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Comparative efficacy of 8-Shaped *Ksharasutra* vs Single Loop *Ksharasutra* in Pilonidal Sinus Treatment: A Prospective Study

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ABSTRACT

Introduction: *Ksharasutra* therapy is long known for effectively treating Pilonidal sinus (*Nadi Vrana*). This study aims to compare the efficacy of two *Ksharasutra* insertion techniques: the 8-Shaped *Ksharasutra* and the standard single loop pattern *Ksharasutra* in patients with Pilonidal Sinus (*Nadi Vrana*). **Methodology:** Ten patients diagnosed with Pilonidal sinus at the outpatient department of Shalya Tantra, TMAES Ayurvedic Medical College, Hospete, Karnataka, India, were selected for this study. These patients were equally divided into two groups: Group A (n=5, 8-Shaped *Ksharasutra*) and Group B (n=5, Single loop *Ksharasutra*). Both groups received a standard *Ksharasutra* (21 *Bhawana*) made with *Apamarga*, *Snuhi*, and *Haridra*. The study evaluated three parameters: VAS score, time taken for cutting through the track and time span for complete healing. The *Ksharasutra* was changed weekly using the rail-road technique on an outpatient basis. Efficacy was assessed from insertion to complete wound healing. **Results:** A significant difference was observed between Group A and Group B concerning the time taken for cutting through the track, disinfection and complete healing of the Pilonidal Sinus track. However, there was no significant difference in VAS score between the two groups during the treatment course. **Conclusion:** 8-Shaped *Ksharasutra* offers the advantage of faster tract cutting, more efficient disinfection and quicker wound healing compared to the single loop pattern *Ksharasutra*.

Key words: *Ksharasutra*, Pilonidal Sinus, 8-Shaped *Ksharasutra*, *Nadivrana*

INTRODUCTION

Pilonidal Sinus is one of the most irritating diseases with high prevalence rate in young hairy males with high BMI (Body Mass Index) and deep natal cleft. It also occurs in females but male female incidence ratio is 3:1. Most commonly it occurs in people who have prolonged sitting jobs like drivers, bankers and IT professionals. Though it doesn't hamper the day to day

work of an individual but definitely decrease the quality of life. Pilonidal disease includes a pilonidal sinus, pilonidal cyst and pilonidal abscess. Pilonidal sinus disease can affect different areas of the body, but most commonly involves the sacrococcygeal region of the natal cleft 4 to 5 cm above the anal opening. The most common presentation of pilonidal sinus is a chronic discharging sinus in the sacrococcygeal area in the midline natal cleft. However, extra natal sites, such as finger webs (in hair dressers, barbers, sheep shearers, dog groomers and people who work in slaughter houses), axilla, perineum, amputation stump, chest wall, umbilicus, ear and supra pubic region may also be involved. The patient may have a series of openings in the midline or may have secondary lateral openings superior to the midline pit. They mostly present with pain, acute abscess or a chronic discharging sinus.^[1]

Young adults of working age are disproportionately affected. It causes discomfort to the patient and

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interferes with the education or employment of patients, sometimes for prolonged periods. The origin and the pathogenesis of pilonidal disease is a subject of controversy. It ranges from the age-old congenital theory to the latest, and more accepted hormonal, acquired theory. The occurrence of disease is related to the appearance of hair, thick, curly and profuse growth. Various factors are included like friction in buttock, obesity, local injury, use of tissue papers for cleaning the perineum, and increased duration of sitting and sweating. Other factors implicated are family history, occupation and folliculitis or furuncle over the area. The sinus tract is smooth and lined with squamous epithelium. Eventually, the sinus tract leads to a subcutaneous cavity lined by granulation tissue and is filled with nests of hair. The sinus tract openings are actually an extension of the deep cavity. The sinus usually tracks in the cephalad direction in majority of cases, but in some cases, it may track toward the anus and present as perianal sepsis. Patients with a chronic discharging sinus without an acute exacerbation, tend to have a recurrent or chronic pilonidal disease. Surgical treatment options for this condition include drainage with/without excision, marsupialization, excision with healing by secondary intention, or excision with primary closure. To decrease recurrence rates and chronicity, various other techniques have been described such as Karydaki's flap, Limberg flap rotation surgery, closure by Z-plasty, Bascom's and modified Bascom's procedure.^[2]

Treatment principles include for elimination of the sinus tract, full healing of the surrounding skin, and avoidance of recurrence.

According to Ayurveda, it is known as *Nadi Vrana*. *Nadi* refers to a tract, and *Vrana* refers to an ulcer. Hence a tract ulcer is referred to as a '*Nadi Vrana*'. *Nadivrana* (*Shalya Nimittyaj*), which is produced by *Shalya* (i.e. a foreign body). *Shalyaj Nadivrana* is a track that has gone undiscovered due to the presence of pus, unhealthy granulation tissue, and hairs, among other things.^[3]

Acharya Sushruta described a less invasive approach for the treatment of *Nadivrana* (Pilonidal sinus). *Sushruta* has stated that hair might be a root cause of

sinus growth and has also provided numerous treatment approaches.^[4]

Ksharasutra

It is a unique method of excision that uses mechanical pressure and chemical action instead of a knife. *Sushruta* suggest using *Ksharasutra* in *Nadi Vrana* for patients who are emaciated, timid, and positioned in the *Marma Sthanas* (vital points). Probing is done via the hole, and the tract is tracked to its blind end, where an opening is formed and *Ksharasutra* is inserted.

Chakradatta has also advocated usage of *Ksharasutra* along with other methods of treatment which have been listed for different types of *Nadi Vrana*.^[5]

OBJECTIVE OF THE STUDY

To compare 8-shaped *Ksharasutra* and single loop *Ksharasutra*, on the basis of outcome, in terms of VAS score, time taken for cutting through the track and time span for complete healing.

METHODOLOGY

This study was conducted in Department of Shalya Tantra, TMAES Ayurvedic Medical College, Hospete, Karnataka with proper ethical clearance and informed consent, a prospective study was conducted on 10 patients of symptomatic pilonidal disease from April 2023 to October 2023. Patients were recruited consecutively and divided randomly into two groups of 05 patients each with almost similar lengths of the Pilonidal Sinus tracks (3-4 cm approx.). The sample size is decided according to the past experience of cases of pilonidal sinuses and local guidelines. After proper pre-operative workup, first group (Group A) underwent 8-shaped *Ksharasutra* insertion and the second group (Group B) underwent single loop *Ksharasutra* insertion. Authors had a good experience in both surgeries. A working proforma was designed which included signs, symptoms, predisposing risk factors, investigations, diagnosis, type of operative technique, operative time, complications (early and late) and outcome.

Operative Procedures

The patients taken up were operated under local anesthesia. Patients were placed in prone position. The operative area was prepared and draped. In Group A,

using a copper malleable probe, the track was probed, the mouth of the pilonidal sinus was made wider by excision and with the help of mosquito forceps hair and other material were pulled out manually as much as possible. The distal end of the track was approximated with copper probe and an artificial opening was made at the palpable tip of the probe and *Ksharasutra* was passed through the track. Probe was then reinserted inside the Pilonidal cyst and pushed through proximally (towards caudal side). Again an artificial opening was made to get the end of probe out and then one end of the thread which had already been placed distally was pulled through this track. The two loose ends are tied with each other which gave a shape of 8 to the inserted thread. The knot was kept at the natural opening of the sinus.

Group B was subjected to preoperative workup as usual, mouth of the sinus was made wide open by excision and hair and other debris material was pulled out manually. The tack was probed and distal end of the probe was pulled out through an artificial opening made through the skin and sub-cutaneous tissue. *Ksharasutra* was inserted as a single loop thread and tied outside.

In both groups a 21 Bhawana *Ksharasutra* was used made up of barbers thread, 11 layers of *Haridra* (*Curcuma longa* Linn), 5 layers of *Apamarga Kshar* (*Achyranthes aspera* Linn) and 5 layers of *Snuhi* (*Euphorbia neriifolia*) latex.^[6]

The thread was changed on weekly by rail road technique on outpatient basis and dressing was done using *Jatyadi Keram* for both groups.



Picture 1: 8-Shaped Ksharasutra Insertion in OT



Picture 2: 8 Shaped Ksharasutra in Place



Picture 3: After Cut Through (8 Shaped Ksharasutra- 50 days)



Picture 4: Complete Healing (60 days)



Picture 5: Single Loop Ksharasutra



Picture 6: Complete Healing (Single Loop KS- 80 days)

RESULT AND DISCUSSION

Table 1: VAS Score

Parameters	8-Shaped Ksharasutra	Single Loop Ksharasutra
VAS Score	2/10	2/10
Average Time Taken to Cut Through	45 days	60 days
Average Time Taken for Complete Healing	60 days	80 days

In current study it was observed that there no significant difference in Pain experienced by the patients during the course of treatment and both groups received similar scores in the study

Time taken to cut through

There was marked difference in time taken to cut through the Pilonidal sinus track in both the Groups although the length of track in both groups were almost similar (3-4 cm approx.). Group A with 8-shaped ligation took around 45 days to cut through the track due more mechanical pressure and high concentration of *Kshara* spreading inside the track. Moreover, the proximal loop of the *Ksharasutra* went through the Pilonidal cyst which was the basis of the sinus that helped in quicker disinfection. The natural mouth of the pilonidal cyst was always left wide open due to crossing of thread strands at mouth which helped in quicker disinfection and debridement. In Group B, it took around 60 days to cut through the track and manual debridement had to be done

regularly due to closure of mouth of Sinus frequently which was a bit uncomfortable to the patients.

Time taken for complete healing

Patients from Group A took around 60 days for complete healing. The wound healed inside out by secondary intention but due to clearance of Pilonidal cyst which was the source of infection, complete healing was achieved after 15 days of cut through. Patients from Group B took some extra time around 80 days for complete healing i.e. 20 days after the cut through. Dressing after cut through was done with *Jatyadi Keram*.

CONCLUSION

Ksharasutra has been a primary choice of treatment in Pilonidal sinus in *Ayurveda*. Though efficacy of *Ksharasutra* as primary choice of treatment has been established by many research scholars over the time, new modified techniques like 8-Shaped insertion have some additional benefits. The technique comes with basic benefits of common single loop *Ksharasutra* with no complications but has additional features like quick cut through, robust disinfection and quicker healing. Hence it can be concluded that this minimal modification in *Ksharasutra* technique can provide essentially better results and reducing the time of treatment.

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