



Research Article

APPROACH TOWARDS SACROCCYGEAL FISTULA: A PROSPECTIVE CLINICAL AND COMPETITIVE INTERPRETATION

Gupta Sudesh¹, Prasher Aarushi^{2*}, Sharma Kumar Arun², Sharma Sakshi², Manhas Raman²

¹Professor and HOD, ²P.G.Scholars of Final year, Department of Shalya Tantra, Jammu Institute of Ayurveda & Research, Nardini (Raipur), Jammu.

KEYWORDS: Sacrococcygeal fistula, Pilonidal sinus, Natal cleft, *Shalyaja Nadi vrana*, *Arka Ksharasutra*, *Taal yantra*.

ABSTRACT

Background: Sacrococcygeal fistula, also known as Pilonidal sinus is an acute or chronic infection in the subcutaneous fatty tissue, mainly in the natal cleft. The condition, though not life threatening, is socially embarrassing and adversely affects the quality of life of patients. In *Ayurvedic* literature Sacrococcygeal fistula is better correlated and treated as *Nadi Vrana*. *Acharya Sushruta* had explained Para-surgical procedure with the intervention of medicated Seton (*Kshara Sutra*) as one of the treatment modalities. The ideal method of treatment of Sacrococcygeal fistula should be effective with a low recurrence rate, short hospital stay and economical.

Aim: This study is an attempt to evaluate the efficacy of *Arka Ksharasutra* in the management of Sacrococcygeal fistula.

Methodology: A total no. of 10 patients having signs and symptoms of Sacrococcygeal fistula were selected for *Arka Ksharasutra* ligation under local anesthesia and the Seton was changed every week during the entire treatment period.

Results: In this study all the patients i.e., 100% were males with age between 25-35 years. The length of initial track was 3.6 to 5.5 cm and average Unit Cutting Time was 7.23 days/cm in previously non-operated cases and 11.26 days/cm in previously operated cases, average being 8.2days/cm. There was no post-operative complication and recurrence even after 3 months of follow-up.

Conclusion: *Arka Ksharasutra* is laced with anti-bacterial, anti-fungal, bactericidal and anti-inflammatory properties which minimizes the use of antibiotics and also demolished the recurrence of symptoms.

*Address for correspondence

*Dr. Aarushi Prasher

P.G. Final year Scholar,
Department of Shalya tantra,
Jammu Institute of Ayurveda &
Research, Nardini (Raipur),
Jammu.

Email:

aarushimoudgil04@gmail.com

INTRODUCTION

Sacroccygeal fistula is a chronic inflammation resulting from invasive hair into the skin, mostly seen in the sacrococcygeal natal cleft and usually presented by inflammation, abscess formation and sinus formation.^[1] About 3 per 10,000 people per year are affected and it occurs more often in males than females^[2]. Herbert Mayo was the first to describe a disease that involved a hair-filled cyst at the base of the coccyx in 1833.^[3] The first official description was made by Abraham Wendell Anderson in 1847 in the form of a paper entitled "Hair extracted from an ulcer" written to

the editor of the "Boston Medical and Surgical Journal." It was Richard Manning Hodges in 1880^[4], who first coined this term "Pilonidal" from the Latin word 'Pilus' meaning hair and 'Nidus' meaning nest, thus meaning 'Nest of hair.'^[5] During World War II, over 80,000 soldiers in the United States Army were hospitalized with the condition. Louis Buie, a Mayo Clinic proctologist, recognized the association and described it in 1944 as "Jeep rider's disease." As a large number of soldiers who were being hospitalized rode in jeeps for long journeys through

rough terrain, it was thought that pressure on and irritation of the coccyx led to this condition.^[6]

The presentation may vary from asymptomatic pits to painful draining lesions in the intergluteal region. It has a male preponderance and usually affects patients from mid-teens into the early 30s. The onset of disease in adolescent can be correlated with pubertal hormonal effect. The familial tendency and genetic predisposition have also been reported. The condition is usually seen associated with obese and hirsute individuals who experience profuse sweating and have a sedentary lifestyle.

In the dermatological literature, Sacrococcygeal fistula is counted as one of the four conditions constituting the so-called follicular occlusion tetrad.^[7] The central pathological event in these conditions is thought to be follicular hyperkeratosis, leading to obstruction of the infundibulum of a hair follicle. The follicle becomes dilated and ruptures, leading to secondary infection and the formation of fistulae and abscesses. Bascom hypothesized that hyperkeratosis, obstruction and follicular rupture are the primary events and that the hairs only secondarily come to lie in the preformed openings.^[8] This theory has not, however been confirmed by any new research in the last 30 years. On the contrary, Karyadkis already hypothesized in the 1970s that fistulae arise only when free hairs perforate the vulnerable, but still intact skin. Karyadkis suspected that they become implanted in the natal cleft and then bore deeper and deeper in the manner of a screw.^[9] The hairs that are found in the subcutaneous cavity seem to be broken or cut i.e. hairs have been separated from their follicles.^[10]

The treatment of Sacrococcygeal fistula still remains challenging among the modern surgeons. Modern line treatment includes Sinusectomy, Surgical marsupialization, Phenol instillation, Negative pressure wound therapy, Endoscopic sacrococcygeal fistula surgery, Laser therapy, Fibrin glue therapy, Plasties (Limberg flap, V-Y plasty and Z-plasty). But all these modalities have their own disadvantages like wound infection, wound separation, seroma and marked recurrence rate. Hence there is a need to evaluate the role of other alternative as well as innovative techniques for the management of this challenging disease so as to minimize recurrence, make it economical, with improved acceptability and minimum hospitalization.

According to Ayurveda Sacrococcygeal fistula can be considered as *Nadivrana*. *Nadi* means a tract and *Vrana* means an ulcer. So an ulcer, which is having a tract is called as *Nadivrana*. Among its eight types, *Shalyaja Nadivrana* can be considered as sacrococcygeal fistula caused by *Bal shalya* (hair)^[11]. *Acharya Sushruta* has advocated a very unique minimally invasive treatment i.e. *Ksharasutra*^[12] procedure in the management of *Nadivrana*. *Kshara sutra* is a medicated thread/seton (*Kshara sutra* derived from Sanskrit word-*Kshara* means to cut; *Sutra* means thread) coated with herbal drugs and is alkaline in nature. It is having the power to pierce the skin and cut through the channels and heals the tract.

AIMS AND OBJECTIVES

To evaluate the efficacy of *Arka Ksharasutra* in the management of Sacrococcygeal fistula.

MATERIALS AND METHODS

Material: Standardized *Arka Ksharasutra* was used for ligation.

1. Drugs used for *Arka Ksharasutra* preparation were: *Arka Kshara* (*Calotropis Procera* L.), *Haridra churna* (*Curcuma longa* L.), *Snuhi ksheera* (*Euphorbia Nerifolia* L.).
2. Surgical linen thread no.20
3. *Kshara Sutra* hanger
4. *Ksharasutra* drying chamber

For the preparation of *Ksharasutra*, surgical linen thread no. 20 was manually coated 11 times with latex of *Snuhi* followed by 7 coatings of latex and alkaline powder of *Arka* alternatively and dried. In the final phase, 3 coatings of latex and powder of *Haridra* were done alternatively. The prepared thread was sterilized by UV radiation and packed in glass tube.

Clinical study

Source of data

10 Patients fulfilling criteria for selection were registered from OPD of PG Department of *Shalya Tantra*, Jammu Institute of Ayurveda & Research, Nardini, Jammu and Sri Sain Charitable Trust Hospital, Pamposh colony, Janipur, irrespective of gender, occupation caste and religion.

Inclusion criteria

- Patients having Sacrococcygeal fistula with straight tract.
- Patients between the age group of 15 to 60 years.

Exclusion criteria

- Patients with uncontrolled Hypertension, Diabetes Mellitus
- Patients suffering from HIV or Hepatitis B
- Patients having neoplastic sinus.
- Patients having osteomyelitis of spine or sacrum.
- Tubercular sinus
- Sinus with multiple openings
- Sinus with abscess
- Patients on immunosuppressant therapy
- Uncooperative patients

Assessment Criteria

The results were evaluated by subjective and objective parameters based on clinical observation by grading method.

1. Unit Cutting time = Total no. of days taken for cut through/ initial length of track in cm

2. Pain on Visual Analogue Scale

G0	No pain
G1	Mild pain
G2	Moderate pain
G3	Severe pain

3. Discharge

G0	No discharge
G1	Mild: If discharge wets one pad of 4cm×4cm gauze
G2	Moderate: If discharge wets two pads of 4cm×4cm gauze
G3	Profuse: If discharge wets more than two pads of 4cm×4cm gauze

4. Tenderness

G0	No tenderness
G1	Mild: Tenderness on firmly pressing
G2	Moderate: Tenderness on gently pressing
G3	Severe: Patient denies touching

5. Induration

G0	No inflammatory reaction
G1	Mild: Inflammatory reaction with tissue oedema and cellular response
G2	Moderate: G1 reaction with involvement of reticular layer of dermis
G3	Severe: G2 reaction with involvement of subcutaneous tissue

PROCEDURE**Pre-operative**

The written informed consent was taken before the procedure. Pre-operative checkup was done to rule out any systemic illness. Pre-operative anesthetic checkup was also done. Patient was kept nil orally for six hours before surgery. Part prepared by shaving and soap water enema was given at 10pm at night and repeated at 8am in the morning. Inj. T.T 0.5ml I/M and Inj. Xylocaine 2% I/D for sensitivity test was given before surgery. Inj. Promethazine HCL was given half an hour before the procedure to calm down the patient.

Operative

The patient was kept in Jack Knife position i.e. prone position with the sacrococcygeal region elevated by a pillow or angulation of the table. Draping and painting with *Triphala Kashyam* was done. The procedure was done under local anesthesia by infiltrating lidocaine with adrenalin 4-7mg/kg of body weight, around the sinus in different planes, deep upto the natal cleft. The visible hairs were removed firstly and any bad debris with purulent discharge was removed from the sinus to make it ready for probing. Methylene blue dye was injected through the external opening to stain the sinus tracks and its off shoots. Probing of the sinus was done to locate the track and its branches. Utmost care should be taken so as not to create a false track. The probe was passed upwards and forwards through the opening of the sinus towards the sacrum. The point where it blindly ends is marked with a skin pencil. Local anesthesia was infiltrated on that part and a small incision was given. The probe was then partially moved out from the secondary opening.

Now the external opening was widened with the help of artery forceps in the direction of the probe. Widening has to be done enough so that one can visualize well into the sinus and hairs were removed. Unhealthy granulation tissue and impacted hair were curetted well with a *Taal yantra* (volkman's scoop). Now a suitable length of *Arka Ksharasutra* was taken and threaded into the eye of the probe, then the probe was pulled out through the secondary opening to leave the thread behind the track. The two ends of the *Ksharasutra* were then tied together snugly outside the track for the action of *Ksharasutra*.

Post-operative

Gauze impregnated with *Durva tailam* was kept over the ligation and dressing was done. Appropriate analgesics and antibiotics were advised orally. Hot sitz bath with *Panchavalkala*

Kashyam was advised thrice a day followed by *Durva tailam pichu dharana*. Patient was advised for early ambulation and regular shaving of post anal region. Successive changing of *Ksharasutra* every week was advised till complete wound healing.

Duration of treatment: Till complete wound healing.

Follow-up: After 3 months.

Observations and results

The present study revealed that maximum number of patients i.e. 6 (60%) fall within the age group of 25-35years. Out of 10 cases, there was no female patient, all the patients were males. This shows the male preponderance nature of this disease. 80% of the patients belonged to Hindu religion. Incidence of occupational status revealed that maximum patients i.e. 70% were drivers. Analysis of Socio-economic status revealed that majority of patients i.e. 60% belonged to middle class followed by 30% of lower class and 10% of upper class. Out of 10 patients, 8 i.e. 80% were reported from rural area and 4 i.e. 20% were reported from urban area. 80% of patients were married. While observing the nature of diet it was noticed that maximum number of patients i.e. 64.3% were the ones taking mixed diet. Moreover, the maximum number of patients i.e. 60% were of *Pitta-kaphaja prakruti*. Out of 10 cases 8 cases were non-operated previously and 2 cases were reported as recurrent cases after operate. All recurrent cases had undertaken the operation once. In all the 10

cases, the initial length of the track was measured which showed that maximum number of cases 7 (70%) were having their initial length in between 3.6 to 5.5 cm, while 2 (20%) cases were having initial length in the range of 1 to 2.5 cm and the minimum number of cases i.e. 1 (10%) were having initial length within the range of 2.6 to 3.5 cm. The analysis of average unit cutting time was less in non-operated cases i.e. 7.23 days/cm and it was more in previously operated cases i.e. 11.26 days/cm. Finally the total average U.C.T. was 8.2 days/cm. It was observed that all the patients felt pain at the time of changing *Ksharasutra* but the pain was reduced to about 100% after the track has been cut through. No cases were reported either with inflammation or pyrexia during the course of therapy. No case was reported with recurrence in 3 months of follow-up. The present study showed highly significant results. The mean score of Pain (Table no.1) before the procedure was 2.6 which is reduced to 0 with 100% of relief which is highly significant. The mean score of Discharge (Table no.2) before the treatment was 1.6 which is reduced to 0 with 100% of relief, which is highly significant. The mean score of Tenderness (Table no. 3) before the procedure was 2.4 which is reduced to 0 with 100% of relief which is highly significant. The mean score of Induration (Table no. 4) before the procedure was 2.3 which is reduced to 0 with 100% of relief, which is again highly significant.

Table 1: Showing the overall effect of therapy on pain

Symptom	N	Mean Score		Percentage Relief	SD	SE	P
		BT	AT				
Pain	10	2.6	0	100%	0.765	0.214	<0.001

Table 2: Showing the overall effect of therapy on Discharge

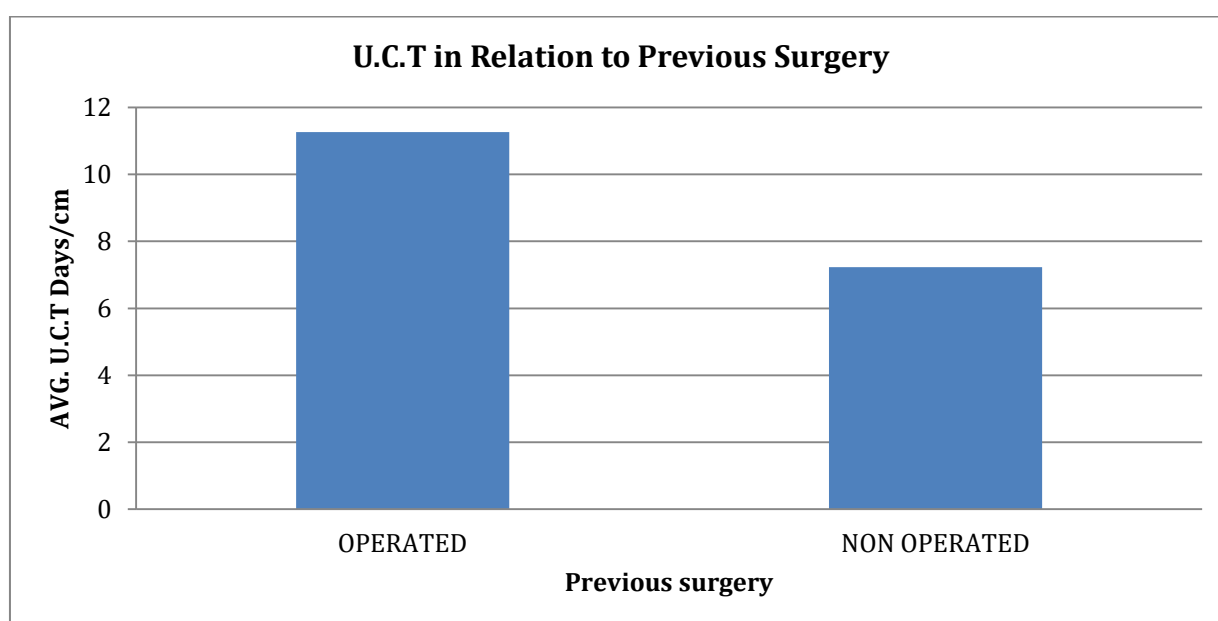
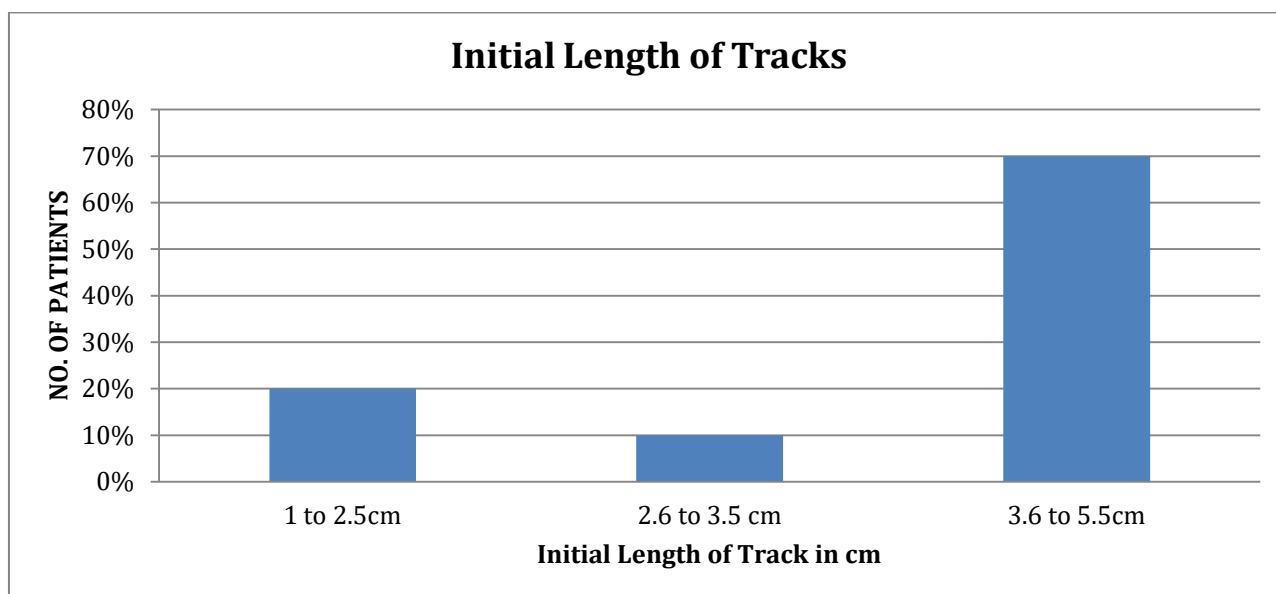
Symptom	N	Mean Score		Percentage Relief	SD	SE	P
		BT	AT				
Discharge	10	1.6	0	100%	0.667	0.267	<0.001

Table 3: Showing the overall effect of therapy on Tenderness

Symptom	N	Mean Score		Percentage Relief	SD	SE	P
		BT	AT				
Tenderness	10	2.4	0	100%	0.447	0.122	<0.001

Table 4: Showing the overall effect of therapy on Induration

Symptom	N	Mean Score		Percentage Relief	SD	SE	P
		BT	AT				
Induration	10	2.3	0	100%	0.675	0.213	<0.001



Discussion

The incidence of Sacrococcygeal fistula disease is more common in young patients. It can be illustrated that hormonal changes during puberty is closely linked to an increased incidence of infected pilosebaceous glands. Males are more affected than females because of their hirsute nature. The higher percentage of cases recorded belonged to Hindu religion. Socio-economic status indicates that people of lower and middle socio-economic status were more susceptible to Sacrococcygeal fistula. The reason behind this is that high socio-economic class people are more educated, more conscious about their health, undergo regular health checkups and avail more medical facilities rather than the middle and lower class people who neglect small ailments, doesn't maintain proper hygiene and seek

medical advice at a very late stage. The disease was encountered more among the rural population than the urban population as the rural people are less educated and are unaware of the disease. Moreover the disease was encountered more among the drivers due to their sedentary work with more exertion to the post anal region and poor personal hygiene. Next patients who are doing sedentary work become obese and obesity is one of the causes of sacrococcygeal fistula. The disease was encountered more among *Pitta pradhana kaphaja prakruti* patients. The possible reason for this is that *Pitta* and *Kapha doshas* are potent causes of Sacrococcygeal fistula disease. Statistically highly significant results were obtained in pain and discharge.

Principle of *Arka Ksharasutra*

The principle involved in the use of *Arka Ksharasutra* is a wire cutting through a block of ice. During this therapy gradual cutting and healing takes place simultaneously which seems like the ice is still adherent after division by the wire. The principle behind changing the *Ksharasutra* after 7 days can be explained that *Shareera* is composed of *Sapta Dhatus* and it takes 24 hours for cutting each *Dhatu*.

Probable mode of action of *Arka Ksharasutra*

Arka is *Katu* and *Tikta* in *Rasa*, *Laghu*, *Ruksha* and *Teekshana* in *Guna*, *Ushnavirya* and possesses *Bhedana* (incision), *Krimighana*, *Vishaghana*, *Vrunahara*, *Vatahara*, *Shophaghana* properties.^[13] An application of *Arka Ksharasutra* does cutting (by tying) layer by layer and there is continuous drainage from the track which helps in healing. The combination of drugs used in *Ksharasutra* preparation (*Arka*, *Snuhi Ksheera*, *Haridra*) helps in debridement and lysis of tissues, possesses anti-inflammatory, anti-bacterial and anti-fungal actions. *Kshara sutra* in situ encourages

healing by promoting new granulation tissue formation from the base. Due to anti-microbial action as a Seton, it allows proper drainage of pus from the sinus thus promoting healing. The cutting effect of thread incises the skin gradually without the need of a surgical incision. It performs the functions of excision, scrapping, draining, penetrating, debridement, sclerosing and healing. Moreover it is bactericidal and bacteriostatic in nature. Another mechanism proposed for the *Ksharasutra* is that it destroys the residual glands in the epithelium. It minimizes the rates of complications and recurrence.

Mode of action of *Panchavalka kashayam* and *Durva tailam*

Panchavalka Kashayam is used for hot sitz bath. It is having *Vranaprakshalana* (cleansing), *Vranaropana* (healing) and *Shothahara* (anti-inflammatory) properties^[14]. *Durva Tailam* is having *Shodhana* (cleansing) and *Ropana* (healing) properties^[15]. Hence it was also found useful in checking wound infection.



CONCLUSION

Sacrococcygeal fistula disease has a male preponderance and most commonly found in drivers and sedentary workers because of their continuous sitting and continuous irritation to the post-anal region which causes the hair to move inside the body and causes the sinus. *Arka Ksharasutra* can be considered as a better alternative in place of modern techniques as

Ksharasutra ligation procedure can be done under local anesthesia as outpatient or day care procedure. Moreover it is economical, minimally invasive, short duration of hospital stay, less recurrent and has almost no complications hence making it a more acceptable procedure.

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