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## A clinical study of laser fistulectomy for high and low anal fistula in ANO

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### Abstract

#### Aims

1. To find the age and sex incidence of fistula in ano
2. To study the various modes of clinical presentation of fistula in ano
3. To evaluate short term and long-term recovery with post-operative pain, persistence of fistula, anal incontinence and bleeding
4. To study the efficacy of laser fistulectomy

**Materials and Methodology:** This is a prospective observational study in Shri Chhatrapati Shivaji Maharaj Sarvopchar Rughalay, Solapur. Total 30 patients who will be treated for fistula in ano at our tertiary hospital will be analyzed in this study. Patient will undergo routine hematological and radiological investigations. Patients will be operated for laser fistulectomy. Post-operative complications like pain, discharge, fecal incontinence, length of hospital stay, recurrence will be analyzed. Patients will be followed for a period of three months.

#### Results

1. **Age distribution:** Majority of the patients belonged to the age group of 30-39 years (30%). Mean age was 40.8 with standard deviation of 13.01.
2. **Gender distribution:** 80% patients were males as opposed to 20% females.
3. **Type of fistula:** Patients had extra-sphincteric fistula whereas 23% had inter-sphincteric fistula; 13% had trans-sphincteric fistula and 20% females concluding that fistula in ano is more common in males.
4. **Co-morbidities:** Hypertension was the most common co-morbidity encountered, followed by Diabetes, Coronary artery disease.
5. **Clinical presentation:** Most common presenting complaints were discharge (38%) followed by pain (34%) and itching (14%) followed by swelling (7%).
6. **History of previous surgery:** 10% patients had a history of surgery for perianal abscess, were associated trans-sphincteric type of fistula in ano. 6% patients underwent fistulotomy for extra-sphincteric fistula.
7. **Hospital stay:** 56% patients were discharged on Day 2 post-operatively, followed by 30% patients on day 4 and 5 and 13% on more than day 5.
8. **Post-operative complications:** Post-operatively 63% patients experienced pain, followed by 26.6% of the patients who discharge and 13.3% had had recurrence in a period of 3 months.

**Conclusion:** Ideal surgical treatment for anal fistula should aim to eradicate sepsis and promote healing of the tract, whilst preserving the sphincters and the mechanism of continence. For the simple and most distal fistulae, conventional surgical options such as laying open of the fistula tract seem to be relatively safe and therefore, well accepted in clinical practice. However, for the more complex fistulae where a significant proportion of the anal sphincter is involved, great concern remains about damaging the sphincter and subsequent poor functional outcomes, which is quite inevitable following conventional surgical treatment. For this reason, over the last two decades, many sphincter-preserving procedures for the treatment of anal fistula have been introduced with the common goal of trying to minimize the injury to the anal sphincters and preserving optimal function. FiLaC uses a laser probe which is easier to insert independently as well as in patients with an indwelling seton, assisting in the maturation of the primary tract by inducing fibrotic reshaping of the fistula lumen. FiLaC is essentially a "blind" procedure hence it has the potential of missing secondary tracts which may lead to recurrences. Long-term randomized control trials are necessary to determine the success rate of this procedure.

**Keywords:** Fistula in ano, Fistula-tract Laser Closure (FiLaC™), fistulectomy

### Introduction

Fistula, literally means reed, pipe or flute in Latin. Fistula in ano is an abnormal communication, lined by granulation tissue between the anal canal and the skin [1].

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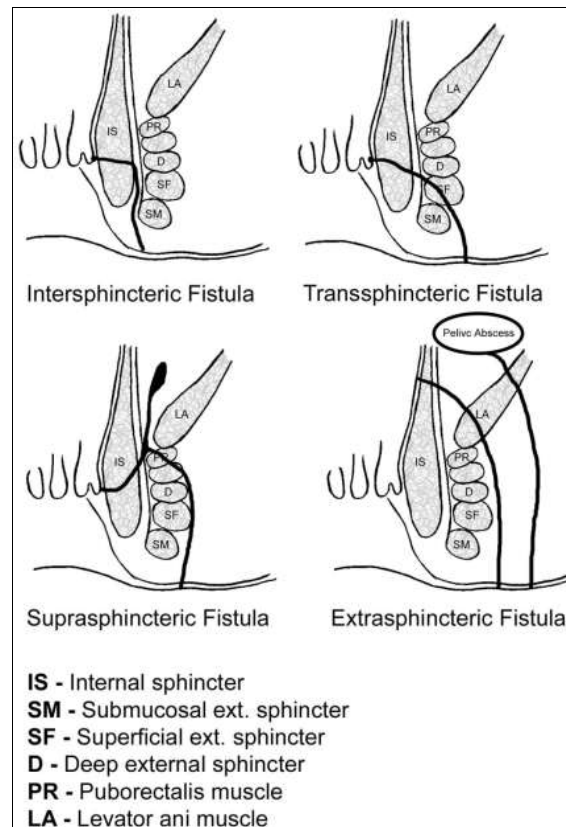
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Most commonly these fistulae develop following an anal abscess secondary to infection of an anal gland. It is the most common cause of seropurulent discharge in the perianal region. Anal glands are present in the sub epithelial layer of the anal canal. The duct of each gland opens into the anal crypt (Morgagni's crypt). If the glands' outlet is blocked due to fecal matter, foreign bodies, or trauma, stasis, infection, and abscess develops, which will eventually drain on the skin surface. Abscess can recur if the fistula seals off, causing an accumulation of pus. A fistula may cause pain, discharge either purulent or sero-sanguinous, pruritus ani, diarrhoea, skin excoriation, in severe cases it may lead to septicemia. Some patients may present with an active infection that necessitates antibiotic treatment and clearance prior to definitive treatment. Fistula in ano have been linked to a variety of diseases, including inflammatory bowel disease, diverticulitis, tuberculosis, HIV infection [2]. They may be associated with radiation therapy or steroid therapy. These patients may exhibit changes in bowel habits, abdominal pain, and weight loss. It is mandatory to evaluate for these diseases, prior to surgical intervention. In 1961, Parks demonstrated infected anal glands and paved way for pathophysiology [3]. Surgery for fistula in ano is considered necessary for the decompression of acute abscesses and the prevention of

infection spread. Surgery for fistula in ano is performed as an elective procedure the treatment of anal fistulas is still challenging as it necessitates both continence and radical surgery to prevent recurrence. Because of the anatomical location of the disease, the recurrence rate, the potential risk of septic complications, and the risk of post-operative fecal incontinence, treating anal fistula is a difficult task. The primary goal of surgery is to heal the fistula and reduce disease morbidity. There are numerous surgical procedures, including fistulectomy, fistulotomy, seton technique, and endorectal used for advancement flap, LIFT, Video Assisted Anal Fistula Treatment, fibrin glue and fibrinplug. Eradication of sepsis and maintenance of continence are two significant obstacles to surgical success. As a result, optimal decision should be made to select an appropriate surgical technique for the treatment of fistula in ano.

Fistula-tract Laser Closure (FiLaC) is a novel sphincter-saving technique in the field of fistula surgery. The FiLaC technique, as previously described, employs a radial-emitting laser fiber. The FiLaC method uses a photothermal effect to destroy both the crypt gland and the additional epithelial layer of the fistula track at the same time, obliterating both the internal and external fistula orifices.



### Aims and Objectives

1. To find the age and sex incidence of fistula in ano
2. To study the various modes of clinical presentation of fistula in ano
3. To evaluate short term and long-term recovery with post-operative pain, persistence of fistula, anal incontinence and bleeding
4. To study the efficacy of laser fistulectomy

### Materials and Methods

**Type of Study:** Prospective study

**Period of study:** December 2020 to December 2022

**Place of Study:** Dr Vaishampayan Memorial Government Medical College and SCSMSR, Solapur

**Sample Size:** 30 Cases

**This study had been approved by the Institutional Ethical Committee**

### Plan of Study

Patients who will be treated for fistula in ano at the Shri Chatrapati Shivaji Maharaj Sarvopchar Rungalay, Solapur a tertiary hospital will be analyzed in this study. Demographic data like age, sex, body mass index, details regarding fistula type, history of previous treatment will be recorded.

Hematological investigations like Complete blood count, HIV, HBsAg, HCV will be obtained. All patients will be evaluated clinically, MR fistulogram will be obtained.

Pre-operatively, all patients will undergo bowel preparation and receive pre-operative antibiotic Inj Cefotaxim 1gm intravenously. Spinal anesthesia will be used for all patients.

Post-operatively patients will receive Inj Cefotaxim 1gm intravenously with Inj Metronidazole 100cc intravenously 8hrly. Analgesics will be administered as per individual patient requirement. Stool softeners and sitz bath with KMnO4 will be advised. Post-operative complications like pain, discharge, fecal incontinence, length of hospital stay, recurrence will be analyzed. Patients will be followed for a period of three months.



This novel sphincter-saving technique uses an emitting laser probe FiLaC™ a diode laser by Lasotronix. The diode laser emits 100-120J/cm energy at wavelength of 1470nm with the help of a radial fibre at 8Watt.

**Inclusion criteria**

- Age > 18years
- High and low fistulas
- Male and female patients
- Recurrent fistulas

**Exclusion criteria**

- Age < 18years
- Medical and surgical contraindications to spinal anesthesia
- Fissure in ano
- Tuberculosis
- HIV
- Pregnancy

**Results**

**Table 1:** Age distribution

Age in years	Frequency	Percentage
20-29	7	23.3
30-39	9	30
40-49	7	23.3
50-59	3	0.1
60-69	4	0.13

Majority of the patients belonged to the age group of 30-39 years (30%) Mean age was 40.8 with standard deviation of 13.01

**Table 2:** Gender distribution

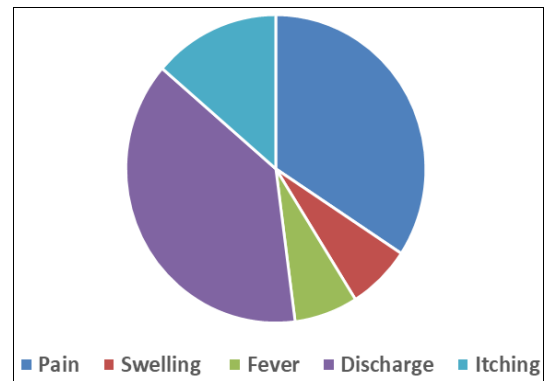
Gender	Frequency	Percentage
Male	24	80
Female	6	20

Males (80%) outnumbered females (20%).

**Table 3:** Co-morbidities

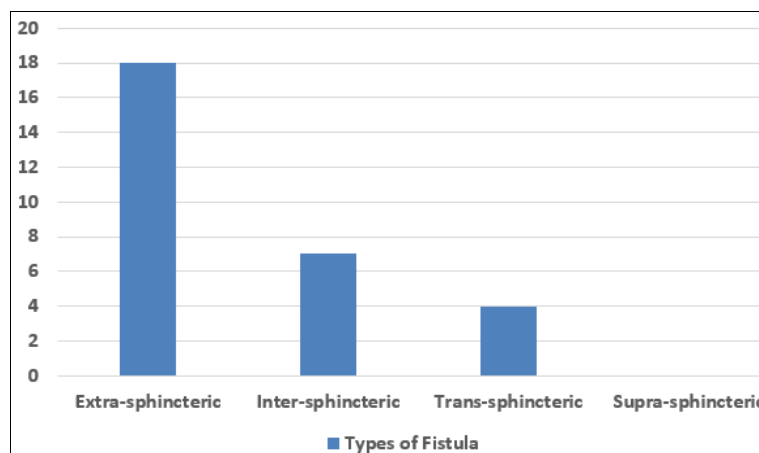
Diseases	Frequency	Percentage
Hypertension	3	0.1
Diabetes mellitus	2	0.06
Coronary artery disease	2	0.06
Others	2	0.06

From the table it is evident that Hypertension was the most common co-morbidity encountered



**Fig 1:** Clinical presentation

Most common presenting complaints were discharge (38%) followed by pain (34%) and itching (14%) followed by swelling (7%).



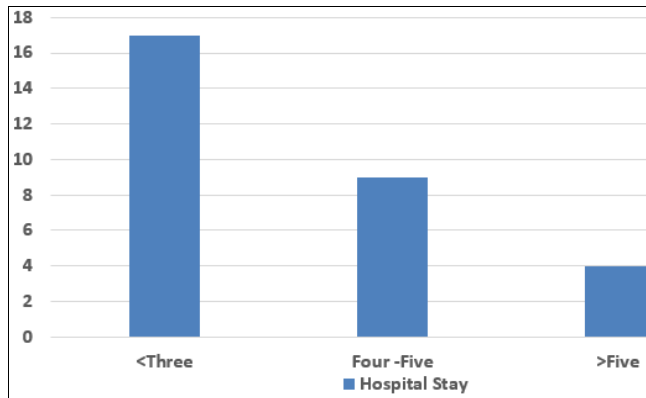
**Fig 2:** Types of Fistula

60% Patients had extra-sphincteric fistula whereas 23% had inter-sphincteric fistula; 13% had trans-sphincteric fistula.

**Table 4:** History of previous surgery

Surgery	Frequency	Fistula type
Perianal abscess	3	Trans-sphincteric
Fistulotomy	2	Simple

10% patients had a history of surgery for perianal abscess, were associated tran-sphincteric type of fistula in ano. 6% patients underwent fistulotomy for simple fistula.



**Fig 3:** Hospital stay

56% patients were discharged on Day 2 post-operatively, followed by 30% patients on day 4 and 5 and 13% on more than day 5.

**Table 5:** Post-operative complications

	Frequency	Percentage
Pain	19	63
Discharge	8	26.6
Anal incontinence	0	0
Recurrence	4	13.3

Post-operatively 63% patients experienced pain, followed by 26.6% patients had discharge and 13.3% had recurrence in a period of 3 months. There was no incidence of anal incontinence.

## Discussion

The aim of treating fistula by minimal invasive techniques is to prevent anal incontinence irrespective of the extent of the sphincters involved. As per ASCRS guidelines the principle of minimal invasive procedure for fistula in ano is obliteration of internal opening along with epithelialized fistula tract without sphincter division<sup>[8]</sup>. Hence, the goal in treating fistula is to eliminate the septic foci and any associated epithelialized tracts with the least amount of functional derangement. For most appropriate, treatment, the etiology should be well defined. Healing rates may vary by the presence of Crohn's disease or any other associated etiology. While treating fistula, it is very important for a surgeon to know the anatomy of anal canal and judge accordingly, as anatomy truly beget semiology. Nonspecific infections attribute to obstruction of a crypto glandular gland. The anal crypts reside at the base of columns of Morgagni and are 10-12 in number. Approximately half of all crypts have associated anal glands. About 80% of these anal glands are located in the submucosa. Role of anal glands is to lubricate the anal canal for smooth passage of stool. If these

glands become clogged with faecal matter and get infected by bacteria, anal abscesses are formed. These abscesses become fistula. Abscess represent an acute stage where as fistula represents a chronic pathology.

As per ASCRS guidelines the principle of minimal invasive procedure for fistula in ano is obliteration of internal opening along with epithelialized fistula tract without sphincter division.

In a study done by Wilhelm A *et al*, overall median age 46 years; range 17-82 years. Ozurk *et al* described a study with a median age of 41 years, range: 23-83 years<sup>[7]</sup>. In our study, majority of the patients belonged to the age group of 30-39 years (30%) Mean age was 40.8 with standard deviation of 13.01. In a study by Wilhelm, A *et al* males were 62.2% vs. female: 68.5%, in our study 80% patients were males as opposed to 20% females. Ozurk *et al* described a study in which 37 male (74%) and 13 female (26%) patients were studied who underwent laser fistulectomy. Among 50 patients, 10 had inter-sphincteric fistulas (20%), 34 had low trans-sphincteric fistulas (68%) and 6 patients had high trans-sphincteric fistulas (12%) in a study by Ozurk *et al*. Patients had extra-sphincteric fistula whereas 23% had inter-sphincteric fistula; 13% had trans-sphincteric fistula. Most common presenting complaints were discharge (38%) followed by pain (34%) and itching (14%) followed by swelling (7%).

In a study done by Wilhem A *et al*, One hundred and thirteen patients (96.6%) had previously undergone surgery including abscess drainage and prior fistula operations. The mean number of operations before FiLaC™ treatment was 2.4 (±1.7) with a range of 1-9 previous operations whereas in the study done by Giamundo P *et al* Thirty-five patients (78%) had a history of previous surgery for their fistulas<sup>[5]</sup>. In our study, 10% patients had a history of surgery for perianal abscess, were associated tran-sphincteric type of fistula in ano. 6% patients underwent fistulotomy for extra-sphincteric fistula.

56% patients were discharged on Day 2 post-operatively, followed by 30% patients on day 4 and 5 and 13% on more than day 5. In a study done by Ozurk *et al* the return to daily activities required a median of 7 days (range: 5-17 days). In our study, post-operatively 63% patients experienced pain, followed by 26.6% patients had discharge and 13.3% had recurrence. There was no case of anal incontinence in a period of 3 months. As per Giamundo P *et al*, eleven of the 13 failures (85%) were early failures (persistent symptoms). No patient reported postoperative incontinence whereas as per Wilhelm *et al* no major forms of incontinence (solid, liquid stool or gas) were reported, with minor soiling noted in seven patients (5.9%), postoperative pain and anismus in 8 patients treated.

It doesn't affect continence, administers controlled hyperthermic effect to the tissues, has a short learning-curve and reduces postoperative hospital stay as compared to endorectal advancement flap or LIFT. However, it has also some drawbacks. It is a "blind" procedure, as it's not possible a direct visualization of the fistula tract or any secondary tracts and this may lead to recurrence. It requires expensive equipment, particularly if compared to other sphincter-saving techniques. Randomized trials comparing FiLaC with the most common sphincter-preserving procedure are therefore required<sup>[9]</sup>. Most recurrences after FiLaC present early and are due to fistula opening up due to epithelial remnants from small undetected tracts.

## Conclusion

**1. Age distribution:** Majority of the patients belonged to the age group of 30-39 years (30%) Mean age was 40.8 with

standard deviation of 13.01

2. **Gender distribution:** 80% patients were males as opposed to 60%
3. **Type of fistula:** Patients had extra-sphincteric fistula whereas 23% had inter-sphincteric fistula; 13% had trans-sphincteric fistula o 20% females concluding that fistula in ano is more common in males.
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#### Conflict of Interest

Not available

#### Financial Support

Not available

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