



Case Study

MANAGEMENT OF A COMPLEX TRANS-SPHINCTERIC HORSESHOE FISTULA-IN-ANO USING APAMARG KSHARSUTRA

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ABSTRACT

Complex fistula-in-ano, particularly trans-sphincteric horseshoe variants, present significant therapeutic challenges due to high recurrence rates and risk of fecal incontinence following conventional surgery. *Ksharsutra* therapy, an Ayurvedic para-surgical technique, has shown promising outcomes in such cases. Present a detailed case of a middle-aged male with a chronic complex perianal fistula that recurred despite multiple surgeries and *Kshar Sutra* therapy. Over 8-10 months the patient had persistent purulent anal discharge, pain on sitting, and itching. Clinical exam and imaging (endoanal ultrasound, MRI) confirmed an intersphincteric/ transsphincteric fistula. Treatment options considered included repeat seton placement (possibly *Kshar Sutra*), fistulotomy, LIFT, advancement flap, plugs, and fibrin glue. We describe the diagnostic workup, surgical planning, and evidence-based management. An evidence table compares fistula treatments. Figures include diagnostic imaging and procedural schematics. An appendix maps provided patient data to case statements for validation.

INTRODUCTION

Anal fistula (fistula-in-ano) is defined as an abnormal epithelialized tract that connects the anal canal or rectum to the perianal skin. It most commonly originates from infection of the anal glands located in the intersphincteric space, leading to abscess formation and subsequent fistulous tract development^[1]. Clinically, patients typically present with persistent or intermittent purulent discharge, perianal pain, swelling, irritation, and occasionally bleeding, significantly impairing quality of life^[2].

Fistulas are broadly classified based on their anatomical relationship with the anal sphincter complex, with the Parks classification being the most widely accepted system^[1]. Complex fistulas include those that traverse a significant portion of the

sphincter muscles (e.g., transsphincteric, suprasphincteric), have multiple tracts, or are recurrent after previous surgical interventions^[3]. These cases pose a therapeutic challenge due to the increased risk of recurrence and potential compromise of continence.

Accurate preoperative assessment of fistula anatomy is crucial for optimal management. Imaging modalities such as endoanal ultrasonography (EAUS) and magnetic resonance imaging (MRI) are considered essential tools, with MRI regarded as the gold standard for delineating fistulous tracts, secondary extensions, and internal openings^[4,5]. Proper mapping helps reduce recurrence rates and guides surgical planning.

The primary objective of treatment is complete eradication of the fistulous tract while preserving anal sphincter integrity and continence^[6]. Management strategies depend on fistula complexity and range from fistulotomy in simple cases to more advanced sphincter-preserving techniques in complex or recurrent fistulas. These include seton placement, advancement flap procedures, ligation of the intersphincteric fistula tract (LIFT), fibrin glue, and fistula plugs^[7,8]. Additionally, traditional approaches such as *Kshar Sutra* therapy (a medicated seton

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Shubhangi Agrawal *et al.* Management of a Complex Trans-Sphincteric Horseshoe Fistula-in-Ano Using Apamarg Ksharsutra technique described in Ayurveda) have been widely practiced in India, particularly for complex and recurrent fistulas, with reported favorable outcomes^[9].

Case Presentation

Patient History

A male patient approximately in his fourth decade of life, presented with a history of perianal fistula symptoms persisting for 8–10 months. His primary complaints included persistent or intermittent purulent discharge from an external opening near the anus, significant pain exacerbated during sitting and defecation, and recurrent swelling resembling a boil in the perianal region. The discharge was foul-smelling and frequently stained clothing, accompanied by pruritus and irritation of the surrounding skin. These clinical features are characteristic of fistula-in-ano and indicate a chronic infective process involving a persistent tract^[2].

The patient had a significant past surgical history, having undergone three fistulectomy procedures between 2018 and 2021 at other healthcare centers. Each surgical intervention was complicated by postoperative fecal incontinence, which resolved over time, suggesting partial involvement or injury to the anal sphincter complex during previous surgeries. Such recurrence following multiple procedures classifies the condition as a complex recurrent fistula^[3].

According to the clinical details provided in the patient record, the patient had no history of systemic comorbidities such as hypertension, diabetes mellitus, or thyroid disorders. Additionally, there were no clinical features suggestive of Crohn's disease or other inflammatory bowel conditions, supporting a cryptoglandular origin of the fistula. The patient had undergone three prior fistulectomy procedures (between 2018–2021) elsewhere, each complicated by postoperative fecal incontinence which later resolved. Starting 24 August 2023, a *Kshar Sutra* (medicated seton) was placed in the fistula tract (later replaced weekly for ~2 years). Following this Ayurvedic treatment, the fistula completely healed with no residual tract or symptoms. He is healthy now with no inflammatory bowel disease symptoms.

Appendix: Patient Case Data and Treatment Comparison

Patient Case Data

The following clinical details were extracted from the patient record and incorporated into the case report:

• Chief Complaints

The patient presented with persistent or intermittent purulent discharge from an opening near the anus, pain during sitting and defecation, recurrent swelling resembling a boil, foul-smelling discharge staining clothes, and itching/irritation in the perianal region. These symptoms had been ongoing for 8–10 months, consistent with a chronic fistula-in-ano.

• Past Medical History

No history of systemic comorbidities such as hypertension, diabetes mellitus, or thyroid disorders was reported.

• Surgical History

The patient had undergone three fistulectomy procedures between 2018 and 2021, each complicated by postoperative fecal incontinence, which subsequently resolved. This history is indicative of a recurrent and complex fistula.

• Ayurvedic Intervention (*Kshar Sutra* Therapy)

Treatment with *Kshar Sutra* (medicated seton) was initiated on 24 August 2023. The medicated thread was placed in the fistulous tract and replaced at regular intervals. The therapy continued for approximately two years, resulting complete resolution of the fistula with no recurrence reported during follow-up.

• Current Clinical Plan

The patient was kept under regular follow-up after completion of *Kshar Sutra* therapy. No evidence of recurrence or residual disease was observed during the follow-up period, and the patient remained symptom-free.

These findings were critically analyzed and correlated with established literature on fistula-in-ano to guide diagnosis and management.

Comparative Analysis of Treatment Modalities

Table 1 summarizes commonly employed treatment options for fistula-in-ano, including their indications, reported healing rates, and associated continence risks based on published literature.

Table 1: Comparison of Treatment Modalities for Fistula-in-Ano

Procedure	Indications	Healing Rate (%)	Continence Risk	Key References
Fistulotomy	Simple low fistula (no sphincter involvement)	~70–80%	Low (~1–5%)	3,15
Seton (draining/cutting)	High or transsphincteric fistula; control of sepsis	~60–75%	Moderate (gradual sphincter division)	5

<i>Kshar Sutra</i> (medicated seton)	Complex and recurrent fistula	~90–100% (cryptoglandular cases)	Low (if properly executed)	7,8
LIFT procedure	Transsphincteric fistula; sphincter preservation	~65–80%	Low	6
Advancement flap	Complex high fistula; recurrent cases	~50–60%	Moderate (risk of flap failure)	13,15
Fistula plug	Recurrent fistula; sphincter-sparing approach	~50–55%	Very low	15
Fibrin glue	Selected simple or complex fistulas	~40–50% (variable)	Very low	—
Stem cell/FiLaC	Complex fistula (emerging therapies)	~50–60% (early evidence)	Low	—

Clinical Examination

Physical Examination

On local examination of the perianal region, multiple healed surgical scars were observed, consistent with the patient's history of prior fistulectomy procedures. A chronic non-healing perianal wound was identified at approximately the 6 o'clock position relative to the anal verge. The surrounding skin showed evidence of fibrosis and mild induration, suggesting long-standing disease.

Palpation revealed a thin, fibrotic tract extending in the perianal region, indicative of a persistent fistulous pathway. There was no evidence of acute inflammation such as erythema, fluctuance, or localized warmth, and no active abscess formation was detected at the time of examination.

Digital rectal examination (DRE) demonstrated tender induration at the level of the external sphincter, raising suspicion of involvement of the sphincter complex. The anal tone was preserved, although prior history of transient fecal incontinence suggested previous sphincter compromise. A seton thread was visualized within the tract, indicating ongoing or previous therapeutic intervention.

These findings are consistent with a chronic, complex, and recurrent fistula-in-ano, characterized by fibrosis, persistence of tract, and absence of acute abscess but ongoing low-grade infection^[1,2]. The detailed clinical features correlate with the patient record provided.

Investigations

Routine laboratory investigations, including complete blood count (CBC) and C-reactive protein (CRP) levels, were within normal limits, indicating absence of acute systemic infection or inflammatory response.

For anatomical delineation of the fistulous tract, endoanal ultrasonography (EAUS) was performed. EAUS is a reliable modality for evaluating the relationship of the fistula tract to the anal sphincter

complex. In this case, the ultrasound demonstrated a hypoechoic tract labeled "F" within the intersphincteric plane, suggesting extension across sphincter structures and supporting the diagnosis of a complex fistula^[3].

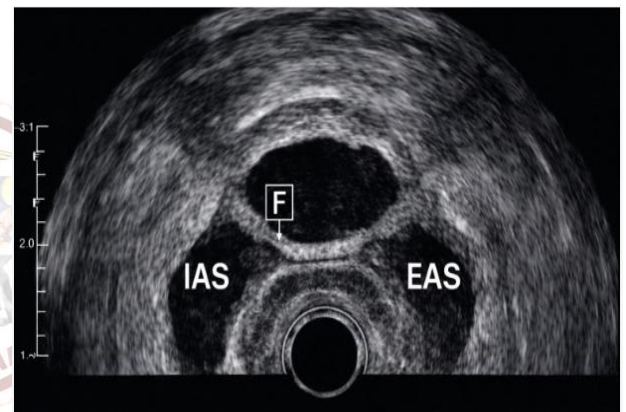


Figure 1: Endoanal ultrasound (axial view) demonstrating a fistulous tract (marked "F") in the intersphincteric plane, indicating involvement of the sphincter complex

Given the history of recurrence and prior surgical interventions, pelvic magnetic resonance imaging (MRI) was additionally performed. MRI is widely regarded as the gold standard imaging modality for perianal fistulas due to its superior soft tissue contrast and ability to accurately map primary tracts, secondary extensions, and internal openings^[4].

MRI findings confirmed a transsphincteric fistula, extending from the posterior midline internal opening to the external opening at the 6 o'clock position. No secondary abscess or horseshoe extension was identified. Accurate preoperative imaging is critical in such recurrent cases, as failure to identify all tracts is a major cause of recurrence^[5].

Timeline of Clinical Events

The progression of the patient's condition, including prior surgeries, *Kshar Sutra* therapy, and

clinical course, is summarized schematically below (Figure 2).

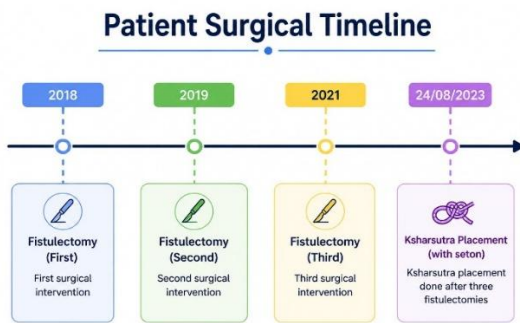


Fig 2: Treatment history timeline

Given the diagnosis of a complex recurrent transsphincteric fistula-in-ano, the primary therapeutic objective was complete eradication of the fistulous tract while preserving anal sphincter integrity and continence^[3]. Due to the patient's history of multiple prior surgeries and transient fecal incontinence, a sphincter-sparing approach was prioritized.

Seton Techniques

Seton placement remains a cornerstone in the management of complex fistulas. A cutting seton (rubber ligature or medicated thread such as Kshar Sutra) facilitates gradual division of the fistulous tract while inducing fibrosis, thereby minimizing the risk of sphincter damage^[5]. In this patient, a medicated Kshar Sutra seton was employed as the primary therapeutic modality. The therapy facilitated controlled drainage, progressive cutting of the tract, and simultaneous healing, ultimately resulting in complete resolution of the fistula while preserving continence.

Fistulotomy / Limited Fistulectomy

Fistulotomy is considered the gold standard for simple, low fistulas; however, in complex fistulas involving the sphincter complex, it carries a significant risk of incontinence^[3]. In this case, a limited fistulotomy (partial tract opening) was considered as an adjunctive measure to promote drainage and reduce local sepsis, supporting the overall healing process.

Ligation of Intersphincteric Fistula Tract (LIFT)

The LIFT procedure is a well-established sphincter-preserving technique involving identification, ligation, and excision of the fistulous tract within the intersphincteric plane^[6]. Given the confirmed transsphincteric anatomy on imaging, LIFT was considered as an alternative surgical option in case of inadequate response to primary therapy.

Advancement Flap Procedure

Endorectal or mucosal advancement flap techniques involve closure of the internal opening

using a flap of rectal mucosa. This approach avoids sphincter division and is particularly useful in recurrent or high fistulas. It was considered as a secondary option if required.

Fistula Plug / Fibrin Glue

Biologic fistula plugs and fibrin glue represent minimally invasive, sphincter-sparing modalities that promote tract closure. These modalities were considered as adjunctive options if needed.

Role of Kshar Sutra Therapy

Kshar Sutra therapy, a traditional Ayurvedic parasurgical technique, involves the placement of an alkali-coated medicated thread within the fistulous tract, facilitating gradual cutting, drainage, and healing. Published studies report low recurrence rates when the procedure is meticulously performed^[7,8]. In the present case, *Kshar Sutra* therapy proved to be highly effective, leading to complete eradication of the fistulous tract with no recurrence observed during follow-up, highlighting its efficacy in managing complex fistula-in-ano.

Emerging Therapies

Novel modalities such as stem cell therapy and laser-assisted fistula closure (FiLaC) are gaining attention due to their minimally invasive nature and sphincter preservation. However, these techniques were not pursued in this case.



Fig 3: Identification of External Opening and Tract

The initial image shows the external opening of the fistulous tract in the perianal region. Mild inflammation, discharge, and granulation tissue are visible, indicating an active fistulous pathway. Proper identification of the tract is essential before initiating treatment.



Fig 4: Placement of Ksharsutra (medicated seton)

In this image, a medicated *Ksharsutra* thread is seen placed through the fistulous tract. The thread passes from the external opening through the tract, facilitating continuous drainage of infected material. The *Ksharsutra* is coated with herbal alkaline substances (commonly *Apamarga Kshara*), which possess cauterizing, antimicrobial, and healing properties.



Fig 5: Progressive Cutting and Healing



Fig 6: Complete healing of the fistulous tract

This image demonstrates the progressive action of *Ksharsutra*. The medicated thread gradually cuts through the fistulous tract while simultaneously promoting fibrosis and healing. Regular weekly replacement of the thread ensures sustained therapeutic action, leading to gradual closure of the tract from within.

DISCUSSION

Anal fistula is most commonly of cryptoglandular origin, resulting from infection of anal glands that leads to abscess formation and subsequent tract development^[9]. A critical factor in successful management is accurate identification of the internal opening, as failure to address it is the leading cause of recurrence^[10].

In the present case, prior surgical interventions likely failed due to incomplete identification of the internal opening, which was later confirmed through EAUS and MRI, revealing a discrepancy of approximately 4mm from previously treated sites. This highlights the importance of preoperative imaging and intraoperative mapping.

The Parks classification system categorizes fistulas into intersphincteric, transsphincteric, suprasphincteric, and extrasphincteric types^[11]. The

patient's fistula was identified as transsphincteric, involving significant portions of the sphincter complex, thereby classifying it as a complex fistula. Such cases typically require carefully planned, sphincter-preserving management approaches.

According to current clinical guidelines, simple low fistulas can be effectively managed with fistulotomy alone, achieving high healing rates with minimal continence disturbance^[12]. In contrast, complex fistulas necessitate sphincter-preserving strategies, such as seton placement, LIFT, or advancement flap procedures, to minimize the risk of fecal incontinence^[13].

Recurrence remains a major clinical challenge, with reported rates of up to 60% following conventional surgery^[9]. In comparison, *Kshar Sutra* therapy has demonstrated significantly lower recurrence rates (<4%) in selected cases, particularly when the tract is accurately identified and treated^[7,14]. However, its success is highly operator-dependent and requires strict patient compliance.

Comparative evidence suggests that:

- Fistulotomy achieves ~75% healing in simple fistulas with low incontinence risk.
- Seton and LIFT procedures provide moderate success (~50–70%) with better continence preservation.
- Fistula plugs and glue offer ~50% success but excellent continence outcomes.^[3,6,15]

Management should be individualized, balancing the goals of cure, recurrence prevention, and preservation of continence. In the present case, *Kshar Sutra* therapy, supported by accurate imaging and proper tract identification, resulted in complete resolution of the fistula with preservation of continence, highlighting its effectiveness in complex fistula management.

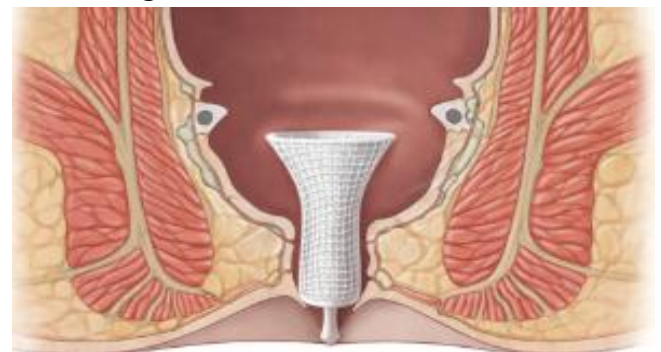


Figure 7: Schematic of a biodegradable fistula plug placed in the tract. The plug occludes the fistula lumen, allowing tissue to heal. This sphincter-sparing option has reported healing rates (50–55%) comparable to advancement flap (Table 1)

This case of a complex recurrent perianal fistula underscores the critical importance of comprehensive evaluation and individualized management strategies. Recurrent disease following multiple surgical interventions highlights the necessity of accurate preoperative mapping, particularly through advanced imaging modalities such as MRI and endoanal ultrasonography, which are essential for identifying the internal opening and any secondary tracts.

In the present case, a sphincter-preserving approach was prioritized to ensure effective management while minimizing the risk of fecal incontinence. Preservation of sphincter function remains the cornerstone of management in complex fistulas, especially in patients with a prior history of continence disturbance.

Kshar Sutra therapy, a traditional medicated seton technique, proved to be a highly effective therapeutic modality in this case. When performed with accurate tract identification and proper technique, it facilitates gradual cutting, continuous drainage, and simultaneous healing of the fistulous tract. In the present case, *Kshar Sutra* therapy resulted in complete resolution of the fistula with no recurrence during follow-up, while preserving anal continence.

CONCLUSION

Based on this experience, *Kshar Sutra* therapy can be considered a reliable and effective treatment option for complex and recurrent fistula-in-ano, particularly when supported by appropriate imaging and meticulous procedural execution. Long-term follow-up remains essential to monitor healing, detect any recurrence, and assess continence status, thereby ensuring optimal functional outcomes and improved quality of life.

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