



Observational Study of Effectiveness of Ligation of Intersphincteric Fistula Tract (LIFT) in Perianal Fistulas Operated at AIIMS Patna

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Abstract

Background: Perianal fistula or fistula-in-ano, is a chronic abnormal communication, usually lined by granulation tissue, which runs outwards from the anorectal lumen (the internal opening) to an external opening on the skin of the perineum and gluteal region. Perianal fistula develops as a result of anorectal sepsis. Ligation of intersphincteric fistula tract (LIFT) is a new sphincter saving method with good result in the management of fistula. The aim of study was to evaluate the effectiveness and functional outcomes of the LIFT patients operated at AIIMS Patna.

Methods: This prospective study includes 20 patients who were operated for perianal fistulas at AIIMS Patna during the period of October 2018 to September 2019. Patients of all ages with or without history of recurrence are included. Patients with fistulas due to crohn's disease, anal cancer and tuberculosis were excluded. A perianal exam with detailed history, clinical presentation, per rectal examination and supportive imaging studies with pre and post operative status were done for all cases.

Results: In this study most of the patients were male and few of them are recurrent fistula with perianal discharge. All the 20 patients with perianal fistula underwent Ligation of intersphincteric fistula tract (LIFT). Patients were followed for a period of 3 months. Most of the cases healed completely within 2-4 weeks (90%), few cases took 6 weeks for healing (10%). Recurrence of fistula occurs in 5 cases (20%). In recurrent fistula re-recurrence occurs in 2 cases (40%).

Conclusions: The LIFT procedure is highly safe and effective means of treatment for perianal fistula with no risk of incontinence, less postoperative pain score and also better for recurrent fistulas.

Keywords: Perianal fistula, Anorectal sepsis, LIFT, Recurrence.

Introduction

The anal canal commences at the level where the rectum passes through the pelvic diaphragm at the anorectal ring and ends at the anal verge and is approximately 4cm in length. The muscular

junction between the rectum and anal canal can be felt with the finger as a thickened ridge – the anorectal ‘bundle’ or ‘ring’.

The external anal sphincter-- forms the bulk of the anal sphincter complex. The external sphincter

is composed of striated voluntary muscle supplied by the pudendal nerve. **The internal anal sphincter** -- is the thickened (2–5 mm) distal continuation of the circular muscle coat of the

rectum. The internal sphincter is composed of circular, non-striated involuntary muscle supplied by autonomic nerves.

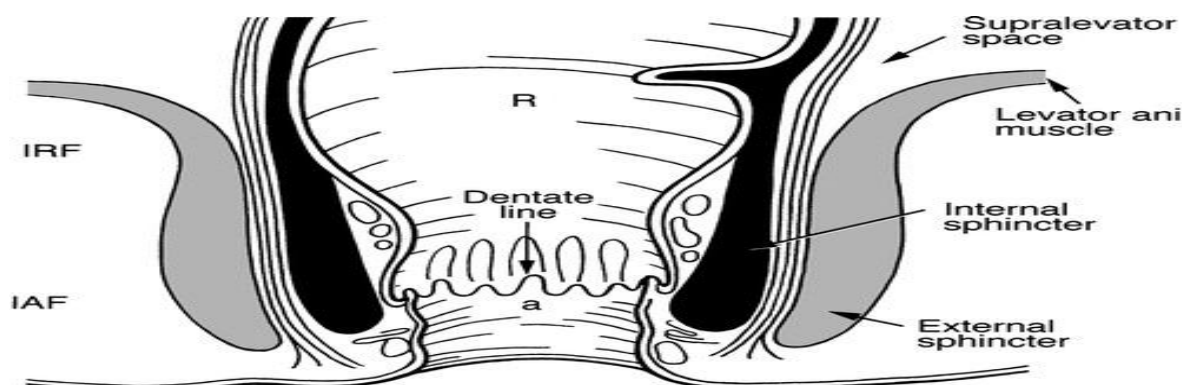


Fig I: Line diagram shows the normal anatomy of the perianal region in the coronal plane. a = anal canal, IAF = ischioanal fossa, IRF = ischiorectal fossa, R = rectum.

Perianal fistula is defined as an epithelized abnormal tract connecting two surfaces; usually the rectal mucosa and perianal skin¹. It is a benign treatable lesion of the rectum and the anal canal. Crypto glandular infection accounts for about ninety percent of the cases. Majority of the infection are acute, and a minority contributed by chronic low grade infection. The pathogenesis has been attributed to the bursting open of an acute or inadequate treated ano rectal abscess into the perianal skin. Infection developed in an anal gland lying within the sub mucosa of the anal canal is the direct cause of most of the fistula in ano². It can be associated with a number of conditions including tuberculosis, Crohn's disease and malignancies. There are various classifications of fistula in ano but the simplest and the most widely used one is the Park's classification:- based on relationship of fistulous tract to the anal sphincters³. 4 types-• Intersphincteric • Trans sphincteric • Supra Sphincteric • Extra Sphincteric .

Other ways of classification given by American Gastroenterology Association as simple and complex fistulas. The simple fistulas originate below the dentate line (low type) and involve small part of sphincter complex. Complex fistulas originate above the dentate line (high type) and

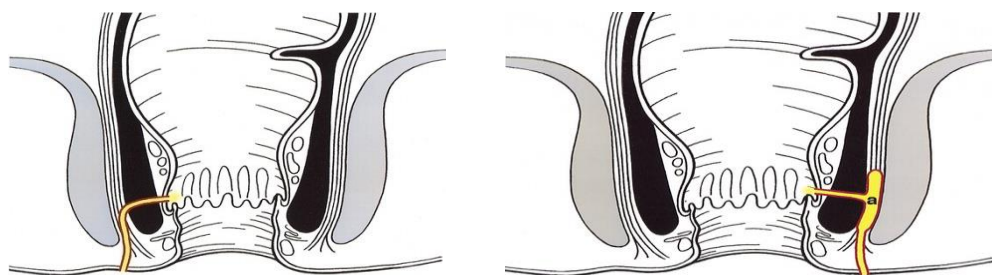
involve significant part of sphincter mechanism. High trans sphincteric , supra sphincteric fistula with multiple tract, anterior fistula in women, recurrent fistula, fistula in patients with preexisting incontinence and fistulas associated with local irradiation, cancer and inflammatory bowel disease are classified as complex fistulas⁴.

The MR imaging-based classification the St James's University Hospital classification⁵, consists of five grades and relates the Parks surgical classification to anatomy seen at MR imaging in both axial and coronal plane. It deals not only with the demonstration of the primary fistulous track but also with secondary ramifications and associated abscesses. **Grade 1: Simple Linear Intersphincteric Fistula.**—In a simple linear intersphincteric fistula, the fistulous track extends from the skin of the perineum or natal cleft to the anal canal, and the ischioanal and ischioanal fossae are clear. **Grade 2: Intersphincteric Fistula with Abscess or Secondary Track**—Intersphincteric fistulas with an abscess or secondary track are also bounded by the external sphincter. **Grade 3: Trans-sphincteric Fistula**—Instead of tracking down the intersphincteric plane to the skin, the trans-sphincteric fistula pierces through both layers of the sphincter complex and then arcs down to the

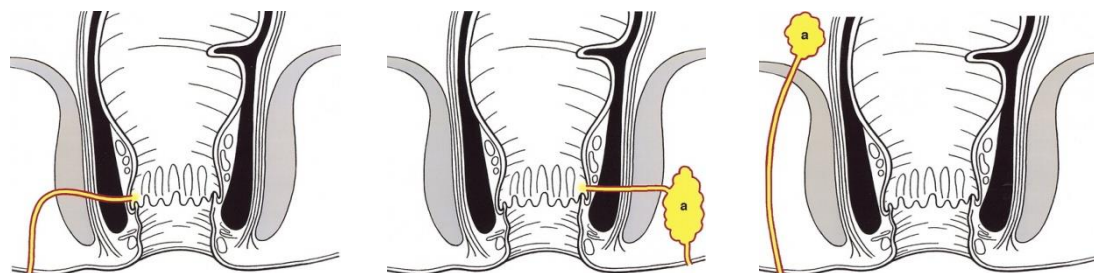
skin through the ischioanal and ischioanal fossae. **Grade 4: Trans-sphincteric Fistula with Abscess or Secondary Track within the Ischioanal Fossa.**—A trans-sphincteric fistula can be complicated by sepsis in the ischioanal or ischioanal fossa. Such an abscess may manifest as an expansion along the primary track or as a

structure distorting or filling the ischioanal fossa. **Grade 5: Supralelevator and Translevator Disease.**—In rare cases, perianal fistulous disease extends above the insertion of the levator ani muscle. These fistulas pose problems for management because further assessment is needed to detect pelvic sepsis.

FIG II: Showing different grades of perianal fistula on the basis of imaging



Grade 1: Simple Linear Intersphincteric Fistula Grade 2: Intersphincteric Fistula with Abscess or Secondary Track



**Grade 3: Trans-sphincteric Fistula Grade 4: Trans-sphincteric Fistula with Abscess
Grade 5: Supralelevator and Translevator Disease**

The surgical treatment of anal fistulas has been a challenge for both the surgeons and patients. For evaluation of anal fistula an accurate preoperative assessment of the anatomy of an anal fistula is very important. Five essential points of a clinical examination of an anal fistula: (1) location of the internal opening (2) location of the external opening (3) location of the primary track (4) location of any secondary track (5) determination of the presence or absence of underlying disease.

Fistulography: provides only very limited information on fistula anatomy. **CT** is inferior to **MRI** in the assessment of anal fistula. **MRI**—Gold Standard, and an accurate method of imaging anal fistula. MRI should be considered in any primary fistula deemed after clinical or endosonographic assessment to be complex. It

should also be considered in patients with a recurrent anal fistula. **Anal endosonography** (ultrasound) may be the firstline investigation for patients with an anal fistula that is suspected to be complex. There are variable surgical procedures for the management of anal fistula with variable risk of incontinence and recurrence⁶⁻¹⁰.

• **Fistulotomy** • **Fistulectomy** • **Setons Loose & Tight Setons** • **Fibrin glue** • **Fibrin plug** • **Advancement Flaps**. **NEWER MODALITIES OF TREATMENT:**—• **Ligation of Intersphincteric Fistula tract (LIFT)** • **VAAFT: Video Assisted Anal Fistula Treatment** • **STEM CELL THERAPY** -expanded adipose derived stem cells • **FISTULA LASER CLOSURE-(FiLaC)** radial emitting laser probe • **FISTULA CLIPS**

LIFT (Ligation of Intersphincteric Fistula tract) is a recent, minimally invasive, sphincter saving procedure which is easy to learn and perform, and can be used on recurrent cases. LIFT is the most promising surgical technique which is based on secure closure of the internal opening and removal of the infected crypto glandular tissue through inter sphincteric approach. In this procedure, the intersphincteric space is opened via a small incision made in the intersphincteric groove and the fistula tract is identified as it crosses from the internal to the external sphincter. It is clearly defined and ligated with a suture. The technique disconnects the internal and external openings, thus allowing for fibrosis of the tract without any damage to the anal sphincter. The procedure was developed by Thai colorectal surgeon Arun Rojanasakul, colorectal division, Department of Surgery, Chulalongkorn University in Bangkok, Thailand and showed a success rate of 94% in the treatment of fistula in ano without any incontinence¹¹.

Ligation of the intersphincteric fistula tract (LIFT) procedure is a recent, minimally invasive, sphincter saving procedure which is easy to learn and perform, and can be used on recurrent cases¹². This procedure is a simple, safe with high and rapid healing rate. It is now being widely adopted because of early satisfactory results. The aim of this observational study was to evaluate the efficiency of LIFT technique for perianal fistulas operated at AIIMS Patna.

Methods

The prospective study was conducted between October 2018 to September 2019 in department of General Surgery at AIIMS Patna. It includes 20 patients of either sex admitted electively from outpatient department who were underwent Ligation of intersphincteric fistula tract (LIFT) for perianal fistulas. There was a pre formed performa for every patients with demographics, detailed clinical history, per rectal examination with

supportive imaging studies. It also includes site of fistula, number of external and internal opening, position and length of fistula with or without recurrent fistula. Duration of stay in hospital, type and duration of analgesia used, VAS (Visual Analogue Scale) Score, post operative complications if any and healing time of fistula was also maintained for each patients underwent LIFT. Patients presenting with fistulas from other cause such as Crohn's disease, Tuberculosis and Malignancy were excluded. The patients were followed for three months period. All patients were admitted one or two days before surgery and were informed about the technique to be used with proper consent. The procedure was done under regional anesthesia in lithotomy position.

This technique includes the following components:

- Most of the fistula tracts can be identified by palpating an internal opening by rectal examination or by injection of saline and hydrogen peroxide through the external opening.
- Inter sphincteric plane was entered via curvilinear incision corresponding to the site of the internal opening at inter sphincteric groove which had the characteristics of a cord like structure identified by palpation. Dissect around the tract using a narrow and small angle clamp.
- Confirm the tract either by injecting saline and hydrogen peroxide or passing a probe through the external opening. Secure suture ligation or trans fixing of inter sphincteric fistula tract at both sides using 2-0 absorbable suture near to the internal opening (closer to internal sphincter) and another suture at the external sphincter defect.
- Remove the fistula tract by excising in between the ligation.
- Make sure that tract is sutured well by injecting saline and as well as by inserting a probe at both openings (internal and external opening).
- Curette well the fistula tract from external opening.
- Closure of inter sphincteric wound with absorbable 3-0 simple interrupted single layer. The fistula tract was sent for histopathological examination.

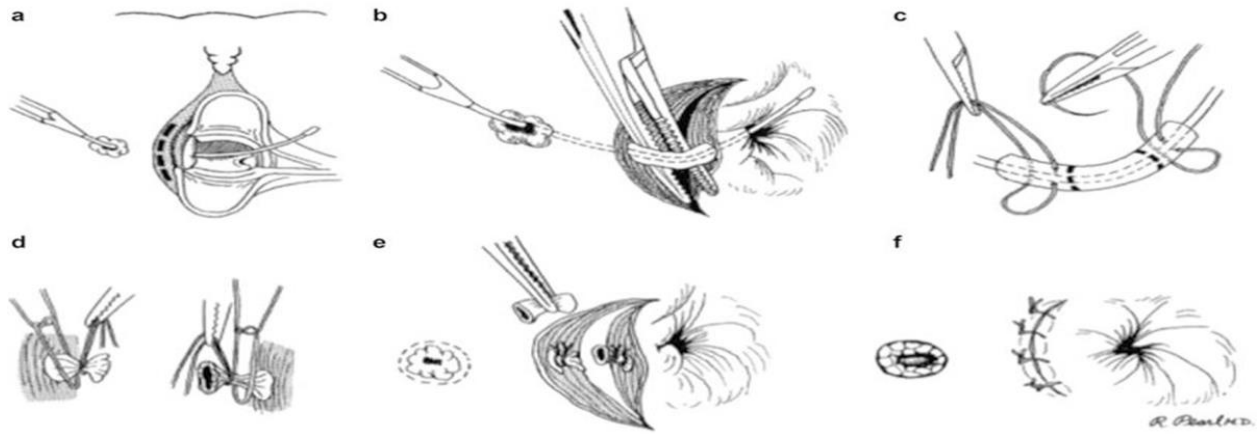


Fig III: Illustrated view showing methods of ligation of intersphincteric fistula tract (LIFT)

All the patients were put on intravenous broad-spectrum antibiotics and analgesics for one or two days and keep records of VAS (Visual Analogue Scale) Score for post operative days. The patients were discharged after one or two days after operation with advised of laxatives and sitz bath 2-3 times a day for 5 – 7 days. After hospital discharge the patients were seen one week after the initial procedure. At the first visit they were advised to maintain cleanliness and perianal hygiene with or without sitz bath depending on wound status. The second consultation was 3 weeks after the first visit and the follow up was at three weeks thereafter until complete wound healing had occurred (follow-up up to 3 months). At each visit the patients were asked about clinical continence status. The intersphincteric incision wound was examined, the site of the previous internal and external opening was palpated and sphincteric tone was assessed. After healing the patient was asked to return to the work. The time to return to the work after surgery was noted. All patients with documented healed fistula were enquired of possible recurrence. Pre and post operative anal function was assessed during the 3-month follow-up period. Successful clinical healing of the fistula was defined as complete wound healing and closure of all external openings in combination with the absence of symptoms at any time during follow-up.

Results

Total of 20 patients who presented with perianal fistulas and underwent ligation of intersphincteric fistula tract (LIFT) were studied. The patients consisted of 18males (90%) and 02 females (10%). The frequency of perianal fistula is much greater in males as compared to females. The ages of the patients ranged from 19 years to 60 years. The time from the period of onset of complains with perianal fistula to diagnose ranged from 02 to 24 months with mean of 10 months.

Table 1: Sex wise distribution of patients

Sex	No. of cases	Percentage
Male	18	90
Female	02	10

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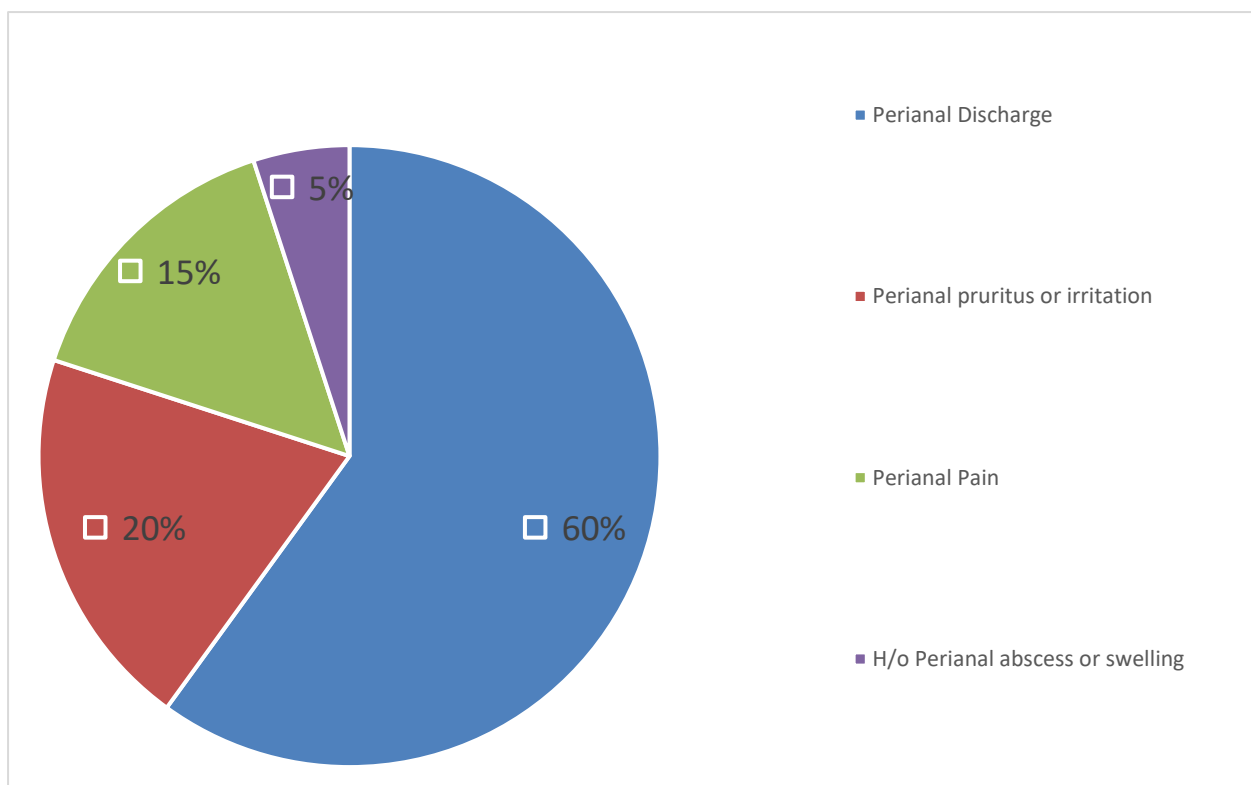
frequency of perianal fistulas is much greater in males as compared to females.

Table 2: Age distribution of the patients

Age (years)	No. of cases	Percentage
15 - 25	03	15
26 - 35	08	40
36 - 45	04	20
46 - 55	03	15
>56	02	10

The maximum incidences of perianal fistulas occurs in third and fourth decades.

Fig: IV: Mode of presentation (in percentage)



In this study maximum number of patients presented with the complaints of perianal discharge followed by perianal pruritus or

irritation. Patients with H/o perianal abscess or swelling presented with least numbers.

Table 3: No. of external opening

Number of external opening	No. of cases	Percentage
1	16	80
2	2	10
>2	2	10

Perianal fistulas with a single external opening is the commonest findings in this study group.

Table 4: Situation of external opening

Situation	No. of cases	Percentage
Anterior	4	20
Posterior	16	80

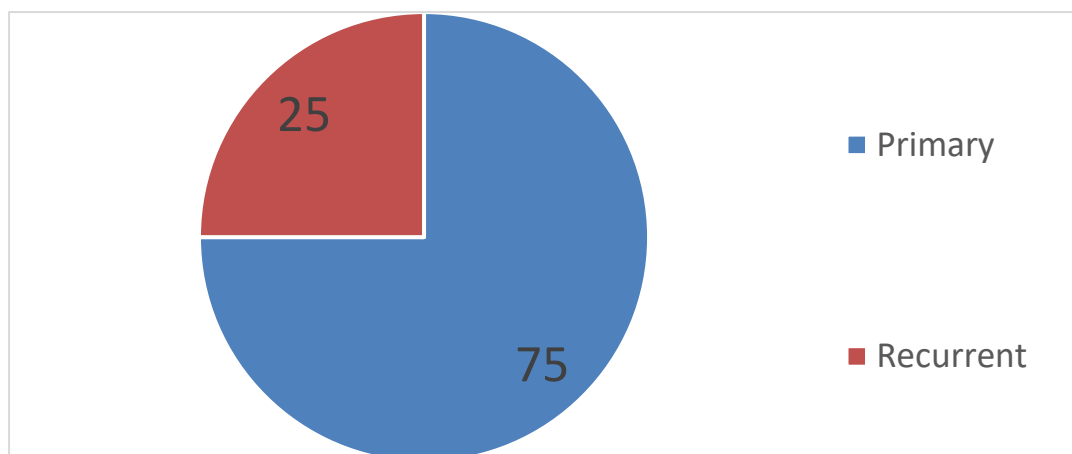
Posterior external opening was more common than anterior .

Table 5: Level of fistula

Level	No. of cases	Percentage
Low	12	60
High	8	40

In this study, 60% of the patients had lower level fistula and another 40% of the patients had higher level fistula (internal opening situated above the ano rectal ring)

Fig. V: Type of fistula (In percentage)



Primary fistulas cases were in maximum number as compared to recurrent fistulas cases, but there was a clear cut findings that recurrent fistulas has more chances of re recurrence.

In this study most common type of fistulas are of intersphincteric type which is as according to Park`s classification are also of most common group, shown as below in fig. III

FIG VI: Fistula type according to Park`s classification (No. of cases)

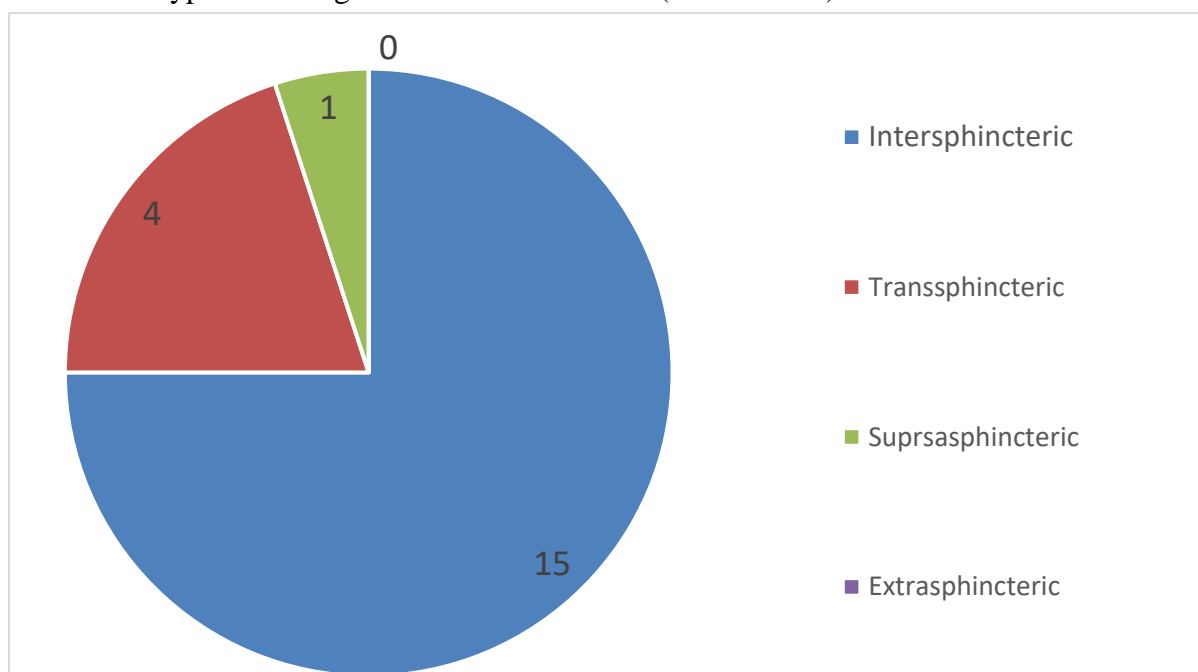


Table 6: No. of days Antibiotics and Analgesics used

No. of days	No. of cases	Percentage
1	5	25
2	10	50
>2	5	25

In this study the maximum use of analgesics and antibiotics was upto 2nd postoperative day.

Table 07: VAS Score

VAS Score	Post Op Day 0		Post Op Day 1		Post Op Day 2	
	No. of Patients	Percentage	No. of Patients	Percentage	No. of Patients	Percentage
0 (No pain)	00	00	02	10	16	80
1 (Mild pain)	00	00	08	40	03	15
2 (Mild ,annoying)	03	15	09	45	01	05
3 (Moderate, annoying)	13	65	01	05	00	00
4 (Nagging, uncomfortable)	04	20	00	00	00	00

According to VAS Score maximum numbers of patients (80%) felts no pain at post operative day two.

Table 08: Complete Healing time

Healing time	No. of patients	Percentage
Within 4 weeks	16	89
Upto 6 weeks	02	11

In this study the patients were followed for a period of 3 months. Sixteen fistulas healed within 4 weeks whereas two fistulas took around 6 weeks for healing.

Table 09: Postoperative complications

Complications	No. of patients	Percentage
Bleeding	00	00
Infection	02	10
Anal incontinence	00	00
Recurrence	04	20
Death	00	00

In this study, complete healing occurred in 18 cases (89%) and recurrence occurred in 04 cases (20%), with 02 patients had infection postoperatively (10%).

Table 10: Comparative recurrence in Primary and Recurrent fistula

Type of fistula	Total no. of cases	Recurrence	Percentage
Primary	15	03	20
Recurrent	05	02	40

In this study recurrence of primary fistulas was 20% and recurrent fistulas had re-recurrence in 40%. So it is very challenging to manage recurrent fistulas.

Discussion

Perianal fistula is one of the most common benign anal conditions in daily surgical practice. Fistula-in-ano is defined as an epithelized abnormal tract connecting two surfaces; usually the rectal mucosa and perianal skin. Infection developed in an anal gland lying within the sub mucosa of the anal canal is the direct cause of most of the fistula in ano. Surgical management in any case of

perianal fistula aims at eradication of sepsis while maintaining continence¹³. Recently, several new sphincter-preserving surgical techniques have been described for the treatment of complex anal fistulas, with the goal of preserving sphincter integrity and optimizing the functional outcome.¹⁴⁻¹⁶ Ligation of intersphincteric fistula tract (LIFT) is a new sphincter-preserving technique for the treatment of perianal fistulas that was described by Rojanasakul et al with an initial healing rate of 94.4%. Subsequent studies with longer follow-up have shown lower success rates, ranging from 39.8% to 92%, and recurrence rates of 18% to 28%¹⁷⁻²⁰.

In this study an initial healing rate was 89% and recurrence rate was 20% which is as comparable as to previous studies. The criteria determining success or failure of surgery are incidence of recurrence or incontinence²¹.

The commonest age group of presentation was third and fourth decade of life, Khalid et al observed a high incidence in third and fourth decades which is comparable to present study²².

Most of the patients in our study that is 18 patients (90%) were male and 02 patients were female (10%). Buchanan G et al (in their study 17 patients were male and 03 were females having fistula in ano), which is similar to Saif et al (in their study 41 males and 04 females had fistula in ano) and these results show that male approximately 9-10 folds at high risk of developing fistula in ano as compared to females^{23,24}. This proves that males have more intra muscular glands than females and they are more ramifying and cystic.

Most common symptom was perianal discharge (60%) followed by perianal irritation (20%). Pain and swelling were other presentations in some patients.

In present study majority of the cases the fistulas were found posteriorly (80%). In another study of 199 cases, in majority of the patients, external opening of fistulas was found posteriorly²⁵. In this study our experience showed that LIFT technique can be preferred treatment option for fistula in ano with preventing the recurrence and preserving the incontinence.

In the current study, the median healing time for the LIFT was 4 weeks, which was similar to previous studies. Since Rojanasakul et al reported a mean healing time of 4 weeks for the LIFT technique, several studies have shown a wide range of healing time from 26.6 days to 8 weeks²⁶⁻²⁹. The median healing time in the Ooi et al's study in which the LIFT technique was used for complex cryptoglandular anal fistulas was 6 weeks. A recent review, including 18 studies between 2003 and 2009, suggested that the mean

healing time was 5.5 weeks for the LIFT technique.

Two prospective randomized trials suggested that LIFT has the advantage of less postoperative pain compared with mucosal advancement flap. Bleier et al³⁰ reported a total of 39 patients who underwent LIFT during a 17-month period; only 1 patient (2.6%) presented with persistent anal pain, which necessitated an examination under anesthesia and was unremarkable. In our study there were no pain postoperatively for most of the patients (80%) at POD 2 and VAS Score was zero, which were supported by previous studies.

LIFT techniques were effective sphincter conserving approach for the treatment of perianal fistulas. LIFT has gained popularity due to its high success rate and preservation of continence. Most subsequent studies have shown no postoperative impairment of continence. In a systematic review that included 29 articles, 183 patients were formally assessed for continence, of whom only 11 (6%) had a minor disturbance.²⁴ Other reviews also suggested that LIFT is a feasible and effective surgical technique with a low impact on fecal continence³¹⁻³³.

In the present study, all patients underwent ligation of intersphincteric fistula tract (LIFT) procedure for perianal fistula and achieved 89% cure rate with only 04 (20%) cases of recurrence. No anal incontinence was noted in our study. Huda et al achieved 100% success rate in fistula closure after the procedure and no patient had loss of continence³⁴. Makhlof et al, in a study of 30 patients who underwent LIFT showed complete cure rate of 90% with recurrence in 03 patients³⁵. There were also no cases of anal incontinence in their study.

LIFT procedures were safe in the current study. We observed only two patients with postoperative complication of wound infection (10%) and were treated successfully with no case of new onset or worsening incontinence. In a systematic review of 435 patients, only 8 (1.8%) had postoperative complications, as follows: purulent discharge, superficial persistent wound dehiscence, anal

fissure, persistent anal pain, thrombosed hemorrhoids, and secondary bleeding³⁶.

In this study use of analgesics and antibiotics were very minimal and limited, 05 cases (25%) needs for one day and ten patients (50%) for two day and only 05 cases needs beyond that. Regarding complex fistulas, a clinical consensus about the best operation is still lacking. No single technique has been shown to be suitable for all cases. Furthermore, recurrence rates after surgery seem to be high although studies with proper follow-up are scarce. Therefore, complex anal fistulas management remains a challenge for surgeons worldwide²⁵. The ligation of the intersphincteric fistula tract (LIFT) procedure has been described as the most recent innovation to sphincter-preserving surgery for the management of complex anal fistulas. In this study recurrence of primary fistulas was 20% and recurrent fistulas had re-recurrence in 40%, so LIFT is also better for recurrent and complex fistulas which were supported by previous studies.

The results obtained in this study demonstrates that LIFT is a very safe and effective technique. Considering that one of the main expected advantages of the technique is low or zero possibility of an impaired sphincter function and less recurrence with minimal pain and also suitable for complex and recurrent fistulas.

Nevertheless, there were some limitations to this study. The main limitation was the length of follow-up, which was only 3 months. It has been suggested that the recurrence rate of complex anal fistulas increases over time with longer follow-up³⁷.

Conclusion

The study supports that the ligation of intersphincteric fistula tract (LIFT) is simple and safe procedures, which have high healing rate with no risk of incontinence, a lower early postoperative pain score and it is also better for recurrent fistulas.

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