

## A PROSPECTIVE OBSERVATIONAL STUDY ON CLINICAL PROFILE, MANAGEMENT AND OUTCOMES OF FISTULA IN-ANO IN A TERTIARY CARE HOSPITAL

Shwetabh Pradhan<sup>1</sup>, Sophiya<sup>2</sup>, Ashutosh Sayana<sup>3</sup>

Received : 20/03/2026  
Received in revised form : 06/05/2026  
Accepted : 22/05/2026

**Keywords:**

Fistula in ano; Fistulectomy; Fistulotomy; Setons.

Corresponding Author:

**Dr. Shwetabh Pradhan,**

Email: drshwetabh@gmail.com

DOI: 10.47009/jamp.2026.8.3.113

Source of Support: Nil,

Conflict of Interest: None declared

*Int J Acad Med Pharm*  
2026; 8 (3); 619-623



<sup>1</sup>Professor and Head, Department of General Surgery, Gautam Buddha Chikitsa Mahavidyalaya(GBCM) & Dr. KKBM Subharti hospital, Dehradun, Uttarakhand, India.

<sup>2</sup>Senior Resident, Department of General Surgery, Government Doon Medical College(GDMC), Dehradun, Uttarakhand, India.

<sup>3</sup>Principal and Professor, Department of General Surgery, Veer Chandra Singh Garhwali Government Institute of Medical Sciences & Research, Srinagar, Garhwal, Uttarakhand, India.

### ABSTRACT

**Background:** Fistula in ano is a prevalent and significant anorectal disorder, presenting an unpredictable course, with varying degrees of severity depending on the complexity of the fistulous tract. Surgical strategies range from conventional to sphincter- preserving techniques. Fistula in ano significantly affects patients' psychological well-being and social functioning. The present study was conducted to assess the clinical profile, management and outcomes of patients with fistula in ano and to compare the efficacy of different surgical techniques. **Materials and Methods:** Present study was conducted on 40 patients suffering from fistula in ano. Patients were assessed for clinical presentation, imaging findings and postoperative outcomes. Patients were monitored at regular intervals (at 2 weeks, 1 month, 3 months, and 6 months postoperatively) to assess long-term surgical success and complications. Data obtained was subjected to statistical analysis using SPSS version 20.0 software. **Result:** Mean pain score decreased from day 1 to 4th week in all surgeries. Mean hospital stay and healing time was maximum with Fistulectomy and minimum with Setons placement. Traditional surgical techniques, such as fistulectomy and fistulotomy, demonstrated higher rates of complications than Setons placement. Setons placement showed superior outcomes in terms of recurrence-free survival and faster recovery compared to traditional open surgical approaches. **Conclusion:** Setons offer better functional outcomes and lower complication rates. It is crucial for clinicians not only rely on their technical skills but also consider personalized treatment strategies that integrate advanced imaging, patient preferences, and surgical expertise. By doing so, the recurrence rates and functional impairments associated with fistula in ano can be significantly reduced, improving the overall quality of life for patients.

## INTRODUCTION

Fistula in ano is a persistent pathological tract that develops between the anorectal canal and an external opening on the perineal skin. This condition is often a consequence of a previously untreated or inadequately managed anorectal abscess.<sup>[1]</sup> Fistula in ano is a prevalent and significant anorectal disorder, with a higher incidence among males (12.3 per 100,000) compared to females (5.6 per 100,000).<sup>[1]</sup> Clinically, fistula in ano presents with symptoms such as persistent perianal discharge, intermittent pain, perianal swelling, and pruritus, often accompanied by episodes of perianal abscesses. Patients frequently report a history of prior drainage of perianal abscesses, with incomplete resolution

leading to chronic fistula formation. The disease is known to follow an unpredictable course, with varying degrees of severity depending on the complexity of the fistulous tract, whether it is low or high, simple or complex, or associated with other underlying conditions such as Crohn's disease, tuberculosis, malignancy, or trauma.<sup>[2]</sup>

The significance of fistula in ano in surgical practice cannot be understated, as it is a common proctologic disorder that often necessitates surgical intervention.<sup>1</sup> Surgical strategies vary widely, ranging from fistulectomy and fistulotomy, which are traditionally used for simple fistulas, to sphincter-preserving techniques such as the Ligation of the Intersphincteric Fistula Tract (LIFT), Video-Assisted Anal Fistula Treatment (VAAFT), Setons and

advancement flap procedures, which are preferred in cases where sphincter function preservation is a priority.<sup>[3]</sup>

Due to its chronic and recurrent nature, fistula in ano significantly affects patients' psychological well-being and social functioning. Persistent discharge, foul odor, and pain can cause emotional distress and embarrassment, leading to a diminished quality of life. Moreover, delayed or improper treatment can result in secondary complications, including anorectal strictures, anal stenosis, or progression to malignancy in rare cases.<sup>[4]</sup> While significant progress has been made in understanding its pathophysiology and optimizing treatment modalities, further studies are required to refine surgical techniques, minimize recurrence, and improve long-term patient outcomes.<sup>[5]</sup> The present study was conducted to assess the clinical profile, management and outcomes of patients with fistula in ano and to compare the efficacy of different surgical techniques.

## MATERIALS AND METHODS

The present prospective observational study was conducted in a tertiary care hospital that serves a diverse patient population. The study allowed real-time data collection, monitoring patients from the preoperative stage through surgery and into the postoperative recovery period for accurate assessment of disease progression, response to treatment, and analyse different surgical interventions in a controlled, real-world setting. Prior to initiating the study, ethical clearance has been obtained from the Institutional Ethics Committee. The study adheres to the principles of the Declaration of Helsinki. All patients were detailed about the study and a written informed consent was signed by them. All patient information was stored securely and maintained in confidentiality, following the guidelines set by data protection and privacy regulations.

### Sample Size Calculation

$$n = Z^2 \times P \times (1 - P) / d^2$$

$$n = \frac{Z^2 \times P \times (1 - P)}{d^2}$$

Where:

- n = Required sample size

- Z = Z-score for the chosen confidence level (1.96 for 95% confidence interval)
- P = Expected proportion of outcome (recurrence rate of 7% or 0.07)
- d = Precision level (set at 5% or 0.05) Substituting the values:

$$n = (1.96)^2 \times 0.07 \times (1 - 0.07) / (0.05)^2$$

$$= 38.9$$

To account for potential dropouts, loss to follow-up, or non-participation, an additional margin of 5% was added, bringing the final sample size to 40 patients.

**Data Collection:** Patients aged between 18 and 80 years; suffering from any types of fistula in ano (both high and low fistulas); and those who gave consent to undergo surgical intervention were included in the study. Patients having fistulas secondary to inflammatory bowel disease (IBD), Crohn's disease, tuberculosis (TB) and those associated with malignancy were excluded from the study. The study employed a structured data collection approach, covering patient demographics, clinical presentation (symptoms, comorbidities, lifestyle factors), imaging findings (MRI, Endoanal Ultrasonography (EAUS), Computed Tomography (CT)), surgical procedures (fistulectomy, fistulotomy, seton placement), and postoperative outcomes (Wound healing, pain, infections, recurrence, hospital stay). Patients were monitored at regular intervals (at 2 weeks, 1 month, 3 months, and 6 months postoperatively) to assess long-term surgical success and complications. Data obtained was subjected to statistical analysis using SPSS version 20.0 software.

## RESULTS

Maximum patients were aged between 35-45yrs of age, showing female predominance (55%). Most of the cases had clinical presentation of perianal discharge (90%), followed by pain (85%), history of abscess (65%), bleeding (30%) and Fecal Incontinence (10%). Low anal fistula was reported in 29 cases, whereas high anal fistula in 5 cases. Simple fistula was seen in 31 cases, whereas complex fistula in 9 cases. MRI & Endoanal Ultrasound Findings revealed maximum cases (50%) with Inter-sphincteric fistula; followed by 35% having Trans-sphincteric, 10% Supra-sphincteric and 5% with Extra-sphincteric fistula. [Table 1].

**Table 1: Clinical and Imaging findings**

Clinical Presentation	
Parameter	Frequency (%)
Pain	85%
Perianal Discharge	90%
Bleeding	30%
Fecal Incontinence	10%
History of Abscess	65%
Imaging findings	
Inter-sphincteric	50%
Trans-sphincteric	35%
Supra-sphincteric	10%
Extra-sphincteric	5%

59.5% cases were treated using fistulectomy, followed by 27% with fistulotomy and 13.5% using fistulectomy with setons. Mean pain score decreased from day 1 (8.5) to 1st week (5.2) till 4th week (2.1). [Figure 1].

Mean hospital stay was maximum with Fistulectomy ( $5 \pm 1.2$ ) and minimum with Setons placement ( $3 \pm 0.8$ ). Mean healing time was maximum with Fistulectomy ( $6 \pm 1.5$ ) and minimum with Setons placement ( $4 \pm 1.0$ ). [Table 2].



Figure 1: Comparison of Pain Scores Over Time (Line Graph - Day 1, Week 1, Week 4).

Surgery	Hospital Stay (Days)	Healing Time (Weeks)
Fistulectomy	$5 \pm 1.2$	$6 \pm 1.5$
Fistulotomy	$4 \pm 1.0$	$5 \pm 1.2$
Setons placement	$3 \pm 0.8$	$4 \pm 1.0$

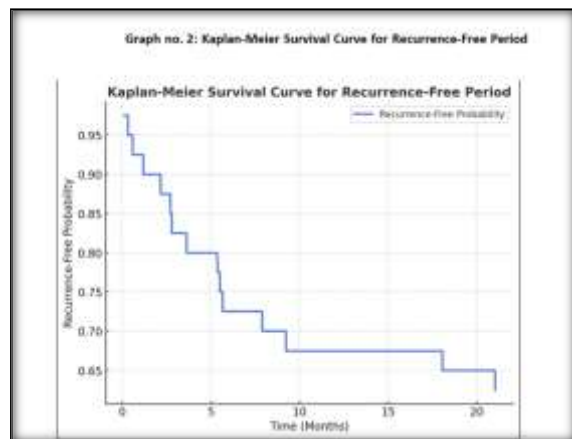
Traditional surgical techniques, such as fistulectomy and fistulotomy, demonstrate higher rates of fecal incontinence (15% vs 10%) and recurrence (12% vs 10%). Setons placement show lower rates of fecal incontinence (3%), infection (5%) and recurrence (8%). (Table no. 3).

Complication	Fistulectomy (%)	Fistulotomy (%)	Setons placement (%)
Infection	10%	8%	5%
Fecal Incontinence	15%	10%	3%
Recurrence	12%	10%	8%

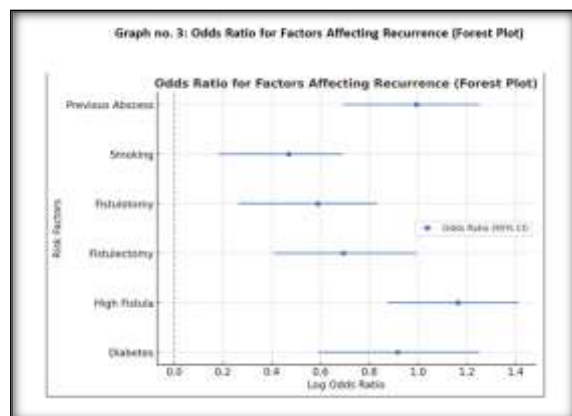
Fistulectomy and fistulotomy showed earlier recurrence events, with higher recurrence rates within the first 3–6 months. Seton placement, often used for high or complex fistulas, shows moderate recurrence rates. The recurrence rates at 12 months are relatively similar across all techniques (2%), suggesting that most recurrences manifest within the early postoperative period (first 3–6 months). [Table 4].

Surgical Technique	Recurrence Rate (%)	Recurrence at 3 Months (%)	Recurrence at 6 Months (%)	Recurrence at 12 Months (%)
Fistulectomy	12%	6%	4%	2%
Fistulotomy	10%	5%	3%	2%
Setons placement	8%	3%	3%	2%

For recurrence free period Kaplan-Meier survival curve was made [Figure 2]



The logistic regression analysis was done to identify key risk factors that significantly contributed to the recurrence of fistula in ano post-surgery. Patients with diabetes were 2.5 times more susceptible; those with high fistulas were 3.2 times more prone and patients undergoing fistulectomy have twice the risk of recurrence. [Figure 3]



Setons placement showed superior outcomes in terms of recurrence-free survival and faster recovery compared to traditional open surgical approaches. Setons offer quicker post-operative recovery, with patients experiencing less pain and a shorter hospital stay. On the other hand, open techniques like fistulectomy and fistulotomy remain effective for treating simple fistulas but are associated with higher recurrence rates, especially in the early post-operative period. These techniques also carry a higher risk of fecal incontinence, particularly when the fistula involves the sphincter muscle. [Table 5].

Table no. 5: Most Effective Surgical Techniques & Key Factors Affecting Outcomes

Surgical Technique	Recurrence Rate (%)	Fecal Incontinence Risk	Healing Time (Weeks)	Hospital Stay (Days)	Pain Severity (Post-Op)	Preferred for High Fistulas
Fistulectomy	12%	High	6	5	High	No
Fistulotomy	10%	Moderate	5	4	Moderate	No
Seton Placement	8%	Low	4	3	Moderate	Yes

## DISCUSSION

In this study, we observed that, Setons placement show superior recurrence-free survival rates and faster recovery times when compared to traditional open techniques such as fistulectomy and fistulotomy. This finding aligns with study by Cano Valderrama et al,<sup>[7]</sup> (2023) who highlighted that Setons have significant advantages in terms of reducing recurrence rates and promoting faster recovery compared to conventional approaches. These results are attributed to the ability of Setons to preserve the anal sphincter during surgery, reducing the risk of fecal incontinence, a common complication with open procedures. Seton placement, while often necessary for high and complex fistulas, was associated with moderate level of postoperative pain. This finding corresponds with the work of Hariprasad et al (2023),<sup>[2]</sup> who highlighted that the use of setons, particularly in more intricate fistulas, can cause significant discomfort during the initial stages of treatment.

In contrast, our findings confirm the higher recurrence rates and greater risk of fecal incontinence in patients who underwent traditional procedures such as fistulectomy and fistulotomy, particularly in high fistulas. This aligns with Cano Valderrama et al. (2023),<sup>[7]</sup> who noted that fistulectomy remains a standard procedure for simple fistulas, but its outcomes are compromised in more complex cases, where higher recurrence rates are often seen. Regarding the hospital stay, Shivakumar et al,<sup>[5]</sup> (2023) found that the average hospital stay was between 4 to 5 days, which closely matches the findings of this study.

Furthermore, our study's findings on the impact of diabetes and complex fistulas on recurrence were also reflected by Cano Valderrama et al,<sup>[7]</sup> (2023) who emphasized that diabetes mellitus is known to exacerbate the healing process, leading to a higher incidence of infection and recurrence. This suggests that careful preoperative management and postoperative monitoring are essential for diabetic patients, as emphasized by both our study and previous works.

Additionally, the challenges of managing high fistulas, which are often associated with complex fistula tracts and higher recurrence rates, have been well-documented in prior studies like Cano Valderrama et al. (2023).<sup>[7]</sup> Their findings underline the importance of advanced imaging techniques and

minimally invasive surgical options in managing such cases effectively. Overall, our study corroborates existing literature, reinforcing the notion that sphincter-preserving procedures like Setons placement should be preferred for complex or recurrent fistulas to achieve better long-term outcomes.<sup>[8-10]</sup> The comparison highlights the critical need for personalized treatment plans based on patient-specific factors such as diabetes, fistula complexity, and the risk of recurrence to improve clinical outcomes in fistula-in-ano surgeries.

### Strengths of the Study

1. Prospective observational design of our study allows for real-time data collection and ability to observe longitudinal outcomes in patients undergoing different surgical procedures.
2. This study contributes to the existing literature by providing detailed insights into recurrence rates, healing times, and post-operative complications associated with each surgical technique.
3. Study's inclusion of multiple variables, including the impact of factors such as diabetes and fistula complexity, provides a comprehensive understanding of the key determinants that affect surgical outcomes.
4. The rigorous statistical analysis using Kaplan-Meier survival curves and logistic regression models offers strong evidence of the predictive factors for recurrence, further enhancing the study's scientific robustness.

### Limitations of the Study

1. Our study was conducted in a single tertiary care center, with a small sample size of 40 patients that may limit the generalizability of results.
2. The absence of randomization in this study limits its ability to control for potential confounders, which might affect the validity of causal relationships.
3. Long-term follow-up data would have also enhanced the reliability of recurrence-free survival rates and allowed for a more comprehensive assessment of the long-term functional outcomes of different surgical approaches.
4. Lastly, while patient-reported outcomes such as pain scores and quality of life were assessed, the lack of objective measures or standardized scoring systems for these outcomes may introduce subjectivity into the findings.

## CONCLUSION

In conclusion, the future of fistula in ano research is poised to explore cutting-edge technologies and biologic therapies that offer promise for better surgical outcomes, faster recovery times, and lower recurrence rates. Emphasizing multi-disciplinary approaches, including the integration of stem cell therapy and advanced imaging, will likely play a pivotal role in advancing the treatment of this challenging condition. Moving forward, it will be

essential for future studies to focus on clinical trials, long-term follow-up data, and collaborative efforts to ensure that these innovative techniques can be safely and effectively implemented in routine clinical practice.

## REFERENCES

1. Buchanan, G. N., Halligan, S., Bartram, C. I., Williams, A. B., Tarroni, D., & Cohen, C. R. G. (2004). Clinical examination, endosonography, and MR imaging in preoperative assessment of fistula in ano: comparison with outcome-based reference standard. *Radiology*, 233(3), 674-681.
2. Hariprasad, C. P., Kumar, A., Kumar, M., Kumar, M., Paswan, S. S., Rohit, G., & Kumar, P. (2023). The efficacy of Ksharsutra, Fistulectomy and Ligation of Intersphincteric Fistula Tract (LIFT) procedure in management of Fistula in ano a prospective observational study. *BMC surgery*, 23(1), 70.
3. Khamar, J., Sachdeva, A., McKechnie, T., Lee, Y., Tessier, L., Hong, D., & Eskicioglu, C. (2024). Cutting seton for the treatment of cryptoglandular fistula- in-ano: a systematic review and meta-analysis. *Techniques in Coloproctology*, 28(1), 12.
4. Teres, L. B., Marcos, E. B., Santacruz, C. C., Bonito, A. C., Sanchez, A. R., Chaparro, M., ... & Javier, G. S. (2023). FiLaC® procedure for highly selected anal fistula patients: indications, safety and efficacy from an observational study at a tertiary referral center. *Rev Esp Enferm Dig*, 115(12), 700-706.
5. Shivakumar, V., Jayarajah, U., & Samarasekera, D. N. (2023). Characteristics and post-operative outcomes of surgery for fistula-in-ano managed at a tertiary care hospital in Sri Lanka: a retrospective study. *Journal of International Medical Research*, 51(9), 03000605231194516.
6. Parwez, M., Huda, T., Yadav, M. S., Gupta, K., Mital, K., & Pandya, B. (2022). A PILOT STUDY on the Clinical and Functional Outcomes of an Improvised Technique of Core-cut Fistulectomy for Fistula-in-ano. *Surgical Innovation*, 29(3), 426-437.
7. Cano-Valderrama, Ó., Miguel, T. F., Bonito, A. C., Muriel, J. S., Fernández, F. M., Ros, E. P., ... & Cerdán-Santacruz, C. (2023). Surgical treatment trends and outcomes for anal fistula: fistulotomy is still accurate and safe. Results from a nationwide observational study. *Techniques in Coloproctology*, 27(10), 909-919.
8. Sonker, S. K., Dube, S., & Gupta, A. K. (2024). Outcome of Fistulotomy and Fistulectomy with or Without Seton Technique in Management of Fistula in ANO. *Res. J. Med. Sci*, 18, 702-706.
9. Mwaja, D., Washington, L., Boniface, T., Seni, J., Mirambo, M., Mahalu, W., ... & Chalya, P. (2022). HIV seroprevalence, clinical profile and surgical outcomes among patients with acquired anorectal conditions in two referral hospitals in Mwanza, Tanzania. *Tanzania Journal of Health Research*, 23(4), 1-12.
10. Kadhem, S. H., Almoamin, H. H. A., & Saleh, A. M. (2024). Management of Anorectal Malformations: A Five-Year Experience from a Tertiary Care Center of Southern Iraq. *Iranian Journal of Neonatology*, 15(4), 24-28.