

Original Research (Case Study)



Minimally Invasive Management of Pilonidal Sinus Using *Kshara Sutra*: A Clinical Case Study

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DOI: <https://doi.org/10.64280/JAA.2025.V1I106>

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Submitted on: 03-04-2025

Revised on: 30-04-2025

Accepted on: 11-05-2025

Published: 30-06-2025

ABSTRACT

Background: *Nadi Vrana*, described in Ayurveda, refers to an ulcer with a tubular extension. Among its five types, *Shalyaja Nadi Vrana* is comparable to pilonidal sinus, characterized by a tract in the natal cleft region often caused by ingrown hairs (*Shalya*). Conventional treatments such as wide excision and reconstructive surgical techniques are associated with a high recurrence rate. The Ayurvedic approach using *Kshara Sutra* therapy offers a minimally invasive alternative with promising outcomes.

Aim: To evaluate the clinical efficacy of *Guggulu Nimba Kshara Sutra* in the management of pilonidal sinus (*Shalyaja Nadi Vrana*).

Case Presentation: A 28-year-old male patient presented with a painful swelling and discharge in the natal cleft region, diagnosed as pilonidal sinus. The patient was treated using *Guggulu Nimba Kshara Sutra*, a medicated thread prepared with Ayurvedic herbal formulations. The therapy involved gradual excision of the sinus tract through periodic tightening of the thread, promoting healing.

Outcome: Complete excision of the tract was achieved within a span of six weeks with minimal scarring. The patient experienced significant symptom relief, no recurrence during follow-up, and resumed daily activities without discomfort.

Conclusion: This case highlights the efficacy of *Guggulu Nimba Kshara Sutra* in managing pilonidal sinus, offering a cost-effective, minimally invasive treatment option with reduced recurrence rates and faster recovery compared to conventional methods.

Keywords: Pilonidal sinus, *Nadi Vrana*, Ayurvedic surgery, *Kshara Sutra therapy*, *Guggulu Nimba Kshara Sutra*

1. INTRODUCTION

The term pilonidal sinus is derived from a set of two Latin words, i.e., “pilus” means hair, and “nidus” means nest, as it resembles the clinical presentation of disease (i.e., a nest of hairs is found underneath the overlying skin). It is also known as “Jeep Riders Disease” because of the belief that prolonged bumpy rides in Jeeps caused the condition, as in the world war, it was common in soldiers in the United States Army who were hospitalized during that period [1]. According to Bailey & Love’s, pilonidal sinus is a disease characterized by one or more, usually non-infected, midline openings (in the natal cleft region overlying the coccyx), which communicate with a fibrous track lined by granulation tissue, containing hairs lying loosely within the lumen like a nest [2]. It arises when hairs pierce the skin and enter the subcutaneous tissue, causing unhealthy granulation tissue to form in the deeper plane [2]. The two main risk factors for the formation of a pilonidal sinus are the presence of a deep natal cleft and hairs within the cleft region. A deep natal cleft provides a favorable atmosphere for bacterial contamination due to sweating and penetration of hairs. Therefore, the cornerstone of both its prevention and treatment is eliminating these contributing factors.

During the clinical course of the disease, a patient with pilonidal sinus usually presents with any of the common complaints, like an episode of acute abscess formation or recurrent

episodes of pus-filled abscess formation that either go away on their own or with medical assistance. A patient’s local examination usually shows one or more tiny (1-2 mm) dermal pits at the base of the intergluteal cleft; occasionally, hairs are visible at the mouth of these openings. In addition, there is induration approximately these pits. This area may be erythematous and tender when associated with an abscess, and draining pus may be evident from it.

Nadi vrana, as described by *Acharya Sushruta*, occurs when there is negligence or improper management of *Vidhradhi* or *Vrana* [3]. *Acharya Sushruta* has clearly mentioned that when a well-formed abscess is not drained properly, then it leads to the movement of infected dosha (pus) into a deeper plane, leading to the formation of *Nadi varna* [4], which exactly resembles the course of pilonidal sinus, as patients complain of recurrent attacks of abscess formation in the natal cleft region.

Various techniques, such as total excision with or without primary suturing, opening the tract, and marsupialization of the wound, are employed to treat pilonidal sinuses. but none of them provide good results, as the post-operative recurrences are very common. In Ayurvedic literature, its management is described as *Chhedana* (Incision), *Shalya nirharana* (Removal of foreign body like hairs, pus, etc.), *Margashodhana* (Cleaning the

tract), and then its *Ropana* (Wound healing). Along with these, *Acharya Sushruta* has described the use of medicated thread i.e., *Kshara sutra* [5], which possesses all the above

properties i.e., *Chhedana*, *Shalya nirharana* (i.e., removing dead and unhealthy tissue due to *kshana* and *kshapan* properties) [6], *Sodhana* and *Ropana* properties.

2. Material and Methods -

Preparation of *Guggulu Nimba Kshara Sutra*

<i>Guggulu Nimba Kshara Sutra</i>	Coatings
<i>Guggulu Extract</i>	11
<i>Guggulu Extract + Nimba Kshara</i>	07
<i>Guggulu Extract + Haridra Churna</i>	03
Total Coatings	21

Assessment Criteria

1. Unit cutting time (UCT)
2. Pain
3. Discharge

Unit cutting time = $\frac{\text{Total number of days taken to cut through the track}}{\text{Initial length of the Kshara Sutra in cm.}}$

- Time taken (in days) to cut one centimeter of the track with simultaneous healing is known as unit cutting time (UCT).

Pain assessment grading

Grading of Pain	Explanation
0	No Pain
+ (1)	Mild Pain (negligible or tolerable pain) No need of any medicine
++ (2)	Localized tolerable pain, completely relieved by warm fomentation
+++ (3)	Intolerable pain, not relieved by fomentation, relieved by oral analgesic. No disturbance in sleep
++++ (4)	Continuous and intolerable pain with sleep disturbance. Patient seek medical help as early as possible

Discharge assessment grading

Grading of Discharge	Explanation
0	No sign of any discharge
+ (1)	Occasional appearance of discharge and patient uses single cotton pad in 24 hrs.
++ (2)	Frequent appearance of discharge and patient uses 3-4 cotton pads in 24 hrs.
+++ (3)	Increased frequency of discharge and patient uses 5-6 cotton pads in 24 hrs.
++++ (4)	Continuous discharge

CASE STUDY

A patient named XXX, age- 22 years old came to Shalya tantra OPD at Gangasheel Ayurvedic Medical College and Hospital with the complaint of discharge (on and off) from natal cleft region since 4-5 months.

According to the patient he was asymptomatic 4-5 months back then he developed a small boil in natal cleft region along with mild pain. Initially he ignored that but after some intensity of pain increased along with the size of boil. For that he took antibiotics and anti-inflammatory medicines from an allopathic doctor and got mild relief in symptoms. After few days, boil burst spontaneously along with pus discharge, then he got relief symptoms. He further told that, he experienced similar episodes 3-4 times at an interval of one month. Gradually he developed a small opening near natal cleft region. He also told that occasionally, he feels throbbing type of pain, itching and discomfort at natal cleft and lowback region. Patient had no history of bleeding, mucus discharge or any kind of discharge through anus or pain during defecation. There is no history of Diabetes mellitus, Hypertension, Tuberculosis, thyroid, or any other major illness. Patient had good appetite, regular bowel and bladder habits, sound sleep, & did not have any kind of addiction. All the vitals (i.e., Blood pressure, pulse rate, respiratory rate & temperature) of the patient were in normal limits.

After taking the written informed consent from

the patient, Local Examination was done in prone position of patient and findings revealed that patient had 2 small openings i.e., one near natal cleft region and other in the natal cleft itself along with good amount of hair nearby. During palpation, a cord like indurated structure was felt at the opening of sinus. Mild tenderness was present while palpation of local site. Probing was done from the opening to access the branching and extension of the tract; probe was going beyond the opening present in gluteal region. Approx 5 cm tract was found during probing. A tuft of hairs was also removed from the other opening. After completion of examination patient was diagnosed with the Pilonidal sinus (Nadi Vrana).

All situations about disease and its management were explained to the patient and finally was planned for **Kshara Sutra therapy** under local anesthesia as a day care procedure after routine blood investigations.

Kshara Sutra management – Patient was asked to lie down in prone position. Then cleaning and draping was done by taking all aseptic precautions. *Kshara Sutra* procedure was performed under local anesthesia. The malleable probe was inserted gently into the tract after application of xylocaine jelly (2%) and the probe was pushed inside the tract till the tip of the probe was felt by the finger in gluteal region to mark the site of incision. Then local

anesthetic agent was injected in that region and another opening was created, then tact was cleaned by taking out tuft hairs through both the openings. Then probe was again introduced through one opening and eye of the probe was tied with *Kshara Sutra*. After that probe was gently taken out through that opening and both the ends were tied using reef knot. Then operated area was cleaned and sterile dressing was done. No complication arises during and after the procedure. Then patient was shifted to ward and all the vitals of patient were within normal limits. Patient was kept under observation for 30 minutes and discharged after that.

He was advised to do hot fomentation twice a day in natal cleft region and to keep the operated area clean and dry. Patient was asked

to visit the hospital after one week for *Kshara sutra* change and was advised to do all his daily routine works from the very first day.

After one-week *Kshara Sutra* was changed using rail road technique and length of the previous thread was recorded to access the progress. Other assessment parameters were also assessed and recorded on the same day. Similar process was repeated on weekly interval until whole tract gets cut through. The thread was changed on weekly intervals because it acts as an ideal media for drug delivery in the minute channel and further presence of thread in the tract keeps it patent for 7 days enabling the infected material to drain out, which is essentially required for healing of Pilonidal sinus. Weekly local part preparation was ensured.

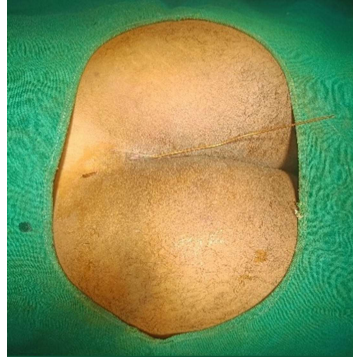
3. OBSERVATIONS AND RESULTS

SYMPTOM	1 st day	7 th day	14 th day	21 st day	25 th day	32 nd day	39 th day	55 th day
PAIN	+3	+2	+1	+1	0	0	0	0
DISCHARGE	+1	+2	+1	0	0	0	0	0
LENGTH OF TRACT	5cm	4cm	2.5 cm	.5 cm	0	0	0	0

Unit Cutting Time (UCT) = 25 days/5 cm = 5 days/cm

Patient had followed the instructions strictly. From 7th day onwards there was remarkable relief in pain, but after 1st sitting amount of discharge of pus was slightly increased and during that week there was profuse serous discharge but it got diminished from 2nd week

onwards. Length of the tract kept on decreasing until cut through occurred on 25th day and along with this cut through tract kept on healing as after 'cutthrough' there was a small wound that was completely healed from its depth.

**Before treatment****Probing****Primary threading****During treatment****After cut through**

4.DISCUSSION

Acharya Sushruta has clearly described *Baala* (hair) as one of the *Shalya* [7], which is the main causative factor responsible for occurrence of the Pilonidal sinus (*Nadi vrana*) disease. In this case, Patient is obese with deep natal cleft and he is having the habit of riding the bike regularly. Because of overweight, there is a chance of friction of hairs between gluteal region. Improper cleaning of anal region after defecation and excessive sweating of this particular area may be contributing factor for this condition. Proper drainage of pus

may not be done in *Pakwasvastha* and intake of medicines for subsiding the condition aggravated his disease. There are so many modalities available for the management of Pilonidal sinus. Nowadays *Kshara Sutra* is becoming more potential to treat Pilonidal sinus. The *Kshanana* and *Ksharana* properties of *Kshara Sutra* cuts pilonidal sinus tract from inside gradually and initiate simultaneous healing [6]. This is because of the wound cleaning and healing properties of constituents of *Guggulu Nimba Kshara Sutra* as Nimba

possess *Vranahara* (helps to cleanse and heal wounds quickly) and *krimihar* (anti - microbial) properties. *Guggulu Nimba Kshara Sutra* has analgesic property, this is probably due to *Vata shamaka* and *Shoolapaharaka karmas* of *Guggulu* as it possesses Chemical constituents like Flavonoids and Guggulusterone, etc. *Nimba* effectively pacifies *Kapha* and *Pitta dosha* and Chemical constituents like Flavonoids, Essential oils and β -Sitosterol of *Guggulu* and Curcumin of *Haridra* possesses Anti- bacterial action hence it alleviates the pus discharge, inflammation and which aids wound healing.

5. CONCLUSION

Aforesaid modern day surgical procedures have unsatisfactory results as they require longer hospitalization, have more chances of re-occurrence and are not cost effective so not easily assessable by all. Contrary to that *Kshara Sutra* is safe, cost effective and is a minimally invasive procedure, promotes healthy healing with negligible recurrence rate and doesn't require longer hospitalization as patient can return to its normal daily routine from next day onwards. So, management of pilonidal sinus with *Guggulu Nimba Kshara Sutra* is found to be very effective, and can be successfully used as a curative measure in cases of Pilonidal

sinus.

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