

MANAGEMENT OF REFRACTORY SACROCCOCCYGEAL PILONIDAL SINUS (SHALYAJA NADI VRANA) VIA MINIMALLY INVASIVE PARA-SURGICAL ABLATION USING SNUHI-APAMARGA KSHARSUTRA: A CARE-COMPLIANT CLINICAL CASE REPORT

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Article Received on 30 June 2026,
Article Revised on 21 July 2026,
Article Published on 01 August 2026,
<https://doi.org/10.5281/zenodo.21698436>

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How to cite this Article: ^{*1}Dr. Alok Kumar, ²Dr. Arjun Anil, ³Dr. Priyanka Barange, ⁴Dr. Elizabeth P. John, ⁵Prof. Ashok Kumar Dwivedi, (2026). Management Of Refractory Sacroccocygeal Pilonidal Sinus (Shalyaja Nadi Vrana) Via Minimally Invasive Para-Surgical Ablation Using Snuhi-Apamarga Ksharsutra: A Care-Compliant Clinical Case Report. World Journal of Pharmaceutical Research, 15(15), 1485–1493.

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1. ABSTRACT

Background: Sacroccocygeal pilonidal sinus disease (PNS) is a chronic inflammatory disorder predominantly affecting the young adult male population. Characterized by hair penetration into the subcutaneous tissues of the natal cleft, it yields blind epithelized tracts presenting with recurrent suppuration and fistulization. Standard aggressive surgical methods—ranging from wide excision with secondary intention healing to advanced advancement flaps—are plagued by prolonged hospitalization, significant postoperative pain, and high recurrence indices. In classical Ayurvedic text (*Sushruta Samhita*), this pathology is dynamic with *Shalyaja Nadi Vrana*. Acharya Sushruta pioneered *Ksharsutra* therapy, a specialized medicated seton intervention, as a definitive minimally invasive para-surgical approach for treating deep-seated fistulous and sinus tracts. **Case Presentation:** A 26-year-old male heavy vehicle operator presented with a two-month history of a persistent, painful, purulent-discharging sinus within the

sacrococcygeal natal cleft, refractory to conservative antibiotic regimens. Clinical assessment identified a classic pilonidal sinus tract with an indurated subcutaneous cord extending 5.5 cm. Under local infiltration anesthesia, exploratory probing, extraction of embedded hair shafts (*Shalyaharana*), and primary fistulotomy with immediate *Snuhi-Apamarga Ksharsutra* application were executed. Systemic support was sustained via *Triphala Guggulu*, *Gandhak Rasayan*, and *Panchsakar Churna*, coupled with daily local applications of *Jatyadi Taila*.

Results: The medicated seton achieved simultaneous chemical debridement, tissue lysis, and synchronized healthy granulation tracking at a cutting rate of 1.0 to 1.5 cm per week. The entire pathological sinus tract was entirely ablated and epithelialized within 45 days. No adverse computational events, secondary tissue infections, or structural contour defects were recorded. At a 12-month post-procedural follow-up, the patient exhibited complete functional recovery with zero recurrence. **Conclusion:** This case report highlights that *Snuhi-Apamarga Ksharsutra* therapy constitutes a highly effective, low-cost, ambulatory, and radical alternative to radical excision, comfortably satisfying modern criteria for optimal day-care surgical interventions.

KEYWORDS: Pilonidal Sinus, Shalyaja Nadi Vrana, Ksharsutra, Snuhi-Apamarga, Anushastra Karma, Case Report, CARE Guidelines.

2. INTRODUCTION

Sacrococcygeal pilonidal sinus disease (PNS) is a complex, acquired chronic indolent condition that is fundamentally localized within the intergluteal cleft.^[1] Rooted etymologically in the Latin expressions *Pilus* (hair) and *Nidus* (nest), its core pathomorphology involves the embedding and entrapment of free hair fragments inside the subdermal layers, driving a foreign-body granulomatous tissue reaction.^[1, 2] Globally, epidemiological datasets report an incidence of roughly 26 cases per 100,000 individuals, indicating a male predisposition with a 3:1 male-to-female ratio, peaking in the second and third decades of life.^[2] Hormonal shifts during puberty increase pilosebaceous gland activity, which, when combined with mechanical shearing forces from prolonged sitting, facilitates hair fragment insertion across the cutaneous barrier.^[2, 3] Modern surgical methodologies, including wide local excision with primary closure or advanced flap surgeries (e.g., Karydak, Limberg), often entail high operational costs, substantial tissue loss, prolonged wound care, and variable recurrence rates ranging up to 15%.^[3, 4]

Within the classical framework of Ayurvedic surgery (*Shalya Tantra*), Acharya Sushruta described this disease under the heading of *Nadi Vrana* (sinus tracts) in the 10th chapter of *Nidana Sthana*.^[5] When an untreated abscess or localized suppurative focus breaks into the deeper tissue planes without a clear exit route, it forms a long, blind inflammatory tube called a *Nadi* or *Gati*.^[5] When this tracking is triggered by an organic or inorganic foreign object trapped in the subcutaneous tissue, it is classified as *Shalyaja Nadi Vrana*.^[5] The continuous irritation from dead hair shafts acts as an active *Shalya* (exogenous foreign body), producing an active sinus track that exudes a clear, warm, or blood-tinged purulent fluid accompanied by local distress.^[5, 6] To treat these deep tracks without causing extensive structural damage, Acharya Sushruta introduced *Ksharsutra* (medicated seton) therapy in the 11th chapter of *Sutra Sthana*.^[6] This para-surgical procedure (*Anushastra Karma*) uses a chemically coated thread to provide simultaneous cutting and healing, offering an effective alternative for complete track eradication.^[6]

3. CASE HISTORY

3.1 Patient Information and Initial Complaints: A 26-year-old male working as an urban heavy commercial transit controller presented to our outpatient surgery wing (OPD 05, *Shalya Tantra*) at the PLRD Hospital, Khurja. He reported persistent pain, localized fluctuating swelling, and foul-smelling purulent discharge from his lower sacral back region for the past two months.

3.2 Timeline and History of Present Illness: The patient's occupational routine involved remaining seated for over 8 to 10 hours daily on rough terrain. Two months before presentation, he noticed a small, tender nodule within his upper natal cleft. Within a week, the swelling ruptured spontaneously, exuding thick pus and blood. He received empirical oral antibiotic therapy (Amoxicillin + Clavulanic acid) and topical analgesics from a local clinic. While this reduced acute systemic distress, the localized discharge and induration persisted, making it difficult for him to sit comfortably or perform daily activities.

3.3 Past and Family History: The patient reported no history of local lumbosacral trauma, diabetes mellitus, systemic hypertension, or tubercular infections. Family history was non-contributory regarding chronic skin conditions or metabolic syndromes.

4. CLINICAL AND DIAGNOSTIC ASSESSMENT

4.1 Physical and Systemic Examination: General physical examination showed an alert, well-oriented young male with a normal gait. All physiological baselines were stable.

- **Blood Pressure:** 124/80 mmHg
- **Pulse Rate:** 80 beats per minute
- **Respiratory Rate:** 18 breaths per minute
- **Body Temperature:** 98.4°F (Axillary)
- **Body Mass Index (BMI):** 25.4 kg/m^2 (Overweight)

Systemic evaluation of the gastrointestinal, cardiovascular, and respiratory systems revealed no abnormalities.

4.2 Detailed Local Examination

- **Inspection:** The patient was examined in the prone position. A distinct primary sinus opening was observed in the midline of the sacrococcygeal natal cleft, approximately 4.5 cm superior to the anal margin. The surrounding skin showed mild erythema and chronic inflammatory induration. A tuft of dark, coarse hair was visible protruding directly from the sinus orifice. Mild active purulent discharge with a foul odor was noted.
- **Palpation:** Severe tenderness was localized over the sacrococcygeal region. A firm, linear, fibrosed subcutaneous cord was palpable, extending superiorly from the primary opening for a length of approximately 5.5 cm. No collateral fluctuations or secondary branching tracks were detected laterally. Digital rectal examination (DRE) was normal, confirming no communication with the anal canal or lower rectum.

4.3 Laboratory and Diagnostic Investigations

- **Hematology:** Hemoglobin: 13.6 gm/dl, Total Leukocyte Count (TLC): 9,400 /cumm (no acute neutrophilic leukocytosis), Platelet Count: 2.33 lakhs/cumm.
- **Biochemistry & Inflammatory Markers:** Erythrocyte Sedimentation Rate (ESR): 28 mm/hr (mildly elevated, reflecting chronic local inflammation). Renal Function Tests (Serum Urea: 24 mg/dl, Serum Creatinine: 0.8 mg/dl) and Liver Function Tests were within normal physiological limits.
- **Serology:** Screenings for HIV, HBsAg, and HCV were negative.
- **Radiological Assessment:** A fistulogram/ultrasonography of the local soft tissue confirmed a blind subcutaneous tract ending blindly over the sacrococcygeal fascia

without bone involvement or pelvic tracking, confirming a diagnosis of non-branching chronic pilonidal sinus (*Shalyaja Nadi Vrana*).

5. THERAPEUTIC INTERVENTION

5.1 Preoperative Protocol: The clinical procedure was explained to the patient, and written informed consent was secured. Complete shaving and mechanical cleaning of the lumbosacral and gluteal zones were performed. A standard intradermal hypersensitivity test for 2% Lignocaine was performed and showed no reaction. Prophylactic coverage was ensured by administering 0.5 ml of Tetanus Toxoid intramuscularly.

5.2 Operative Procedure (Para-surgical Seton Application): The treatment plan utilized a minimally invasive approach to avoid wide excision, focusing on removing the trapped foreign material (*Shalyaharana*) and stabilizing the track.

1. Positioning and Local Anaesthesia: Day 1, 10 Mins.

The patient was secured in the prone position with the buttocks separated using micro-pore drapes. Local infiltration anaesthesia was achieved by injecting 3 to 5 ml of 2% Lignocaine around the path of the indurated sinus tract.

2. Sinus Orifice Excision and Hair Extraction: Day 1, 15 Mins.

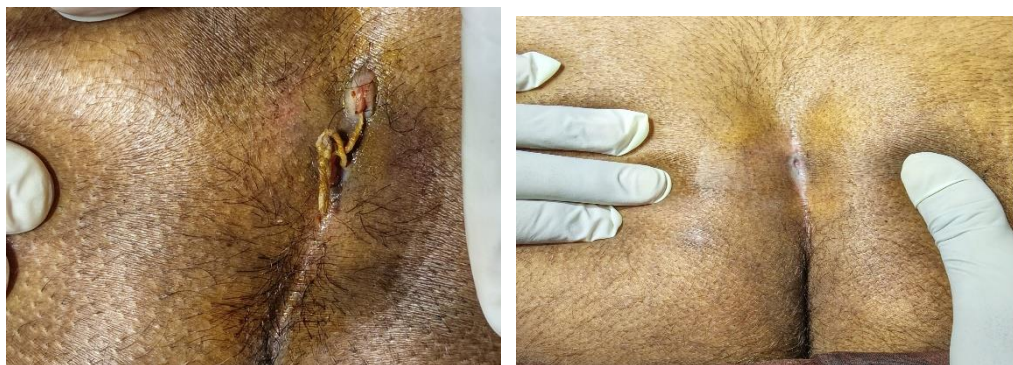
A precise circular incision was made around the primary sinus opening to clear the fibrotic margins. Using fine artery forceps, multiple embedded, loose hair shafts and dense necrotic debris were removed from the subcutaneous space until the cavity was clean.

3. Exploratory Probing and Railroaded: Day 1, 10 Mins.

A flexible silver sinus probe was passed into the primary opening (P_1) and moved superiorly along the midline path until it reached the upper limit of the tract, where a small exit puncture (P_2) was made. A sterile *Snuhi-Apamarga Ksharsutra* was threaded into the eye of the probe and gently railroaded back through the entire track.

4. Seton Securing and Dressing: Day 1, 5 Mins.

The two ends of the *Ksharsutra* were tied together with a secure surgical knot, leaving a loose loop over the bridge of intervening tissue. The wound was irrigated with normal saline and dressed with sterile gauze saturated with *Jatyadi Taila*.



5.3 Postoperative Management and Comprehensive Care: The patient did not require immobilisation and was managed on an outpatient day-care basis. The treatment program integrated local tissue healing with systemic support.

- **Systemic Medications (Duration: 30 Days).**

1. *Triphala Guggulu* (500 mg tablets): 2 tablets twice daily with warm water after meals. (Contains *Guggulu*, *Triphala*, and *Piper longum*, providing systemic anti-inflammatory, anti-bacterial, and wound-healing properties).^[7]
2. *Gandhak Rasayan* (250 mg tablets): 1 tablet twice daily after meals with warm water. (A processed sulfur formulation that enhances skin health, acts as a natural antimicrobial, and counteracts chronic tissue exudation).
3. *Panchsakar Churna*: 5 grams at bedtime with lukewarm water. (Composed of *Senna*, *Haritaki*, *Saindhava Lavana*, *Shunthi*, and *Shatapushpha*, ensuring soft stools to prevent mechanical strain on the sacrococcygeal fascia).

- **Localised Care and Seton Exchange:** The patient was instructed to perform a warm *Sitz bath* containing a mild decoction of *Triphala* for 15 minutes every morning to cleanse the area. The *Ksharsutra* loop was replaced weekly (at 7-day intervals) using the standard railroad technique to ensure a fresh application of chemical agents to the remaining tissue bridge. *Jatyadi Taila* dressings were applied daily to keep the area clean and support granulation.

6. RESULTS AND WOUND HEALING TIMELINE: The clinical progress of the wound and patient milestones was tracked weekly. The *Snuhi-Apamarga Ksharsutra* maintained an average cutting and healing rate of 1.0 to 1.5 cm per week. Pain levels decreased quickly after the initial extraction of the hair shafts, as evaluated by a standard Visual Analogue Scale (VAS).

[Day 0: Baseline] ---> VAS: 8/10 | Discharge: Purulent | Track Length: 5.5 cm

[Day 14: Sitting 2] ---> VAS: 3/10 | Discharge: Serous | Track Length: 3.2 cm

[Day 30: Sitting 4] ---> VAS: 1/10 | Discharge: Minimal | Track Length: 1.0 cm

[Day 45: Sitting 6] ---> VAS: 0/10 | Track Fully Ablated & Epithelialized

Chronological Evaluation Table

Assessment Parameter	Baseline (Day 0)	Mid-Treatment (Day 14)	Resolution Phase (Day 30)	Post-Ablation (Day 45)
Pain Score (VAS 0–10)	8/10	3/10	1/10	0/10
Exudate Nature	Purulent, thick	Serosanguinous	Serous, trace	Completely dry
Palpable Induration	Distinct, 5.5 cm	Moderate, 3.2 cm	Mild localized	Absent
Granulation Base	Unhealthy, pale	Healthy, pinkish	Advanced healing	Complete scar closure

By Day 45, the *Ksharsutra* had completely transitioned through the tissue bridge. The remaining tract healed concurrently from the deeper layers, resulting in a smooth, functional scar line without tissue deficits or contour distortions. The patient experienced no secondary infections or operational complications. Following a 12-month post-treatment observation window, the regional skin remained healthy with zero signs of recurrence.

7. DISCUSSION

7.1 Limitations of Conventional Approaches: Modern surgical procedures for pilonidal sinus disease focus primarily on removing the entire tissue block. While effective at removing the track, wide-open excisions require prolonged healing times (often 60–90 days) and regular packings, which can lead to significant patient discomfort and lost workdays.^[3, 4] Primary closure techniques reduce healing times but carry higher recurrence risks because the depth of the natal cleft remains unchanged, allowing mechanical friction to trap new hair fragments.^[4]

7.2 Physiological Action of Ksharsutra: *Ksharsutra* therapy provides a reliable, minimally invasive alternative by acting as a sustained-release drug delivery seton. The *Snuhi-Apamarga Ksharsutra* is prepared by apply 11 coatings of *Snuhi Ksheera* (latex of *Euphorbia antiquorum*), 7 coatings of *Apamarga Kshara* (alkaline ash of *Achyranthes aspera*), and 3 coatings of *Haridra Churna* (powder of *Curcuma longa*) onto a sterile surgical linen thread (No. 20).^[6]

The clinical efficacy of this combination relies on its integrated pharmacological actions:

- **Proteolytic Excision:** The proteolytic enzymes in *Snuhi Ksheera* liquefy and remove necrotic tissue within the track.^[6, 8]
- **Chemical Debridement and Lysis:** *Apamarga Kshara* provides an alkaline microenvironment (pH ~9.5) that chemically debrides the inner epithelial lining, destroying the unhealthy granulation layer without requiring wide physical excision.^[8]
- **Antimicrobial Action:** The curcuminoids in *Haridra Churna* deliver sustained local anti-inflammatory and antimicrobial activity, preventing secondary bacterial colonization.^[8]
- **Synchronized Healing:** As the thread cuts through the tissue bridge via mechanical tension, it stimulates the wound bed to lay down healthy collagen, allowing simultaneous tracking and healing from the base upward.^[8]

7.3 Role of Systemic Ayurvedic Formulations: Oral administration of *Triphala Guggulu* and *Gandhak Rasayan* supports this process by lowering systemic inflammatory markers and encouraging proper cellular repair. *Jatyadi Taila*, which contains *Jati*, *Nimba*, *Patola*, and *Karanja*, helps maintain an optimal moist environment at the wound surface, accelerating epithelialization and resulting in a flexible, clean scar line.^[7]

8. CONCLUSION

This case report shows that using *Snuhi-Apamarga Ksharsutra* combined with systemic Ayurvedic support is a safe, cost-effective, and minimally invasive method for managing *Shalyaja Nadi Vrana* (Pilonidal Sinus). By providing simultaneous debridement and healing of the sinus tract, this method avoids extensive tissue loss, requires no hospitalization, allows patients to maintain full mobility, and lowers the risk of recurrence, making it an excellent option for ambulatory day-care surgery.

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