Sphincter sacrificing surgeries includes Fistulotomy and Fistulectomy. Sphincter sparing surgeries includes Anal fistula plug, Anal advancement flap, Seton usage and LIFT. This study proves that the LIFT procedure gives better outcome in terms of anal incontinence, wound infection, duration of hospital stay and overall morbidity of patients.

## Limitation

Although in our study LIFT surgery is better in outcome of fistula in ano, but the sample size(n=35) is not adequate to establish a strong acceptance. Further studies with much larger sample size or multi-center studies are required to obtain confidence.

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## REFERENCES

1. Malik A, Hall D, Devaney R, Sylvester H, Yalamarthy S. The impact of specialist experience in the surgical management of perianal abscesses. *Int J Surg.* 2011;9(6):475-7.
2. Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in ano. *Br J Surg.* 1976;63(1):1-12.
3. Whiteford MH, Kilkenny J, Hyman N. For the Standards Practice Task Force, American Society of Colon and Rectal Surgeons. Practice parameters for the treatment of perianal abscess and fistula-in-ano. *Dis Colon Rectum.* 2005;48:1337-42.
4. Seow-Choen F, Nicholls RJ. Anal fistula. *Br J Surg.* 1992;79: 197-205.
5. Kodner IJ, Mazor A, Shemesh EI, Fry RD, Fleshman JW, Birnbaum EH. Endorectal advancement flap repair of rectovaginal and other complicated anorectal fistulas. *Surgery.* 1993;114:682-90.
6. Mizrahi N, Wexner SD, Zmora O, et al. Endorectal advancement flap: Are there predictors of failure? *Dis Colon Rectum.* 2002;45:1616-21.
7. Lindsey I, Humphreys MM, Cunningham C, Mortensen NJ, George BD. A randomized, controlled trial of fibrin glue vs. conventional treatment for anal fistula. *Dis Colon Rectum.* 2002;45:1608-15.
8. Williams JG, MacLeod CA, Rothenberger DA, Goldberg SM. Seton treatment of high anal fistulae. *Br J Surg.* 1991;78:1159-61.
9. Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. *Tech Coloproctol.* 2009;13(3):237-40.
10. Aboulian A, Kaji AH, Kumar RR. Early result of ligation of the intersphincteric fistula tract for fistula-in-ano. *Dis Colon Rectum.* 2011;54(3):289-92.
11. Ellis CN. Outcomes with the use of bioprosthetic grafts to reinforce the ligation of the inter sphincteric fistula tract (BioLIFT procedure) for the management of complex anal fistulas. *Dis Colon Rectum.* 2010;53(10):1361-4.
12. Eisenhammer P. Emergency fistulectomy of the acute anorectal crypto glandular intermuscular abscess-fistula-in-ano. *S A J Surg.* 1985;23:1-7.
13. Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. *Ann Chir Gynaecol.* 1984;73(4):219-24.
14. Hamadani A, haigh PI, Liu IL, Abbas MA. Who is at risk for developing chronic anal fistula or recurrent anal sepsis after initial perianal abscess? *Dis Colon Rectum.* 2009;52:217-21.
15. Lunniss PJ, Jenkins PJ, Besser GM, Perry LA, Phillips RK. Gender differences in incidence of idiopathic fistula-in-ano are not explained by circulating sex hormones. *Int J colorectal Dis.* 1995;10:25-8.
16. Koh CE, Lee PJ, Byrne CM, Wright CM, Chew EH. The lift procedure for fistula-in-ano. initial experience at a single tertiary referral center. *Colorectal Dis.* 2011;13(5):19.
17. Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. *Ann Chir Gynaecol.* 1984;73(4):219-24.
18. 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(1):39-42.
19. Mushaya C, Bartlett L, Schulze B, Ho YH. Ligation of intersphincteric fistula tract compared with advancement flap for complex anorectal fistulas requiring initial seton drainage. *Am J Surg.* 2012;204(3):283-9.
20. Aguilar J, Darey CS, Le CT, Lowry AC, Rothenberger DA. Patient satisfaction after surgical treatment for fistula- in-ano. *Dis Colon Rectum.* 2000;43:1206-12.
21. Abcarian AM, Estrada JJ, Park J. Ligation of intersphincteric fistula tract: early results of a pilot study. *Dis Colon Rectum.* 2012;55:778-82.

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