

# A Comprehensive Review on Nadi Vrana With Special Reference to Pilonidal Sinus

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## 1. Introduction

In Ayurveda, Shalya Tantra (surgical science) places paramount importance on the diagnosis and management of wounds, categorized broadly as *Vrana*. While early, uncomplicated wounds heal naturally, wounds that suffer from prolonged infection, neglected care, or deep tissue destruction transition into non-healing, chronic ulcers known as *Dushta Vrana*.

In contemporary clinical practice, a condition that notoriously mimics the pathological behavior of a *Dushta Vrana*—and fundamentally begins as a *Nadi Vrana* (sinus tract)—is the Pilonidal Sinus. Pilonidal sinus is a chronic inflammatory tract located in the mid-gluteal (natal) cleft and has a global incidence rate of roughly 26 cases per 100,000 individuals (Tripathy et al., 2016). Affecting primarily hairy, obese males, the condition is prone to recurrent abscess formation and persistent discharge, making it a challenging surgical entity that responds remarkably well to Ayurvedic tissue-saving modalities.

## 2. Ayurvedic Conceptualization & Classical Verses (Shlokas)

### Definition of Vrana (Wound)

Acharya Sushruta, the father of surgery, describes the permanent nature of a wound's scar in his classical definition:

व्रणोति यस्माद् रूढेऽपि व्रणवास्तु न नश्यति।  
आदेहधारणात्तस्माद् व्रण इत्युच्यते बुधैः ॥ (Sushruta Samhita, Sutrasthana 21/40)

The discontinuity or damage of the tissue which leaves a scar that persists as long as the individual's body survives is called a Vrana.

### Definition of Dushta Vrana (Chronic / Non-healing Ulcer)

When a normal wound fails to heal over an extended period and becomes complicated by aggravated *Doshas* (humors), it is termed *Dushta Vrana*. The clinical presentation is defined as:

पूतिपूय अति दुष्टासृक् स्रावो उत्सङ्गी चिरस्थितिः ।  
दुष्टो व्रणोऽतिगन्धादिः शुद्धलिङ्गं विपर्ययः ॥ (Ashtanga Hridaya, Uttara Sthana 25 / Sushruta)

A wound that continuously discharges foul-smelling pus (*Pootipooya*) and vitiated blood (*Dushtasruk*), features an elevated, pocketed, or uneven base (*Utsanghi*), persists for a very long duration (*Chirasthiti*), emits a putrid odor (*Atigandha*), and possesses characteristics entirely opposite to those of a clean, healing wound (*Shuddha Vrana*) is known as a *Dushta Vrana*.

Such long-standing, non-healing wounds require deep therapeutic purification (*Shodhana*) and healing (*Ropana*) treatments to restore normal tissue integrity (Borhade, 2020).

### 3. Pilonidal Sinus: Correlation with Shalyaja Nadivrana

Pathologically, a Pilonidal sinus develops due to the penetration of loose body hairs through the skin into the subcutaneous tissue, establishing a foreign body reaction. Clinically, it ranges from asymptomatic cysts containing hair to large, painful, and discharging abscesses (Ambady et al., 2025).

In Ayurvedic pathology, this pathogenesis precisely matches **Shalyaja Nadivrana**. A *Nadi Vrana* forms when a localized suppurative swelling (*Vrana Shotha*) is neglected, causing pus to track downward and damage deeper tissues like muscles (*Mamsa*) and veins (*Sira*), forming a blind, tubular tract. Because the pilonidal tract contains hair—which acts as an embedded foreign body or *Shalya*—it is strictly classified as *Shalyaja Nadivrana*. When this cyst or abscess bursts spontaneously or is inadequately excised surgically, the resulting open cavity fails to close due to the trapped *Shalya*, converting the site into a foul-smelling, purulent *Dushta Vrana*.

### 4. Clinical Features: Ayurvedic vs. Modern Perspectives

The symptoms overlap significantly between the two medical sciences:

- **Ayurvedic Parameters of Dushta Vrana:**
  - **Srava (Discharge):** Continuous, purulent, and bloody discharge.
  - **Gandha (Odor):** *Atigandha* (severe, putrid smell).
  - **Vedana (Pain):** Intense throbbing or continuous discomfort in the affected area.
  - **Akruti (Appearance):** Deep tracks, unhealthy granulation, and an uneven bed (*Utsanna*).
- **Modern Parameters of Pilonidal Sinus:**
  - A midline primary pit at the base of the natal cleft lined by epithelium and often presenting a visible tuft of hair.
  - Secondary lateral openings discharging pus and blood (Tripathy et al., 2016).
  - Swelling and persistent pain preventing the patient from sitting comfortably.

### 5. Ayurvedic Management Strategies (Chikitsa)

Conventional modern surgery often resorts to wide, deep excisions with primary or secondary closure. These methods are frequently not cost-effective, require lengthy recovery times, and carry a notorious reputation for high recurrence rates (Tripathy et al., 2016). Ayurveda provides a series of minimally invasive para-surgical measures that cure the root cause while preserving sphincter and local tissue anatomy.

#### 1. Varti (Medicated Wicks) Application:

Instead of wide excision, classical texts recommend the insertion of medicated wicks into the sinus tract. *Aragwadhadi Varti* is highly effective in managing pilonidal sinus. The wick performs chemical debridement, scraping away the unhealthy granulation tissue inside the tract, and promotes gradual healing from the base to the surface (Ambady et al., 2025).

#### 2. Taila Daha (Thermal Cauterization with Oil):

An innovative, sphincter-saving surgical approach involves the excision or curettage of the pilonidal tract followed immediately by *Taila Daha* (thermal cauterization). Boiling medicated oils, such as *Yashtimadhu Taila* (frequently mixed with fine copper sulphate or *Tutthak* powder), are poured into the wound. This induces rapid hemostasis, ablates any remaining pathological epithelial lining,

prevents apposition of the infected wound edges, and drastically reduces the rate of recurrence (Tripathy et al., 2016).

### 3. Jalaukavacharana (Leech Therapy):

In cases where the *Dushta Vrana* is surrounded by severe local induration, swelling, and trapped vitiated blood (*Rakta Dushti*), *Jalaukavacharana* is an excellent parasurgical adjunct. The leech's saliva introduces natural anticoagulants that relieve local blood congestion, mitigate inflammation, and prepare the chronic wound bed for healthy tissue regeneration (Borhade, 2020).

## Ayurvedic Surgical & Para-Surgical Management (Shalya Tantra)

Acharya Sushruta advocated for aggressive but tissue-preserving methods to treat *Nadivrana*, especially when a foreign body (*Shalya*) is involved.

### A. Kshara Sutra Chikitsa (Medicated Seton Therapy)

This is widely considered the gold standard in Ayurveda for sinus tracts and fistulas.

- **Procedure:** A specialized surgical thread (*Kshara Sutra*), repeatedly coated with *Snuhi Ksheera* (latex of *Euphorbia neriifolia*), *Apamarga Kshara* (alkali of *Achyranthes aspera*), and *Haridra* (turmeric powder), is threaded through the pilonidal sinus tract using an *Eshani* (probe). The thread is tied and replaced every 7 days.
- **Mechanism of Action:** The *Kshara Sutra* performs simultaneous *Chedana* (cutting of the fibrotic tract), *Bhedana* (draining of pus), *Lekhana* (scraping of unhealthy granulation tissue), and *Ropana* (healing). It chemically debrides the tract and destroys the local hair follicles, significantly reducing recurrence.

### B. Chedana Karma followed by Agnikarma (Excision and Cauterization)

For broad or highly indurated *Dushta Vrana* resulting from a pilonidal sinus, direct excision followed by thermal cautery is indicated.

- **Procedure:** The entire sinus tract and the cyst are surgically excised (*Chedana*). Immediately following the excision, the wound bed is subjected to *Agnikarma* (thermal cauterization) using specialized metal instruments (*Shalaka*) or boiling medicated liquids (*Taila Daha*, as discussed previously).
- **Rationale:** Acharya Sushruta states that diseases treated with *Agnikarma* do not recur ("*Apunarbhavat*"). It achieves perfect hemostasis, seals the microscopic tracts, and destroys any remaining ectopic hair follicles embedded in the subcutaneous fat.

### C. Eshana and Patana (Probing and Laying Open)

- **Procedure:** The tract is explored using a blunt probe (*Eshani*). Once the depth and direction are established, the entire tract is laid open (*Patana*) using a surgical scalpel (*Mandalagra Shastra*). The wound is then thoroughly cleaned with medicated decoctions (e.g., *Triphala Kwatha*) and packed with healing wicks (*Varti*) to allow healing by secondary intention.

## 2. Modern Surgical Management

In contemporary proctology and general surgery, the choice of operation depends on the severity of the disease, the presence of acute infection, and whether it is a primary or recurrent case.

### A. Acute Management

- **Incision and Drainage (I&D):** Performed when the pilonidal sinus presents as an acute, painful, fluctuant abscess. A lateral incision is made to drain the pus. **Note:** This is purely to relieve the acute infection and pain; it does not cure the underlying sinus, and definitive surgery is required later.

### B. Definitive Surgical Options

Procedure	Technique	Healing Time	Recurrence Rate	Best For
<b>Excision &amp; Lay Open (Secondary Intention)</b>	The entire cyst and sinus tracts are excised down to the sacrococcygeal fascia. The wound is left completely open and packed daily.	6 to 12 weeks	Low (<10%)	Extensive, chronic, or infected tracts.
<b>Excision &amp; Primary Closure</b>	The tract is excised, and the wound edges are sutured together in the midline.	2 to 4 weeks	High (up to 30%)	Small, uninfected, primary sinuses.
<b>Flap Techniques (Limberg, Karydakis, Z-Plasty)</b>	The tract is excised, and healthy tissue from the surrounding buttock is mobilized (as a flap) to cover the defect.	3 to 5 weeks	Very Low (<5%)	Recurrent cases, deep clefts, large defects.

**Why Flaps are Preferred for Complex Cases:** The primary anatomical cause of pilonidal sinus is the deep natal cleft, which acts as a vacuum, drawing in loose hairs. Flap procedures (like the Rhomboid/Limberg flap) flatten the natal cleft and move the surgical incision off the midline, dramatically reducing friction and the chance of hair re-entry.

### C. Minimally Invasive Techniques (Endoscopic/Laser)

For patients seeking rapid recovery with minimal scarring, newer technologies are utilized:

- **EPSiT (Endoscopic Pilonidal Sinus Treatment):** A fistuloscope is inserted into the primary pit. The tract is visualized on a screen, hair and debris are removed with micro-forceps, and the tract is destroyed using an electrocautery brush.
- **SiLaT (Sinus Laser Therapy):** A radial laser fiber is introduced into the cleaned sinus tract. The laser energy thermally ablates and collapses the tract from the inside out, similar in concept to Ayurvedic *Agnikarma*.

### 6. Conclusion

Pilonidal sinus represents a perfect modern clinical analogy to *Shalyaja Nadivrana* that frequently deteriorates into a *Dushta Vrana*. Traditional broad excisions often result in high recurrence and prolonged patient suffering. By interpreting the disease through the lens of Ayurvedic Shalya Tantra and utilizing targeted therapies like medicated wicks (*Varti*) and thermal oil cauterization (*Taila Daha*), surgeons can achieve definitive healing, excellent hemostasis, and minimal recurrence without compromising healthy surrounding tissue.

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