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Modified Conventional Ksharasutra Therapy (MC-KST) for Grade III Trans-Sphincteric Fistula-in-Ano: A Case Report

Hema Sinha,[1] Foram Joshi,[2] Vyasadeva Mahanta[3*]

[1]Third Year MS Scholar, [2]Assistant Professor, [3]Professor, Department of Shalya Tantra, All India Institute of Ayurveda (AIIA), New Delhi, India

ABSTRACT:

Acharya Sushruta described *Chedana Karma* (excision) and *Ksharasutra* therapy (medicated seton technique) for managing *Bhagandara* (fistulas of pelvic, Ano-rectal, and perineal regions). Modified Conventional *Ksharasutra* Therapy (MC-KST) was introduced at the All India Institute of Ayurveda (AIIA), New Delhi, in 2018 for complex trans-sphincteric fistula-in-ano. The technique combines coring of the fistulous tract up to the external anal sphincter (EAS), interception, and staged *Ksharasutra* therapy to eradicate anal gland infection and healing of fistulous tract while minimizing sphincter injury, and preserving continence. In this case report, a 20-year-old male CA student presented with pus discharge from the right sub-scrotal region and irregular bowel habits for two months. Local perianal examination in lithotomy position revealed a single external opening at the 11 o'clock position at the base of the right side of scrotum, approximately 6 cm from the anal verge. Digital rectal examination revealed induration and tenderness at the 12 o'clock position above the dentate line. MRI fistulogram demonstrated a St. James's University Hospital Grade III trans-sphincteric fistula-in-ano, with an internal opening at 12 o'clock, approximately 2.8 cm from the anal verge. The tract extended to the base of the scrotum, without supra-levator extension. The patient underwent MC-KST under saddle block. Complete cut-through of the fistulous tract by *Ksharasutra* was achieved after 39 days of regular treatment, followed by complete wound healing within an additional 20 days. No complications were reported during treatment. The patient remained free from recurrence throughout six months of follow-up. Study concluded that MC-KST demonstrated a favourable outcome in this case of Grade-III trans-sphincteric fistula-in-ano, with complete tract cut-through and subsequent wound healing within 59 days. The absence of reported complications and recurrence during six months of follow-up suggests that MC-KST may be a promising approach for managing complex trans-sphincteric fistula-in-ano.

KEYWORDS: Anal fistula, *Bhagandara*, *Ksharasutra*, MC-KST, MRI fistulogram, *Sushruta.*

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***Corresponding Author:**
Dr. Vyasadeva Mahanta
Professor, Department of Shalya Tantra,
All India Institute of Ayurveda (AIIA), New Delhi, India
Email: drvyasaiia@gmail.com

INTRODUCTION:

Bhagandara, described in *Nyaya Chandrika*, encompasses fistulous disorders of the perineal, ano-rectal (*Guda*) and pelvic (*Basti*) regions. [1] The estimated prevalence of fistula-in-ano is more common in men than in women, with reported incidence rates of 12.3 and 5.6 cases per 100,000 population, respectively. The mean age at diagnosis is approximately 38 years, with the condition occurring predominantly in individuals aged 20–40 years. [2] *Ksharasutra* therapy is an established *Ayurvedic* para-surgical treatment for fistula-in-ano, whose clinical efficacy has been evaluated by the Indian Council of Medical Research (ICMR). [3]

In contemporary practice, fistula-in-ano is classified according to its anatomical relationship with the anal sphincter complex using the Parks classification and its complexity on MRI using the St. James's University Hospital (SJUH) classification. [4] [5] Despite advances in surgical management, recurrence and postoperative faecal incontinence remain significant concerns, particularly in complex and high fistulas. *Acharya Sushruta* described *Chedana Karma* and recommended *Ksharasutra* therapy for *Bhagandara* involving vital anatomical structures (*Marma*), emphasizing the importance of preserving the sphincter complex and maintaining continence. [6]

Conventional *Ksharasutra* is prepared by applying 11 coatings of *Snuhi Ksheera* (*Euphorbia neriifolia* Linn), seven coatings of *Haridra* (*Curcuma longa* Linn) powder, and three coatings of *Kshara* derived from *Apamarga* (*Achyranthes aspera* Linn) to surgical linen thread No. 20.[7] The medicated thread facilitates gradual cutting, drainage, and healing of the fistulous tract. Although favourable healing outcomes have been reported, treatment may require several months, particularly for long and complex fistulas. Consequently, modifications such as partial fistulotomy, partial fistulectomy, and Interception of Fistulous Tract with Application of *Ksharasutra* (IFTAK), introduced by Prof. M. Sahu, have been developed to reduce treatment duration while preserving sphincter function. [8][9][10]

During the clinical application of IFTAK for complex trans-sphincteric fistulas, Prof. (Dr.) V. D. Mahanta observed recurrent abscess formation in some patients where residual fibrosed tracts left for natural absorption and occasional intraoperative bleeding. These observations prompted the development of Modified Conventional *Ksharasutra* Therapy (MC-KST) at the All India Institute of Ayurveda (AIIA), New Delhi, in 2018. The technique combines coring out of the fistulous tract up to the external anal sphincter (EAS), while preserving skin integrity, with interception and *Ksharasutra* application in the residual tract extending towards the infected anal crypt corresponding to the internal opening. This approach aims to remove fibrosed tissue, reduce the tract length requiring gradual cutting, minimize bleeding and sphincter injury, and promote healing with preservation of continence. [11]

The present case report describes the management of a Grade-III fistula-in-ano using MC-KST, highlighting the operative technique, postoperative course, fistula healing, and preservation of anal sphincter function.

CASE REPORT:

A 20-year-old male CA student presented to the *Guda Roga* OPD with complaints of pus discharge from the right sub-scrotal region and irregular bowel habits for two months. He occasionally experienced pain while sitting and during defecation, which did not require medication. Approximately six months prior to presentation, he had developed a painful swelling in the same region, which subsequently ruptured spontaneously. He had taken medication from a local practitioner for five days following the rupture. The patient reported episodes of increased stool frequency, with bowel movements occurring two to three times daily for three to five consecutive days with normal consistency of stool, followed by a return to normal bowel habits. No history of increased stool frequency associated with loose stools, urgency, or other gastrointestinal symptoms. He had no significant past medical or family history, history of chronic illness, previous surgical intervention, or known drug allergies. Over time, the purulent discharge increased, causing discomfort and interfering with his daily activities. Following a thorough clinical evaluation, the patient was admitted to the *Shalya Tantra* Inpatient Department (IPD) of All India Institute of Ayurveda (AIIA) Hospital for further management.

On Local examination, an external opening was revealed at the 11 o'clock position at the base of the right side of the scrotum, approximately 6 cm from the anal verge. (Figure-1,2) The sub-scrotal region was soiled with pus. The surrounding skin and soft tissues appeared normal, with no obvious inflammation. Mild tenderness was elicited along the course of the fistulous tract. Digital rectal examination revealed normal anal sphincter tone, with induration and tenderness at the 12 o'clock position.

Preoperative surgical screening was done, including haematological investigations such as haemoglobin (Hb), bleeding time (BT), and clotting time (CT); liver function tests; renal function tests; and a diabetic profile. Serological screening for human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), hepatitis C virus (HCV), and venereal disease research laboratory (VDRL) was also conducted. Routine and microscopic examination of urine was performed. All laboratory parameters were within normal limits. A chest X-ray (posteroanterior view) was unremarkable, and electrocardiography (ECG) revealed sinus rhythm. Diagnostic Magnetic resonance imaging (MRI) fistulogram revealed a St. James's University Hospital Grade-III trans-sphincteric fistula-in-ano, with the internal opening located at the 12 o'clock position, approximately 2.8 cm from the anal verge. The fistulous tract extended up to the base of the scrotum. (Figure-3)

Based on the clinical examination and MRI findings, the patient was diagnosed with Grade-III trans-sphincteric fistula-in-ano according to the St. James's University Hospital classification. The fistulous tract involved both the internal and external anal sphincters, with no evidence of supra-levator extension.

THERAPEUTIC INTERVENTION:

After obtaining pre-anaesthetic check-up (PAC) clearance, written informed consent for surgery and anaesthesia was obtained from the patient. The modified conventional *Ksharasutra* (MC-KST) procedure was performed under saddle block. (Figure-4) The patient was placed on the operating table in the lithotomy position. Following the standard operative protocol for skin preparation, painting, and draping, hydrogen peroxide mixed with povidone-iodine (Betadine) was gently injected through the external opening. The solution came out through the anal canal without resistance, facilitating identification of the fistulous tract. The internal opening was identified near the dentate line, approximately 2 cm above the anal verge. A small circular incision was made around the external opening, taking care not to disrupt the fistulous tract. The tract was then carefully cored out up to the level of the external anal sphincter. A plane was created by making a small incision at the level of the external anal sphincter and the fistulous tract was intercepted with taking care of surrounding tissues. Thereafter, a soft, malleable, blunt tip probe with a hole was passed through proximal track and taken out from the internal opening. Initially, primary threading was done with linen thread. Haemostasis was achieved, and the external opening was partially closed. An antiseptic dressing was applied using *Jatyadi Taila*.

On the day of surgery, prophylactic antibiotic therapy with intravenous ceftriaxone (1 g) was administered in the operating theatre. A single dose of diclofenac injection was administered three hours later in the recovery room. From the first postoperative day, the patient was prescribed *Triphala Guggulu* (250 mg), two tablets twice daily after food and advised to chew it properly and take it with lukewarm water. Sitz bath with *Panchavalkala Kwatha* was advised once daily, approximately 30 minutes before dressing. During daily wound care, the fistulous tract and the intervening wound site were cleaned with *Panchavalkala Kwatha*, followed by antiseptic dressing with *Jatyadi Taila*. This wound-care regimen was continued until complete healing. On the third postoperative day, the plain thread was replaced with a *Guggulu*-based *Ksharasutra*. Subsequently, the *Ksharasutra* was replaced by the railroad technique at weekly intervals as part of the planned treatment. [12]

Postoperatively, the patient was monitored for pain, discharge, wound healing, and any discomfort related to the procedure. Pain intensity and the nature and quantity of discharge from the external opening were assessed during subsequent follow-up visits. The healing progress of the fistulous tract and the intervening wound was

evaluated through regular clinical examinations and wound assessments. Anal continence was assessed to identify any postoperative impairment in sphincter function. (Figure-6). The patient was followed up regularly until complete wound healing.

Results and Follow-up:

On the first and second postoperative days, the patient experienced mild pain, for which diclofenac suppository was administered once daily. No analgesic was required from the third postoperative day onward. Pus discharge from the interception wound was observed following *Ksharasutra* application and persisted for up to several weeks after *Ksharasutra* change. The interception wound gradually narrowed and required periodic dilatation every 20 days. Daily cleaning of the fistulous tract was performed by injecting *Panchavalkala Kwatha* through the external opening. After two weeks of this management, the fistulous tract showed progressive contraction, and the irrigating fluid no longer passed through the tract during cleaning. The coring fistulous wound healed within 21 days of surgery. Pus discharge from the interception site subsequently ceased, and the cut-through of the remaining proximal fistulous tract was done on the 39th postoperative day. Complete healing of the fistulous tract was achieved by the 59th postoperative day without disturbing the normal contour of the anus. (Figure-5) During six months of follow-up, the patient remained free from clinical signs of anal fistula recurrence and fistula-related complications.

Table-1: Case Timeline

Date	**Therapeutic intervention**
13/02/2026	The patient visited OPD with the complaint of pus discharge from the right sub scrotal region and irregular bowel habit for last 2 months
24/02/2026	Admitted in IPD; surgical profile and MRI were done. Findings suggested as Grade-III trans-sphincteric fistula-in-ano. PAC was also done.
25/02/2026	The patient was operated by MC-KST technique under saddle block. Inj. Antibiotic and analgesic given on the day of surgery.
26/02/2026 (1st post-operative day)	The patient was prescribed *Triphala Guggulu* (250 mg), two tablets twice daily after food and advised to chew it properly and take it with lukewarm water. Sitz bath with *Panchavalkala Kwatha* was advised once daily, approximately 30 minutes before dressing. During daily wound care, the fistulous tract and the intervening wound site were cleaned with *Panchavalkala Kwatha*, followed by antiseptic dressing with *Jatyadi Taila.*

	Diclofenac suppository was administered once daily
28/02/2026 (3rd post-operative day)	Linen thread was replaced with a *Guggulu*-based *Ksharasutra.*
07/03/2026 (10th post-operative day)	*Ksharasutra* changed for the second time and continued same treatment.
14/03/2026 (17th post-operative day)	*Ksharasutra* changed for the third time and continued same treatment.
21/03/2026 (24th post-operative day)	*Ksharasutra* changed for the fourth time and continued same treatment.
28/03/2026 (31st post-operative day)	*Ksharasutra* changed for the fifth time and continued same treatment.
05/04/2026 (39th post-operative day)	Cutting through the fistulous tract was done and continued same treatment.
25/04/2026 (59th post-operative day)	Complete healing
25/10/2026	No recurrence.



Figure-1: Before treatment

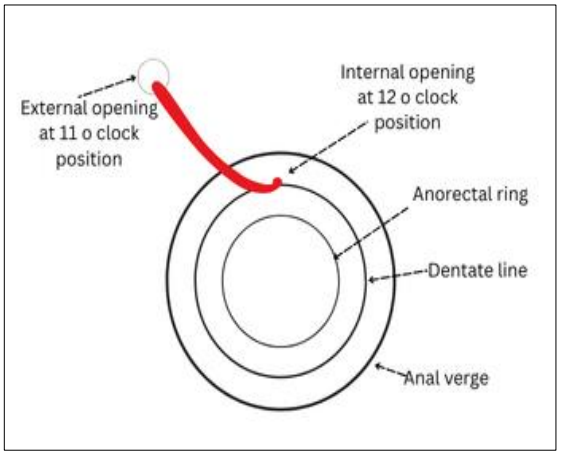


Figure-2: Diagrammatic presentation

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STUDY DATE:	13-Feb-2026	STUDY:	pelvis^APT_PELVIS
[redacted]		AGE:	20 Years
REF. DR:		SEX:	M

MRI - FISTULOGRAM

Clinical indication: C/o recurrent Perianal fistula.

Findings:

There is grade III trans sphincteric perianal fistula internal opening at 12 O'clock position. Distance from anal verge measures approximately 2.8 cm. It is extending downwards along gluteal cleft up to base of scrotum. Length of the track measures approximately 4.6 cm. There are micro abscesses / inflammatory changes seen along the track. No branching / multiple fistulae. Ischio-rectal fossa is unaffected. No e/o communication with rectum. No e/o abscess collection.

Urinary bladder is normal.
Recto-sigmoid colon is normal.
Prostate gland and seminal vesicles are appears normal.

CONCLUSION:

Grade III trans sphicteric perianal fistula internal opening at 12 O'clock position. Distance from anal verge measures approximately 2.8 cm. It is extending downwards along gluteal cleft up to base of scrotum. Length of the track measures approximately 4.6 cm. There are micro abscesses / inflammatory changes seen along the track. No branching / multiple fistulae.

Ischio-rectal fossa is unaffected. No e/o communication with rectum. No e/o abscess collection.

Atul deshmukh

DR. ATUL P. DESHMUKH.
M.B. DMRD, DMRE

WITH REGARDS,

C-9/5, KRISHNA NAGAR, DELHI, PIN 110051
Tel.: 011-7155-7647, E-mail : info@satdiagnostic.com

Figure-3: MRI Fistulogram findings



Figure-4: MC-KST Procedure



Figure- 5: After healing

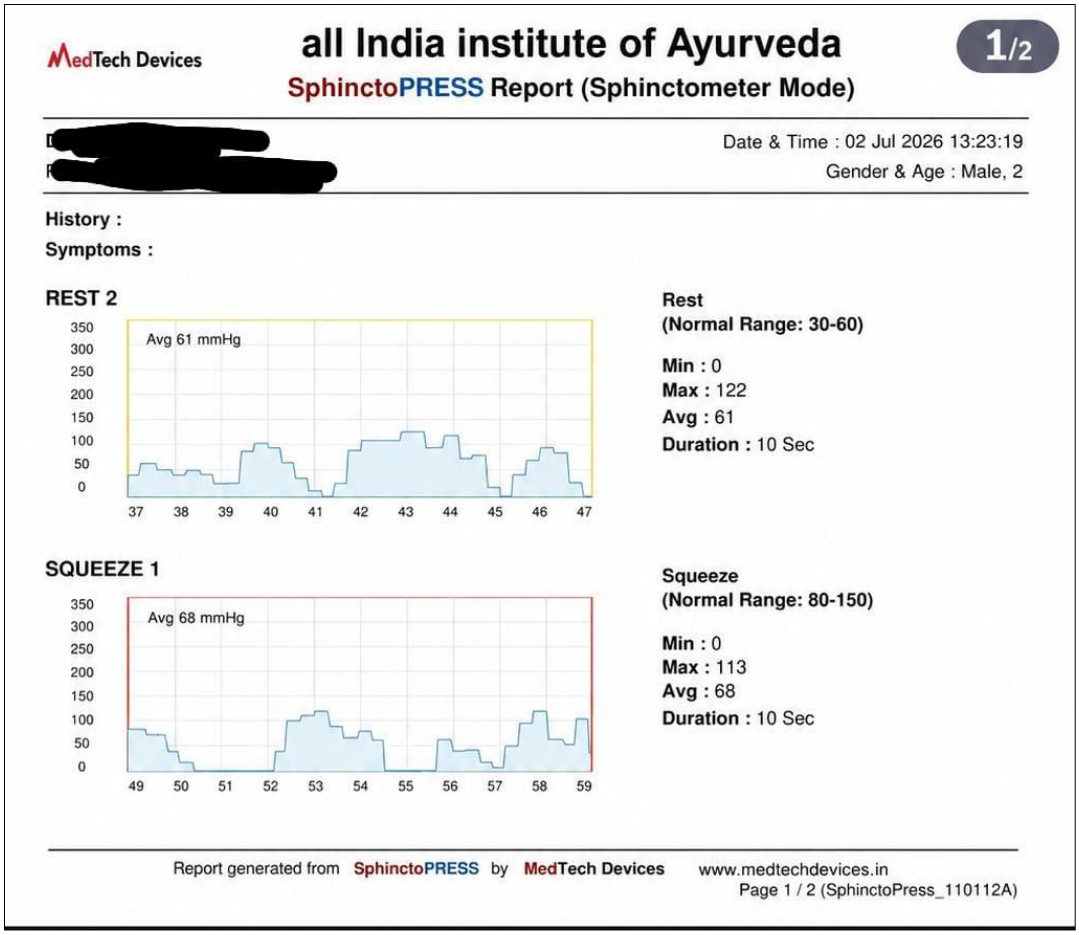


Figure-6: Post-operative Resting and Squeezing pressure.

DISCUSSION:

Anal fistula is one of the clinical conditions encompassed by the broader Ayurvedic term *Bhagandara* (splitting of *Bhaga*, *Guda*, *Basti Pradesha*), which refers to fistulous disorders involving the perineal region. These disorders may include fistula-in-ano, rectovaginal fistula, vesicovaginal fistula, and colovaginal fistula, cervical (either an abnormal opening into the cervix or in the neck), enterovaginal (between the bowel and vagina), rectouterine (between the uterus and bowel) etc. [13], [14] Although anal fistula is a common anorectal disorder, its management remains challenging for surgeons because of the risk of recurrence and postoperative faecal incontinence, particularly in complex fistulas involving a substantial portion of the anal sphincter complex. [15] In modern surgery, fistulotomy and fistulectomy are established surgical procedures for appropriately selected cases of fistula-in-ano and generally demonstrate favourable healing rates. However, these procedures may not be suitable for complex trans-sphincteric fistulas because dividing or excising a substantial portion of the sphincter complex may increase the risk of postoperative incontinence. [16] Therefore, the management of complex

fistulas requires a treatment approach that achieves fistula healing while preserving sphincter function and maintaining the patient's quality of life.

In *Ayurveda*, conventional *Ksharasutra* therapy has demonstrated favourable outcomes in the management of both low and high anal fistulas, with reported success rates ranging from 94.1% to 100% in certain studies. [17]

Some studies have also reported favourable long-term outcomes compared with conventional surgery, although the time required for complete healing may be longer. *Ksharasutra* therapy is an effective ambulatory treatment option that facilitates the gradual cutting and healing of the fistulous tract. Conventional *Ksharasutra* therapy has certain limitations in complex trans-sphincteric fistulas, including prolonged treatment duration, repeated hospital visits for thread change, pain associated with the presence of the thread and persistent discharge, soiling of clothes due to the chemical action of the medicated coating, and long scar formation. The prolonged treatment period and repeated hospital visits may cause physical and psychological discomfort and interfere with the routine activities and professional responsibilities. [18]

Recognising the potential consequences of injury to vital anatomical structures, Acharya Sushruta recommended *Ksharasutra* therapy for *Bhagandara* involving or situated close to *Marma* (vital anatomical structures). This principle highlights the importance of protecting vital structures during surgical intervention. In the management of complex fistula-in-ano, particular attention must be given to preserving the anal sphincter complex to maintain continence and prevent functional impairment.

To overcome the limitations of conventional *Ksharasutra* therapy and reduce the overall treatment duration, several modifications have been developed by surgeons in Ayurvedic institutions. These include partial fistulotomy followed by *Ksharasutra* application, partial fistulectomy with *Ksharasutra* application, and partial fistulectomy with marsupialisation followed by *Ksharasutra* therapy. [19] These approaches aim to reduce the length of the tract requiring gradual cutting while preserving the functional integrity of the anal sphincter. But in these procedures, post fistulotomy / post fistulectomy wound is required daily antiseptic dressing. Among these modifications, Prof. M. Sahu introduced a technique known as Interception of Fistulous Tract with Application of *Ksharasutra* (IFTAK). In this procedure, a window (wound) is made in the inter-sphincteric plane according to the anatomical course of the fistulous tract, and intercepted at this level. [10] The proximal part of the fistulous tract is treated with *Ksharasutra* between the interception site to infected anal crypt corresponding to the internal opening. The distal part of the fistulous tract was left as such for healing. This technique aims to shorten the treatment duration by reducing the length of the tract requiring gradual cutting with *Ksharasutra* and minimise injury to the anal sphincter complex while

maintaining a favourable therapeutic outcome.

During the clinical application of IFTAK for complex trans-sphincteric fistula-in-ano, Prof. (Dr.) V. D. Mahanta observed that, in some cases, reported with abscess formation several months after the procedure may be due to distal fibrosed fistulous tract left untreated following interception. This tissue might act as a foreign body and produce pus in that area. In addition, intraoperative bleeding was encountered in some cases while approaching the fistulous tract at the inter-sphincteric level, because more vascularity which is required necessitating wound closure to achieve haemostasis.

Looking to these limitations, further modification by integrating the principles of conventional *Ksharasutra* therapy, IFTAK, and core fistulectomy, Modified Conventional *Ksharasutra* Therapy (MC-KST) was introduced at the All India Institute of Ayurveda (AIIA), New Delhi, in 2018 for the management of trans-sphincteric fistula-in-ano. The technique involves coring out the fistulous tract while preserving the overlying skin and avoiding unnecessary injury to the external anal sphincter (EAS), followed by interception and application of a *Ksharasutra* in the proximal tract extending from the interception site near the EAS to the infected anal crypt corresponding to the internal opening. By combining targeted excision of the fibrosed portion of the fistulous tract and the gradual therapeutic action of *Ksharasutra* in the proximal tract, MC-KST aims to facilitate effective fistula eradication, reduce treatment duration, minimise sphincter injury, preserve continence, reduce intraoperative bleeding, and promote wound healing. The rationale for selectively coring of the fistulous tract up to EAS while retaining *Ksharasutra* therapy for the proximal tract is supported by the Acharya Sushruta principles of *Chedan Karma* and *Ksharasutra* certainly provide an additional improvement in the success rate of *Ksharasutra.* [20]

MC-KST represents a modified approach intended to address some of the limitations encountered with conventional *Ksharasutra* therapy and IFTAK in complex trans-sphincteric fistula-in-ano. The selective excision of fibrosed fistulous tissue, combined with *Ksharasutra* application in the proximal tract, may help balance effective disease eradication with preservation of sphincter function. This technique is required minimum hospital stay, mild pain intermittently due to presence of thread during course of treatment.

Additionally, the medicines administered during the course of treatment may have contributed to the wound-healing process. Sitz baths with *Panchavalkala Kwatha* may help cleanse the wound area, maintain perianal hygiene, and reduce local discomfort. *Panchavalkala Kwatha* comprises the barks of five medicinal trees and is classically described as possessing *Kashaya Rasa* (astringent taste), *Vrana Shodhana* (wound cleansing) and *Vrana Ropana* (wound healing) properties. [21] These properties may support postoperative wound care by promoting wound cleanliness and facilitating the

healing process. Accordingly, *Panchavalkala Kwatha* was used during the postoperative period as part of the treatment regimen to support wound healing and recovery. *Triphala Guggulu* is a polyherbal formulation comprising the fruits of *Haritaki* (*Terminalia chebula* Retz.), *Bibhitaki* (*Terminalia bellirica* Roxb.), *Amalaki* (*Phyllanthus emblica* Linn.; synonym: *Emblica officinalis* Gaertn.), and *Pippali* (*Piper longum* L.), along with the oleo-gum-resin of *Guggulu* (*Commiphora wightii* (Arn.) Bhandari; synonym: *Commiphora mukul* Hook. ex Stocks). The formulation has been reported to possess antimicrobial and anti-inflammatory properties. Its potential effects on inflammatory responses and tissue repair may contribute to the healing of the fistulous wound. [22] *Jatyadi Taila* contains ingredients such as *Nimba (Azadirachta indica* A. Juss.) and *Daruharidra* (*Berberis aristata* DC.), which have been reported to possess antibacterial properties and potential wound-healing effects.

Topical application of *Jatyadi Taila* as a wound dressing may provide a favourable environment for wound healing. Its phytochemical constituents, including flavonoids, essential oils, tannins, glycosides, steroids, and alkaloids, may contribute to its therapeutic effects. Furthermore, *Jatyadi Taila* has been associated with enhanced protein, hydroxyproline, and collagen synthesis in granulation tissue, potentially promoting wound contraction and re-epithelialization. [23] The patient was followed up for the next six months and advised to use *Jatyadi Taila* locally. No complications related to the fistulae were reported during this period.

CONCLUSION:

Modified Conventional *Ksharasutra* Therapy (MC-KST) demonstrated a favourable clinical outcome in this case of complex trans-sphincteric fistula-in-ano, with MRI-confirmed complete healing and no recurrence during follow-up. Anal manometry findings indicated preserved sphincter function, with no evidence of anal incontinence. These findings suggest the potential utility of MC-KST in selected cases.

Limitation of study:

This study is limited by its single-case design and the inclusion of only one patient with a complex trans-sphincteric fistula-in-ano without secondary ramifications. Although the clinical outcome, MRI findings, and anal manometry results were favourable, the findings cannot be generalised based on a single case. Further studies involving a larger sample size, diverse presentations of complex fistula-in-ano, and longer follow-up periods are warranted to establish the efficacy, safety, sphincter-preserving potential, and long-term outcomes of Modified Conventional *Ksharasutra* Therapy (MC-KST).

Author Contribution:

The surgical procedure and preparation of the case report were carried out by the corresponding author. The first and second authors contributed to data collection, compilation, and

presentation, as well as reviewing the manuscript.

Patient informed Consent: Informed written consent of patient consent has been taken for the treatment and publication without disclosing the identity of patients.

Source of Funding: Not Applicable**.**

Conflict of interest: - None

Guarantor: The corresponding author is the guarantor of this article and its contents.

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