



Case Study

MINIMALLY INVASIVE TECHNIQUE FOR THE MANAGEMENT OF ANO-SCROTAL FISTULA

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Article info

Article History:

Received: 07-08-2026

Accepted: 10-09-2026

Published: 04-10-2026

KEYWORDS:

Ano-scrotal fistula,
Bhagandara,
Ksharasutra.

ABSTRACT

Anal fistula with scrotal extension is a complex presentation of fistula-in-ano arising from cryptoglandular infection. Its anterior location and proximity to delicate structures make management challenging. Conventional *Ksharasutra* therapy is effective but may be associated with prolonged treatment duration, postoperative discomfort, and scarring. So minimally invasive method has been proposed as a modified sphincter-preserving technique to address these limitations. A 45-year-old male patient presenting with recurrent perianal and scrotal discharge was clinically examined and diagnosed with anterior low trans-sphincteric fistula having scrotal extension with a common internal opening at 12 o'clock position. Minimally invasive technique was performed by intercepting the fistulous tract 2cm from the anal verge, followed by *Ksharasutra* ligation of proximal and distal segments. Adjunctive management included *Murivenna* instillation, irrigation with copper sulphate solution, internal Ayurvedic medications such as *Gugguluthiktaka Kashaya*, *Guggulu Panchapala Choornam*, *Kaisora Guggulu*, *Triphala Choornam*, and regular sitz bath. Pain and purulent discharge significantly reduced within two weeks, and complete tract cut-through occurred by the third week. Total wound healing was achieved within five weeks. No recurrence was observed during one-year follow-up. Minimally invasive and sphincter-preserving technique appears to be a safe approach for fistula-in-ano with scrotal extension. It reduces treatment duration, tissue trauma, postoperative morbidity, and scarring while effectively addressing the cryptoglandular source. Larger prospective studies are required to establish standardized protocols and long-term outcomes.

INTRODUCTION

Anal fistula is a distressing anorectal condition most commonly arising from cryptoglandular infection of the anal glands.^[1] In some male patients, the fistulous tract may extend anteriorly from the anal canal into the scrotum, creating a more complex clinical presentation. Such scrotal extension is characterized by a secondary external opening on the rugose skin of the scrotum or at the scroto-perineal junction. Clinically, patients typically present with scrotal pain, swelling, and purulent discharge.^[2]

Anal fistulas with scrotal extension are usually low trans-sphincteric or inter-sphincteric in type and are commonly associated with anterior internal openings.

Their atypical course and proximity to delicate structures make management challenging. Various modern surgical modalities have been employed for fistula-in-ano, including fistulectomy, fistula-tract laser closure (FiLaC), endorectal advancement flap.^[3] Despite these advances, achieving complete eradication of disease while preserving continence and minimizing recurrence remains a significant challenge.^[4]

In the classical Ayurvedic texts, *Bhagandara* is clinically correlated with fistula-in-ano due to its comparable clinical presentation. Sushruta described *Bhagandara* as one of the *Ashta Mahagada* (eight diseases that are particularly difficult to treat). According to Sushruta, *Bhagandara* is a pathological condition affecting the *Bhaga*, *Guda*, and *Vasti Pradesha*. As *Bhaga* denotes the external genital region, fistulous tracts extending to or involving the scrotum can be interpreted as manifestations occurring within the *Bhaga Pradesha*.^[5]

Access this article online

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<https://doi.org/10.47070/ijapr.v14i9.4356>

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Anal fistula continues to be a difficult surgical condition because of its high recurrence rate and associated complications. Although traditional *Ksharasutra* therapy is widely practiced and recognized for its effectiveness, it has limitations, including prolonged treatment duration and extensive post-operative scarring.^[6-9] Furthermore, excessive tissue cutting in the scrotal region or overly tight ligation may compromise local blood supply, resulting in localized tissue necrosis and potentially leading to Fournier's gangrene.^[10]

A critical factor in successful management is the identification and eradication of the pathological source, particularly the infected anal crypt, which serves as the primary focus of persistent sepsis. Treating only the external tract without eliminating this source may predispose to recurrence.^[11]

In view of these concerns, a minimally invasive sphincter-preserving approach developed from the concept of- Interception of Fistulous Tract with Application of *Ksharasutra* (IFTAK)- has been adopted. This technique focuses on intercepting the fistulous tract near its origin and applying *Ksharasutra* in a targeted manner, thereby minimizing tissue damage and reducing treatment duration.^[12-15]

MATERIALS AND METHODS

Presenting complain with medical history

A 45-year-old male patient was admitted to the Shalyatantra Unit of Government Ayurveda College Hospital, Kannur, with complaints of recurrent episodes of boils in the perianal region and scrotum for the past three years. The condition initially began as a gradually developing boil in the right perianal region, which later ruptured, leading to intermittent bleeding and purulent discharge. Gradually develop boil in scrotal region also with repeated episodes of bloody pus discharge since onset.

Clinical Finding

On Inspection

- External opening was noted at the 11 o'clock position, approximately 4cm from the anal verge.
- Another external opening was identified at the base of the scrotum, situated about 0.5cm lateral to the median raphe on the right side.

On palpation

- Induration was felt radially from the external opening located in perianal region to the anal verge towards 12 o'clock position (anterior midline).

- From anterior midline induration continuing up to the external opening at the base of the scrotum.

Digital rectal examination

- Tender dimple point at the 12 o'clock position at the level dentate line.

On probing

Common internal opening was identified at the 12 o'clock position and confirmed by hydrogen peroxide inserted through external openings.



Figure 1: During Examination

Procedure

Under strict aseptic precautions, local anesthesia was administered in and around the external openings. A malleable probe was gently introduced through the external opening at the base of the scrotum and guided along the fistulous tract up to the internal opening at the 12 o'clock position within the anal canal.

A vertical incision measuring approximately 2cm was made in the anterior midline, about 2cm away from the anal verge (above the level of external sphincter). The incision was carefully deepened by splitting the muscle fibers to access the tract up to probe. The fistulous tract was then intercepted at this level.

Ksharasutra ligation was performed in the distal segment of the tract (from external opening to intercepted area). Subsequently, probing was carried out through the intercepted area towards the internal opening at the 12 o'clock position, and *Ksharasutra* ligation was applied to the proximal tract as well.

Hemostasis was secured, and antiseptic dressing with betadine packing was done. The patient was advised to take regular sitz baths with saline water twice daily for 20 minutes.



Figure 2: Procedure

Internal medicine given

1. *Guggulu tikthaka kashayam* 90ml-0-90ml before food.
2. *Guggulu panchapala choornam* 1 tsp-0-1 tsp with honey after food.
3. Tab *Kaisora guggulu* 1-0-1 after food
4. Tab septilin 1-0-1 after food
5. *Thriphala choornam* 1 tsp with lukewarm water at bed time.

Time line of treatment

The sequence of therapeutic events in the current case study is depicted in table 1 as a timeline. It details the specific procedures performed, the progression of symptoms such as pain and pus discharge, and the corresponding clinical outcomes over the course of the intervention. Representative clinical photographs illustrating key stages of treatment and wound healing are presented in Figures 3–5.



Figure 3 After the removal of distal thread



Figure 4 After the cut opening

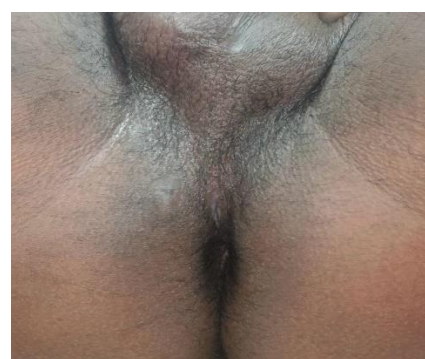


Figure 5 After complete healing

Date	Procedure	Others
03/01/2025	In distal and proximal tracts, <i>Ksharasutra</i> ligation was done.	Intercepted wound packed with betadine.
09/01/2025	Distal <i>Ksharasutra</i> removed. Proximal <i>Ksharasutra</i> changed.	From this week onwards, <i>Murivenna</i> instillation started – 10ml. Intercepted wound packed with <i>Jathyadi Ghritam</i> .
15/01/2025	Proximal <i>Ksharasutra</i> changed.	—

21/01/2025	Proximal tract cut opened with tissue-cutting forceps.	Cut-open part packed with betadine.
22/01/2025	Irrigation with CuSO ₄ solution through the external opening of the scrotal area for 1 week.	Jathyadi Varti plugged into the cut-open area.

RESULT

Within two weeks, a significant reduction in purulent discharge from the scrotal region as well as perianal region was observed. After three weeks, complete resolution of pain and pus discharge was noted, and the proximal tract was fully cut through. The remaining wound healed satisfactorily within five weeks. Overall, the modified approach resulted in reduced treatment duration, minimized tissue damage, and decreased scarring, thereby demonstrating improved clinical outcomes.

Date	Peri -anal region		Scrotal region		
	Pus discharge	Induration	Pus discharge	Induration	Pain (VAS Score)
03/01/2025	2 drops of pus	Persist	3 drops	Persist	6
09/01/2025	2 drops of pus	Moderate	3 drops	Moderate	4
15/01/2025	Nil	Mild	2 drops	Mild	2
21/01/2025	Nil	Nil	Nil	Mild	0
22/01/2025	Nil	Nil	Nil	Nil	0

DISCUSSION

Ksharasutra therapy is widely regarded as one of the most effective treatment modalities for fistula-in-ano, demonstrating a high success rate with a low recurrence rate of approximately 3.33%.^[6] The procedure is simple, cost-effective, and associated with comparatively fewer complications and recurrences when compared with conventional surgical approaches. However, despite its established efficacy, conventional *Ksharasutra* therapy has certain limitations, particularly in complex fistulous tracts. Prolonged treatment duration, repeated manipulation of the tract, post-procedural pain, delayed healing, and relatively large postoperative scars may adversely affect patient compliance and overall treatment acceptability.^[11]

These limitations become more pronounced in cases of ano-scrotal fistula, a complex form of anterior fistula-in-ano in which the tract extends from the anal canal to the scrotum. Such fistulas present unique diagnostic and therapeutic challenges owing to their long tract length and involvement of a delicate anatomical region.^[16] In conventional *Ksharasutra* therapy, treatment of the entire fistulous tract requires sustained tissue cutting and repeated interventions, which may increase pain, delay healing, and result in cosmetically undesirable scarring. Furthermore, prolonged patency of the scrotal tract may predispose to bacterial colonization and increase the risk of local complications, including severe infections such as Fournier's gangrene.^[17] In contemporary surgical practice, where minimally invasive approaches are preferred, treatment strategies that reduce tissue trauma and shorten recovery time are particularly desirable.

The IFTAK (Interception of Fistulous Tract and Application of *Ksharasutra*) technique was introduced to overcome these limitations. The procedure involves interception of the fistulous tract closer to its origin near the anal verge, followed by targeted application of *Ksharasutra*. By shortening the functional length of the tract, IFTAK eliminates the need to treat the entire distal component, thereby reducing treatment duration, minimizing tissue trauma, and preserving sphincter integrity. Simultaneously, the technique addresses the primary cryptoglandular source of infection, which is considered the underlying etiological factor in most fistula-in-ano cases. Consequently, IFTAK offers a more controlled, minimally invasive, and patient-friendly alternative, particularly for complex fistulas with scrotal extension.^[12-15]

In the present case, the primary external opening was located approximately 4cm from the anal verge at the 11 o'clock position, along with a secondary external opening in the scrotal region. Following identification of the common internal opening, interception was performed at the 12 o'clock position, approximately 2cm from the anal verge. This strategic interception effectively shortened the fistulous tract, minimized the extent of tissue destruction and subsequent scarring, and facilitated eradication of the underlying cryptoglandular infection there by healing of perianal fistula. The targeted approach also avoided unnecessary manipulation of the distal scrotal extension, thereby reducing postoperative morbidity.

The clinical outcome observed in this case supports the advantages of the minimally invasive IFTAK based technique. Rapid reduction in pain and discharge was noted following the procedure, with

early tract cut-through and progressive healing. Complete recovery was achieved within approximately one month, accompanied by minimal scar formation. Importantly, no recurrence was observed during one year of follow-up.

Adjunctive local and systemic therapies may have contributed to the favorable outcome observed in this case. *Murivenna* instillation and irrigation with copper sulphate solution provided antimicrobial, anti-inflammatory, debriding, and wound-healing effects, facilitating reduction of pain, edema, discharge, microbial load, and unhealthy granulation tissue while promoting tract contraction and healing.^[18,19] Concurrently, internal medications including *Gugguluthiktaka Kashaya*, *Guggulu Panchapala Choornam*, Septilin tablet, *Kaisora Guggulu* tablet, and *Triphala Choornam* may have supported infection control, modulation of inflammation, tissue repair, granulation, and bowel regulation. In addition, regular warm saline sitz baths helped maintain local hygiene, improve microcirculation, reduce sphincter spasm and edema, and thereby enhance wound healing.

CONCLUSION

The minimal invasive technique from the concept of IFTAK technique appears to be a safe and effective sphincter-preserving approach in the management of fistula-in-ano with scrotal extension. By intercepting the primary tract close to the anal canal and limiting extensive dissection of the anterior scrotal component, the technique minimizes tissue trauma, reduces risk to spermatic cord structures, and promotes controlled healing through gradual chemical debridement and fibrosis. Clinically, it offers satisfactory tract resolution with reduced morbidity, acceptable healing time, and low recurrence, making it a promising modality for complex anterior fistulas; however, larger prospective controlled studies are warranted to establish standardized protocols and long-term outcome data.

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Cite this article as:

Jannathul Sherin M, Gangadharan K. Minimally Invasive Technique for the Management of Ano-Scrotal Fistula. International Journal of Ayurveda and Pharma Research. 2026;14(9):299-304.

<https://doi.org/10.47070/ijapr.v14i9.4356>

Source of support: Nil, Conflict of interest: None Declared

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