

## A Comparative Study of Three Different Types of *Kshara Sutra* in the Management of *Bhagandara* (Fistula In Ano)

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### ABSTRACT

Anorectal disorders are a group of medical disorders that occur at perianal region and at the junction of anal canal and rectum. Anorectal diseases are the group of diseases which are often neglected by general physicians and surgeons. *Bhagandara* (Fistula in ano) is the commonest and notorious amongst them. Its recurrent nature makes it more and more difficult to treat. It causes pain and discomfort that creates problem in day to day activities. *Kshara Sutra* (medicated thread) has been proved to be a big revolution in the treatment of fistula in ano. It is the need of time to do further researches on *Kshara Sutra*, so as to make it more efficient. In the present research work, three different types of *Kshara Sutas*, *Snuhi* (*Euphorbia neriifolia*), *Guggulu* (*Commiphora mukul*) and *Udumber* (*Ficus racemosa*) has been prepared.

A total of 60 patients of *Bhagandara* were selected and divided equally in three groups Group A, B and C, in which *Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Latex Kshara Sutra* was used respectively. The efficacy of *Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Latex Kshara Sutra* was assessed in terms of pain reduction, postoperative discharge, postoperative tenderness, Unit Cutting Time (UCT) and wound healing property. After treatment, it was found that of all the three *Kshara Sutas*, the *Udumber Kshara Sutra* is most effective, in terms of wound healing and UCT. Least UCT was found in *Snuhi Kshara Sutra*, followed by *Guggulu Kshara Sutra*.

**Key words:** *Bhagandara*, Fistula in ano, *Guggulu*, *Kshara Sutra*, *Snuhi*, *Udumber*

### INTRODUCTION

*Ayurveda*, the “Science of Life”, helps in achieving a longer life span by preventing the occurrence of diseases as well as curing it to the possible extent, if occurred. This system advocates holistic approach of the human health care. The wisdom of foresightedness and pragmatic attitude structured in the classics aims for total health care including physical, mental, spiritual, social wellbeing and combating with illness. ‘*Shalya Tantra*’, the most important specialty occupies a very prestigious position among eight branches of *Ayurveda*. Anorectal disorders are a group of medical disorders that may occur at perianal region or the junction of the anal canal and the rectum. These disorders are commonly encountered in general surgical practice. Patients of the anal and rectal diseases are some of the most miserable people in the world. Anorectal disorders are common, and their prevalence in the general population is probably much higher than that seen in clinical practice, as most patients do not seek medical attention. These affect men and women of all ages. These diseases are collectively found in modern literature, but are

scattered in ancient *Ayurveda*. Few of them have been described as complications with some other diseases. There are so many diseases of anorectal region, but usually only those diseases are taken which have grievance, high recurrence, more incidences and are difficult to treat.

#### ***Bhagandara* (Fistula In Ano)**

It is a disease of *Guda bhaga* (anal region). *Sushruta* defined it as a disease which causes splitting pain in vagina, anorectal region and urinary bladder with resultant discontinuity of these sites. He further added that when a boil called as *Pidika* suppurates and bursts open, it forms *Bhagandara*.<sup>[1]</sup> *Bhagandara* is included in eight *Mahagada* (big diseases) by *Acharya Sushruta*. *Vagbhatta* also mentioned it under eight *Mahagadas*, but added three other types as *Parikshepi*, *Riju* and *Arso Bhagandara*.<sup>[2]</sup> *Charaka* gave a little description about *Bhagandara* in the chapter of *Shotha Chikitsa*.<sup>[3]</sup> *Fistula-in- Ano* is a disease of ano-rectum and forms quite a large share of all the disease of this part of the body. It is characterized by single or multiple sinuses with purulent discharge in the perianal area. It becomes a notorious disease due to its anatomical situation. According to a recent study conducted on the prevalence of anal fistula in India by Indian Proctology Society in a defined population of some states, its incidence was approximately 17- 20%; whereas in a London hospital,

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its incidence was approximately 10% of all the patients of anorectal disorders. [4]

### **Kshara Sutra**

*Kshara Sutra* is a revolutionary step and was adopted at many surgical centers. The results proved to be encouraging not only in low anal and sub-cutaneous varieties of fistula in ano but also in deeper fistula. The high anal and ano-rectal varieties still posed problems and the recurrence rate remained as high as 50-60 percent even in the skilled hands. An ambitious excision invariably resulted into division of anal sphincter and a complete permanent fecal incontinence. Therefore, an alternative method was devised which was treated by the application of threads with the hope to effectively induce drainage of the oozing tissue fluid thus preventing recurrence.

Complete and detail descriptions are not available in *Sushruta Samhita*. Generally in management of anorectal disorders, *Sushruta* (800 BC) described four folded line of approach as *Bhaisaja chikitsa*, *Kshara karma*, *Agni karma* and *Shastra karma*. Among all these therapies *Kshara karma* has become very useful and recently modified method of treatment for selected Anorectal diseases mainly in *Bhagandara* [5]. The present form of *Kshara Sutra* therapy was initiated by Dr. P.S Shankaran and subsequently established by Prof. P.J Deshpande through many researches and development in department of *Shalya Tantra* at Banaras Hindu University. The process of development was supported in last few decades by eminent scholars like Prof. K.R Sharma, Prof. G.C Prasad, Prof. S.N Pathak and others from same department. Now *Kshara Sutra* therapy has been accepted globally and has emerged as a gold standard treatment for fistula in ano [6]. The *Kshara Sutra* treatment of fistula-in-ano is now found a place in the text books of colorectal surgery. In this study three different types of *Kshara Sutra* as *Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Latex Kshara Sutra* was used for evaluate the efficacy in fistula in ano. It is such a simple, safe and sure remedy for anal fistula and it is becoming universally acceptable day by day. The Indian Council of Medical Research (ICMR) has validated this unique and effective approach. [7]

### **Need of study**

In modern surgery, the only form of treatment of an anal fistula that affords any reliable prospect of cure is operation. John Goligher has reported that recurrence rate in the fistulectomy is about 8%. Besides that, 12% of the patients complained of inadequate control of faeces, 16% of imperfect control of flatus and 24% of frequent soiling of their underclothes. *Kshara Sutra* will definitely play a key role in the development of *Shalya Tantra* (Surgery) branch. *Kshara Sutra* is a unique and established procedure for the management of *Bhagandara* in *Ayurveda*. It has brought revolution in the Indian system of surgery. *Kshara Sutra* ligation therapy in management of Fistula in ano has proved a boon for the humanity. It can effectively substitute the modern surgical procedure because it is economical, is associated with early ambulation of patient and causes less discomfort. Also, there is no need of hospitalization for long duration. In this study for

assessment of maximum efficacy and least complications, three different types of *Kshara Sutras* were used.

## **MATERIALS AND METHODS**

### **Sources of data**

60 patients from both genders, suffering from fistula in Ano were randomly selected from the "Anorectal OPD" of National resource center (NRC), Banaras Hindu University, Varanasi, after taking written informed consent.

### **Ethical clearance**

The study was approved by the ethical committee of IMS, BHU vide letter no. Dean/2011-2012/EC/296, dated 01.11.2011.

### **Inclusion criteria**

Patients diagnosed to have Fistula in ano of intergluteal region or sacrococcygeal region, with straight tract and those unwilling for surgery were randomly included in the study irrespective of age, sex, chronicity, *Prakriti*, length of tract, type of particular disease, etc.

### **Exclusion criteria**

- Anemic patients (Hb < 9 gm %)	- Malignancy suggested by biopsy
- Malnourished patient	- Patient in septicemia
- Bleeding disorder	- HIV positive patient
- Uncontrolled diabetes mellitus	- Portal hypertension
- Patient in ARF	- HBsAg positive patient
- Tubercular patient.	- Sinus having multiple openings
- Pregnancy	
- Cirrhosis of liver	

### **Grouping and design**

In the present study, three types of *Kshara Sutra*: *Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Kshara Sutra* were prepared. All the registered 60 cases of Fistula in ano were divided randomly into three groups with equal number of patients, and each group was treated with either of the above three *Kshara Sutra*, as follows-

**Group A (n=20):** They were treated with self prepared *Snuhi Kshara Sutra*.

**Group B (n=20):** They were treated with self prepared *Guggulu Kshara Sutra*.

**Group C (n=20):** They were treated with self prepared *Udumber Latex Kshara Sutra*.

### **Assessment criteria**

During the trial and follow up study, the patient of Fistula in ano, were assessed on the basis of 'subjective parameters' such as pain, discharge, tenderness, bleeding and sphincter tone and 'objective parameters' such as UCT (Unit cutting time).

All the subjective and objective parameters are subjected for statistical analysis by Chi-square test within the group comparison and by Chi-square test and Wilcoxon Signed Ranks Test (for mean) in

between the group comparison. To compare UCT between the groups, one way ANOVA Test and Post HOC Test significant were used. Finally, the results were incorporated in terms of probability (“P”).

## Procedure

### 1. Preparation of drugs

#### Contents of different Kshara Sutra

Contents of various Kshara Sutra to be used in this study are -

Group	Group A	Group B	Group C
Contents	Snuhi Kshara Sutra	Guggulu Kshara Sutra	Udumber Latex Kshara Sutra
	Barbour Thread no 20	Barbour Thread no 20	Barbour Thread no 20
	Snuhi Kshira	Guggulu	Udumber Latex
	Apamarga Kshara	Apamarga Kshara	
	Haridra	Haridra	

#### Preparation of three types of Kshara Sutra

The preparation includes:

- Selection of thread
- Preparation of Apamarga Kshara
- Collection and purification of binding material
  - Collection of Snuhi Kshara
  - Collection of Udumber Kshara
  - Collection and purification of Guggulu resin
- Preparation of three types of Kshara Sutra

**a) Selection of thread:** Barbour thread no.20 is used in my study since it is standardized by different workers with regards to its tensile strength and better accessibility.

**b) Preparation of Apamarga Kshara:** Apamarga (*Achyranthes aspera*) was collected during August & September months. Kshara was prepared as described in Ayurvedic texts. The Kshara thus obtained is coarse and has flakes of different sizes. It is made into fine powder and kept in a clean glass bottle with air tight cork.

#### c) Collection and purification of binding material:

##### i. Collection of Snuhi Kshara

The latex of Snuhi used for the preparation of Kshara Sutra was collected in autumn season in morning hour. It cannot be preserved for long time.

##### ii. Collection of Udumber Kshara

The latex of Udumber used for the preparation of Kshara Sutra was collected two hour before use.

##### iii. Collection of Guggulu resin

Guggulu was secured from the pharmacy and dissolved in ethyl alcohol and left in situ for at least one week, with intermittent stirring. The supernatant dissolved portion was used for preparation of Kshara Sutra.

##### iv. Collection of Haridra Churna

Haridra was secured from the pharmacy and was powdered through a grinder and passed through a fine sieve of mesh number 120.

#### d) Preparation of three types of Kshara Sutra

The Barbour thread no. 20 has been spread throughout the length and breadth of the hanger which is then mounted over a hanger stand.

Each hanger is then smeared with latex (or the required material) with the help of clean gauze piece. All the four sides of thread were simultaneously and uniformly smeared. The hanger was then replaced into the cabinet. When all the hangers were processed, the cabinet was closed properly and hot air was blown in order to dry the threads. The same process was repeated the next day.

The orders of 21 coatings are as:

- Snuhi Kshara = 11
- Snuhi Kshara + Kshara = 7
- Snuhi Kshara + Haridra = 3

Similarly, Guggulu Kshara Sutra was prepared:-

- Guggulu resin dissolved in ethyl alcohol= 11
- Guggulu resin + Kshara = 7
- Guggulu resin + Haridra = 3

For Udumber latex Kshara Sutra, only 11 coatings of Udumber Kshara is coated:-

- Udumber Kshara =11

For Udumber stem bark Kshara Sutra, stem bark extract was dissolved in distilled water and thread was coated with it 11 times.

- Udumber stem bark extract =11

When all the coatings were completed, each thread measuring about 30-31 cm was cut away from the hanger and sealed in a sterile glass tube and stored in an incubator at 37<sup>0</sup> C. By doing so, the Kshara Sutra did not get contaminated in spite of passage of time, indicating that the ingredients do not allow the growth of bacteria even over longer periods of time.

### 2. Application of Kshara Sutra

After explaining the whole procedure, patient was asked to lie down in lithotomy or prone position. The desired area (perineal or sacro-coccygeal region) was cleaned with antiseptic solution. Under aseptic measures and under proper anesthesia, track was identified with the help of a probe. After cleaning the track, Kshara Sutra was passed in the track and knot was tied to fix it over there. It was then dressed with gauze soaked in Anu taila (a specific medicated oil) and sterile gauze pad. T-Bandage was then applied. This procedure is termed as “Primary Threading.”

#### PRIMARY THREADING in Fistula in Ano



Fig. 1. Local anaesthesia



Fig. 2. Probe being passed



Fig. 3. Probe coming out of the internal opening



Fig. 4. Ksharsutra ligated around the tract

## RESULTS

In this study, the demographic data states majority of the cases were of the *Ustragriva* variety (37.5%), followed by *Parisravi* (17.5%), *Riju* variety (16.25%), *Sambukavarata* (11.25%), *Shataponaka* (6.25%) and *Parikshepi* (6.25%). Least number of cases belonged to *Unmargi* variety (5%). Majority of cases were of low anal variety (85%), and only a few (15%) were of high anal variety.

80 % patients were having complete type of fistula, followed by the blind internal (11.25%). According to Parks classification, majority of patients were of Transphincteric type (75%), followed by Intersphincteric (22.5%). With respect to opening, maximum patients (78.75%) had single opening while the rest (21.25%) had multiple opening. Majority of the patients had external opening at 3 o'clock (20%) and least patients had external opening at 6 o'clock.

It reveals that the lowest pain during the entire trial period was experienced by Group C (mean±SD 0.14±0.359) followed by Group B (mean±SD 0.25±0.444), whereas highest pain was experienced by Group A (mean±SD 0.35±0.489). It reveals that the lowest discharge during the entire trial period was experienced by Group C (mean±SD 0.05±0.218) followed by Group B (mean±SD 0.10±0.308), whereas highest discharge was experienced by Group A (mean±SD 0.15±0.366). It reveals that the lowest tenderness during the entire trial period was experienced by Group C (mean±SD 0.24±0.436) followed by Group B (mean±SD 0.30±0.470), whereas highest tenderness was experienced by Group A (mean±SD 0.35±0.489).

It was seen that UCT was minimum for group A (6.87 ± 0.282) followed by group B (7.07 ± 0.595). Maximum UCT was seen in group C (7.78 ± 0.836). According to One way ANOVA test applied for comparison between the group A, B and C, result is highly significant with p value <0.001. But Post Hoc Test significant pairs shows group C is significant to group A and group B.

## DISCUSSION

The conventional operative treatment of anal fistula is to lay open or completely excise the fistulous track and allow healing by open granulation (Das S, 2007). But this surgical management carries several complications like frequent damage to the sphincter muscle resulting in incontinence of sphincter control, fecal soiling, rectal prolapse, anal stenosis, delayed wound healing and even after complete excision of tract, there are the chances of subsequent recurrence. Hence the disease Fistula in ano is having still ray of hope and *Ayurveda* could be solution to avoid complications and recurrence.

Earlier studies have proved that '*Kshara Sutra*' has action of Excision (*Chedana*), Scrapping (*Lekhana*), Draining (*Visravana*), Debridement (*Shodhana*), Healing (*Ropana*), bactericidal and bacteriostatic etc. [8] It might be due to the antimicrobial, anti-inflammatory action and *Tridoshaghna* (pacifies all the three bio-humors). [9] The management of fistula-in-ano by Setons is the contribution of *Hippocrates* (460-356 BC), but the idea of the setons

is derived from the *Kshara Sutra* treatment which is being used for treating the disease *Bhagandara* ever since the period of *Sushruta*. [10]

In this study, three different type of *Kshara Sutra* (*Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Latex Kshara Sutra*) were used to assess their efficacy in a total 60 patients of *Bhagandara* divided equally in three groups. The results were as follows:-

### 1. Postoperative Pain

The efficacy of *Snuhi Kshara Sutra* (65%), *Guggulu Kshara Sutra* (75%) and *Udumber Latex Kshara Sutra* (85%) was assessed in terms of reduction of pain felt by the patients of *Fistula in ano* during the treatment.

### 2. Postoperative Discharge

*Udumber Kshara Sutra* (95%) is most effective in terms of reduction in discharge during the treatment, followed by group B (90%) and least being in group A (85%). This is because of its antibacterial activities.

### 3. Postoperative Tenderness

*Udumber Latex Kshara Sutra* (75%) is most effective in terms of reduction in tenderness during the treatment, followed by group B (70%) and then group A (65%).

### 4. Unit Cutting Time (UCT)

UCT is the method followed to assess the efficacy of the treatment in *Fistula in ano*. UCT was measured as per the following formula:

$$UCT = \frac{\text{Total number of days taken during treatment}}{\text{Initial length in cm.}}$$

*Udumber Kshara Sutra* (Group C) showed a comparatively higher UCT of 8.93±0.96 days as compared to other *Kshara Sutra*, but it did not produce any complications like burning sensation and abscess formation in the postoperative period. However, it also means that the *Udumber Kshara Sutra* is competent to cut the tract effectively so that all the *Dushta Vrana* tissue is completely eradicated from the wound, and the fresh tissue thus develops. *Udumber Kshara Sutra* was noticeably more effective in reducing pain, burning sensation and tenderness in spite of higher UCT, because of *Snigdha*, *Laghu Guna*, *Kashaya Rasa* and *Sheeta Virya*.

### 5. Wound Healing

*Udumber Kshara Sutra* is most effective in wound healing, compared to other groups.

## CONCLUSION

In this study, three different type of *Kshara Sutra* (*Snuhi Kshara Sutra*, *Guggulu Kshara Sutra* and *Udumber Latex Kshara Sutra*) were used to assess their efficacy in a total 60 patients of *Bhagandara* divided equally in three groups. The data obtained was statistically analyzed and interpreted, with conclusions as follows:

- 1) Pain, discharge and tenderness were comparatively lower in the group of *Fistula in ano* treated with *Udumber Kshara Sutra*, as compared to *Guggulu Kshara Sutra* and *Snuhi Kshara Sutra*.
- 2) *Udumber Kshara Sutra* is most effective in terms of wound healing as compared to *Guggulu Kshara Sutra* and *Snuhi Kshara Sutra*.

3) *Escherichia coli* were the prominent organism responsible for infection in fistula in ano, as demonstrated by pus culture.

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