Clinical Research

A comparative clinical study of Snuhi Ksheera Sutra, Tilanala Kshara Sutra and Apamarga Kshara Sutra in Bhagandara (Fistula in Ano)

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Abstract

Bhagandara (Fistula in Ano) at modern parlance is a common anorectal condition prevalent in the populations worldwide and its prevalence is second highest after Arsha (hemorrhoids). Kshara Sutra (K.S.) is one of the chief modality in the treatment of Bhagandara in Ayurvedic science. Exploration of the new plants for the preparation of Kshara as a better substitute to Apamarga Kshara is the need of the hour. To find out an effective alternative to Apamarga K.S. in view of easy processing, a Snuhi Ksheera Sutra without any Kshara and the Tilanala K.S. were opted for their clinical evaluation. Total 33 cases of Bhagandara were divided randomly into 3 groups, having 11 patients in each group. In Group A, Snuhi Ksheera Sutra; in Group B, Tilanala K.S. and in Group C, Apamarga K.S. were used. Assessment was done on objective (Unit Cutting Time - UCT) and subjective parameters. Statistically insignificant difference was observed in the efficacy of treatment by subjective parameters like pain, discharge, etc. between the three groups. It was found that Tilanala K.S. showed higher UCT (9.76 days) while lower in Snuhi Ksheera Sutra (7.42 days) as compared to Apamarga K.S. (8.82 days). Thus Tilanala K.S. can be used as a substitute for Apamarga K.S. and Snuhi Ksheera Sutra can be employed in the recurrent fibrosed cases of Bhagandara.

Key words: Apamarga, Bhagandara, fistula in ano, Snuhi Ksheera Sutra, Tilanala Kshara Sutra, Unit Cutting Time

Introduction

Shalya Tantra was at its zenith in Sushruta’s time and the contents of Sushruta Samhita can be compared to any book on surgery written centuries later. Bhagandara (Fistula in ano) is told callous to be cured and is considered under the Ashta Mahagadas.¹ (Eight grave disorders).

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, approx. varied from 17 to 20% while in a London hospital approximately 10% of all patients and 4% of new patients were reported to suffer from this disease among the anorectal disorders.²

To combat such critical anorectal problems, a comprehensive approach through Ayurveda has been extended with definite and a positive outcome. 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.³ K.S. treatment heals the fistulous tract with the integrity of sphincters and the existing data reveal negligible chances of recurrence. K.S. is a scientifically validated treatment in the management of Bhagandara. The Apamarga K.S. is well proven to be an effective treatment for fistula in ano and has been standardized by Central Council for Research in Ayurvedic Sciences (CCRAS), an apex research organization of Government of India (GOI) in the field of Indian system of medicine.³

It is quiet difficult to solely depend upon Apamarga only because of its limited availability globally. India is a vast country, with varied flora and there is also a need for search of the alternate plant sources which may give better results. Sushruta has advocated the use of Tila Kalka as Lepa (application of
paste) in Bhagandara Chikitsa.\textsuperscript{[3]} Moreover, in ethnomedicine as a folklore treatment, Tila Kalka is used in the treatment of Bhagandara (In the form of local application in fistula tract).

Similarly, the rationale behind including the classical Snuhi Ksheera Sutra in this study was to reduce the labor and time required in preparing Kshara for K.S., if it gives the same result as K.S. This concept was based on the version given by Chakradutta on K.S. preparation.\textsuperscript{[6]} Snuhi Ksheera possesses Shodhana as well as Ropana properties.\textsuperscript{[7]} As far as the Rasa Panchaka of the drugs is concerned, Apamarga, Tilanala and Snuhi, all the three are having Katu, Tikta Rasa; Ushna Virya; Katu Vipaka and Kapha-Pitta Shamaka properties.

Hence, to develop an alternative to Apamarga Kshara Sutra in view of easy processing, a Snuhi Ksheera Sutra without any Kshara and the Tilanala Kshara Sutra in Bhagandara were opted for the clinical evaluation for the first time in its kind of study.

**Aims and Objectives of the Study**

- To evaluate the efficacy of Tilanala K.S. and Snuhi Ksheera Sutra in the management of Bhagandara.
- To compare the clinical efficacy of Tilanala K.S. and Snuhi Ksheera Sutra with standard Apamarga K.S.

**Materials and Methods**

**Selection of patients**

Patients were selected from the IPD of the Dept. of Shalya Tantra, as well as from the special surgical diagnostic camps. Total 33 patients of Bhagandara divided into three groups.

**Inclusion criteria**

- Diagnosed cases of Bhagandara (Fistula in ano) of age group of 25-70 years of either sex were selected. (below 25 years less incidences of fistula in ano and above 70 Years the patients may unfit for anesthesia and surgery).
- Fistula in ano associated with tuberculosis (pulmonary TB), diabetes mellitus, hypertension, anemia, amoebiasis were also included in the study, subjected to the disease is under controlled state.

**Exclusion criteria**

- Tuberculosis of hip joint or spine (as the prognosis is not good)
- Osteomyelitis of femur or pelvic bones
- Chronic or acute ulcerative colitis
- Intestinal and pelvic malignancies
- Venereal diseases and HIV
- Strictures of urethra causing urethral sinuses
- Crohn’s disease
- Pregnancy

**Investigations**

Routine hematomical, biochemical, urine and stool examinations were done to rule out the pathological conditions mentioned above.

**Radiological examinations**

1. X-ray chest PA view (in all 3 groups)

**Grouping**

| Grouping       | Snuhi Ksheera Sutra | Tilanala K.S. | Apamarga K.S. (standard) |
|----------------|---------------------|---------------|--------------------------|
| Group A        |                     |               |                          |
| Group B        |                     |               |                          |
| Group C        | Same                |               | Same                     |

All these Kshara Sutras were prepared in the Department of Shalya Tantra, IPGT&RA, Jamnagar.

2. Fistulography (in high anal and recurrent fistulae)

**Pre-operative preparation**

- Written informed consent was taken
- Part preparation was done
- Patient was kept nil orally for 6 hours
- Inj. Tetanus Toxoid, 0.5 ml, I/M was given
- Inj. Xylocaine sensitivity test was done
- Soap water enema was given twice, around 10 pm at previous day of operation and around 7 am on the day of operation.
- Preparation of operation theatre and sterilization of instruments were done.

**Operative procedure**

The patient was kept in lithotomy position, perianal region was cleaned with Triphalaa Kwatha and draping was done after giving spinal anaesthesia. In some patients, local anesthesia was used and it was given after keeping the patient in lithotomy position. When the patient was assured, gloved index finger was gently introduced into the rectum and a suitable metallic probe was passed through the external opening of the fistula. The probe was forwarded along the path of least resistance to reach into the lumen of anal canal through the internal opening, guided by the index finger of the other hand inserted in to the rectum and the tip of probe was finally directed to come out of the anal orifice. In case of externally blind fistula, the tip of the probe was pushed to make the proximal opening in the anal orifice. Then a suitable length of K.S. was taken and threaded into the eye of the probe. Thereafter, the probe was pulled out through the anal orifice, to leave the K.S. in situ i.e. in the fistulous tract. The two ends of the K.S. were tied together with keeping the gap of index finger outside the anal canal. This procedure is termed as ‘primary threading’. After this a gauze piece (surgical pad) soaked with Jati Kalpa Taila was applied, tied with the help of Gophana Bhanda (T-bandage). The same procedure was adopted for all the three groups. The Kshara Sutra threading (KST) before treatment, during treatment and after treatment is shown in Figures 1-3, respectively.

**Postoperative measures**

- Patient was kept nil orally till complete waving off of the anesthetic effect is achieved i.e., maximum for 6 hours.
- I/V fluids were given as per the requirement.
- Suitable analgesic and antibiotics were administered as per the requirement.
- General management

Systemic drugs prepared by Pharmacy of Gujarat Ayurved University, Jamnagar were advocated in all the three groups,

- Ushnodaka Avagaha (Sitz Bath) with Sphatikadi Yoga thrice in a day.
- Matra Basti of Jati Kalpa Taila, 10 ml once daily (by anal route).
• Triphala Guggulu – 2 tabs (1 g) orally, after food, twice daily, with warm water.
• Gandhaka Rasayana 2 tabs (500 mg) orally, twice daily after food with warm milk.

Changing the K.S. by rail road method
On every seventh day, the K.S. was changed with a new Sutra by the rail-road method. In this method, the K.S. was tied at one end and the knot tightened against the knot of the thread in situ. The K.S. at the anal verge was clamped with forceps and cut in between the knot and forceps. The Sutra was slowly pulled out and the new K.S. was replaced by the old one. The knot of the new K.S. was secured after cutting and removing of old K.S. The measurement of the old Sutra was recorded finally to assess the progress of cut through of the tract. The patients were advised to take rest for some time and then allowed to go back for their routine work.

Duration of the treatment
• The changing of K.S. every week was repeated till the K.S. got cut through the tract completely and the duration solely depended on the length of the fistulous tract.

Follow-up period
Follow-up was done once in every 30 days for 3 months after the completion of treatment. For each follow-up visit, the patients were examined for any recurrence of disease or any associated lesion of the anorectal region.

Assessment criteria
1. Assessment criteria for the parameters has been prepared by considering the previous clinical research works conducted at IPGT & RA. Subjective parameters like pain, swelling, discharge, itching and size of the wound, were assessed by scoring patterns.
2. Objective parameter:
   • Unit Cutting Time (UCT) was measured as per the formula: 
     \[ \text{Prakriti assessment criteria adopted form questionnaire for Prakriti assessment prepared by Dr. A. S. Baghel & Prof. R. R. Dwivedi in PhD thesis, Gujarat Ayurved University, Jamnagar 2005.} \]

Statistical design
a. Paired ‘t’ – test of significance
b. Unpaired ‘t’- test for inter group comparison

Observations
The observation on demographic data was presented in Table 1. All the patients were observed for type of Bhagandara according to Sushruta’s and Vagbhata’s classification and it was observed that maximum (16.19%) patients were having Parisravi and Ruju type of Bhagandara [Table 2].

| Parameters used for assessment of pain | No pain | Mild | Moderate | Severe | Unbearable |
|---------------------------------------|---------|------|----------|--------|------------|
| Grade – 0                             |         |      |          |        |            |
| Grade – 1                             |         |      |          |        |            |
| Grade – 2                             |         |      |          |        |            |
| Grade – 3                             |         |      |          |        |            |
| Grade – 4                             |         |      |          |        |            |

Type of Bhagandara as per contemporary medicine having subcutaneous fistula was observed in maximum (24.25%) patients [Table 3].

The entire patients were examined for type of fistula tract and number of external opening and it was seen that maximum
Parameters used for assessment of itching

| Grade | Description                                  |
|-------|----------------------------------------------|
| 0     | No itching                                   |
| 1     | Mild and occasional itching                  |
| 2     | Moderate and frequent itching                |
| 3     | Severe and frequent itching                  |
| 4     | Excruciating (Continuous and profuse discharge) |

Parameters used for assessment of discharge

| Grade | Description                                 |
|-------|---------------------------------------------|
| 0     | No discharge                                |
| 1     | Mild (If wound wets 1×1-cm gauze piece)     |
| 2     | Moderate (If wound wets 2×2-cm gauze piece) |
| 3     | Severe (If wound wets more than 2×2-cm gauze piece) |
| 4     | Excruciating (Continuous and profuse discharge) |

Parameters used for the size of the wound

| Grade | Description       |
|-------|-------------------|
| 0     | Healed            |
| 1     | Wound within 0.5-1cm |
| 2     | Wound within 1-2cm |
| 3     | Wound within 2-3cm |
| 4     | Wound more than 3cm |

Mean unit cutting time

| Groups                           | Mean cutting time |
|----------------------------------|-------------------|
| Group - A (Snuhi Ksheera Sutra)  | 7.42 days/cm      |
| Group - B (Tilanala Kshara Sutra)| 9.76 days/cm      |
| Group - C (Apamarga Kshara Sutra)| 8.82 days/cm      |

Table 1: Demographic data: n=33

| Observations                  | No. of patients | Percentage |
|-------------------------------|-----------------|------------|
| Age (20-40 years)            | 21              | 63.60      |
| Male                         | 29              | 87.88      |
| Occupation (Service sector)  | 8               | 24.25      |
| Socio economic Status (middle class) | 13       | 36.38      |
| Vata Pittaja Prakriti        | 13              | 36.38      |
| Pitta Kaphaja Prakriti       | 11              | 33.34      |
| Kapha Vataja Prakriti        | 9               | 27.26      |
| Urban habitat                | 17              | 51.52      |
| Rural habitat                | 16              | 48.49      |
| Vegetarian                   | 24              | 72.73      |
| Tobacco chewing              | 21              | 63.64      |
| Viruddha Ahara               | 17              | 51.52      |
| Madhyama Koshtha             | 19              | 57.56      |
| Krura Koshtha                | 13              | 39.40      |

48.47% of patients had complete tract [Table 4] and single external opening was observed in 54.55% of patients [Table 5].

The duration of the treatment was continued till the Sutra got cut through the tract completely. In all the three groups i.e., Snuhi ksheera Sutra, Tilanala K.S and Apamarga K.S. (All these Kshara Sutras were prepared in the Kshara Sutra laboratory of Shalya Tantra Department, IPGT&RA, Jamnagar) all the patients had complete cut through of the tract.

The shortest duration of treatment was in a patient of Snuhi Ksheera Sutra group (Group A) where the tract was 1.5 cm and 9 days were taken for the cut through of the tract.

The longest duration of treatment was in a patient of Tilanala K.S. group who had multiple tracts and it took 126 days for the complete cut through of the 11 cm fistulous tract.

25 patients completed their follow-up period and no patient was reported with recurrence.

Results

After Kshara Sutra application all patients were assessed for relief in sign and symptoms. In patients of Group-A statistically significant results were observed in pain and discharge while highly significant results were seen in itching sensation, swelling and size of wound [Table 6]. In patients of Group-B statistically highly significant results were observed in all symptoms like pain, discharge, itching sensation, swelling and size of wound [Table 7]. In patients of Group-C statistically significant result was observed in itching sensation while highly significant results were seen in pain, discharge swelling and size of wound [Table 8].

Discussion

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 K.S. treatment which is being used for treating the disease Bhagandara, since the period of Sushruta.[8] Sushruta and Vagbhata have told Asthi Shalya as one of the causative factors of fistula-in-ano and this holds true even today i.e., by impaction of foreign body in the terminal part of the Gada either causes an abscess in the vicinity of the anal canal which ultimately develops the Bhagandara/Fistula in ano.[9] Goligher in his text book of Surgery of the anus, rectum and colon mentions that “Occasionally a foreign body, such as a rabbit or fish-bone or particle of egg-shell may be lodged in the anorectal region, helping to cause the chronic infective process and as a formation of fistula.”[10] The description of Bhagandara Pidakaa (fistulous abscess) clearly shows that Sushruta had an idea regarding the occurrence of a fistulous abscess and he was also well aware that, not all abscesses in this region lead to the causation of fistula-in-ano but only Bhagandara Pidika[11] (fistulous abscess) is converted in to Bhagandara (Fistula in ano). The description of blind internal, blind external fistula, the detailed techniques of surgery i.e., excision or fistulectomy, are available in detail and it shows the advancements that had taken place for the management of Bhagandara at the time of Sushruta. In fact it may be remarked that the present day modern techniques are just a reflection of his principles.

The art of probing i.e., ‘Eshana Karma’ was well mastered by Sushruta owing to which he classified Bhagandara and has given a very scientific classification into Antarmukha and Bahirmukha varieties of Bhagandara.[12] Sushruta was practising more than 10 types of incisions especially in Shataponaka and...
**Table 2: Type of Bhagandara:** n=33

| Type of Bhagandara | No. of patients | Total | Percentage |
|--------------------|----------------|-------|------------|
|                    | Group A | Group B | Group C |       |
| Shataponaka        | 1       | 1       | 2       | 4     | 12.09 |
| Ushthragreeva      | 3       | 1       | 1       | 5     | 15.16 |
| Parisravi          | 3       | 2       | 1       | 6     | 18.19 |
| Shambukavarta      | 1       | 1       | 1       | 3     | 09.09 |
| Unmargi            | 1       | 0       | 1       | 2     | 06.06 |
| Parikshepi         | 0       | 1       | 1       | 2     | 06.06 |
| Riju               | 1       | 3       | 2       | 6     | 18.19 |
| Arsho              | 1       | 2       | 2       | 5     | 15.16 |
| Bhagandara         | 11      | 11      | 11      | 33    | 100.00 |

**Table 4: Types of fistulous tract on probing: n=33**

| Type of fistulous tract | No. of patients | Total | Percentage |
|-------------------------|-----------------|-------|------------|
|                        | Group A | Group B | Group C |       |
| Blind internal         | 2       | 1       | 3       | 6     | 18.19 |
| Blind external         | 3       | 4       | 4       | 11    | 33.34 |
| Complete               | 6       | 6       | 4       | 16    | 48.47 |
| Total                  | 11      | 11      | 11      | 33    | 100.00 |

**Table 3: Types of Bhagandara (Fistula in Ano) as per contemporary medicine: n=33**

| Type of fistula in ano | No. of patients | Total | Percentage |
|------------------------|-----------------|-------|------------|
|                        | Group A | Group B | Group C |       |
| Intersphincteric       | 2       | 1       | 2       | 5     | 15.16 |
| Transsphincteric       | 3       | 1       | 2       | 6     | 18.19 |
| Suprasphincteric       | 3       | 2       | 2       | 7     | 21.22 |
| Extrasphincteric       | 1       | 1       | 1       | 3     | 09.09 |
| Subcutaneous           | 3       | 2       | 3       | 8     | 24.25 |
| Submucous              | 2       | 1       | 1       | 4     | 12.13 |

**Table 5: Analysis of patients in relation to number of external openings: n=33**

| No. of external openings | No. of patients | Total | Percentage |
|--------------------------|-----------------|-------|------------|
|                         | Group A | Group B | Group C |       |
| One                     | 4       | 6       | 8       | 18    | 54.55 |
| Two                     | 4       | 3       | 1       | 8     | 24.25 |
| >Three                  | 3       | 2       | 2       | 7     | 21.22 |
| Total                   | 11      | 11      | 11      | 33    | 100.00 |

The incidence of Bhagandara was commonly seen in the age group of 20-40 years with peak incidence of 63.60%. It is the active period of a person’s life and there will be many social assignments in this stage of life. The persons are casual to this problem because it starts with a minimal discomfort in anal region. In this study, 87.88% patients were males, which go hand in hand with a study conducted in a large population which concluded that the prevalence rate is double in males compared to females. The specially designed Ano rectal chair was used for Avagaha Sveda (Sitz Bath). Avagaha Sveda helps in maintaining the hygiene of the perineal part and reduced the Shotha (inflammation) as well as pain. Matra

*Parisravi* types of Bhagandara. The incisions are indicated on the basis of the course of tracts. The character of Kharjura Patra or date palm leaf consists of central axis on which the leaves are arranged, probably the nature of incision looks like the main incision along with small branched incision. But when individual date palm leaf is considered which looks like Y-shape, indicates laying open of the fistulous tract as done in fistulotomy. Vagbhata gives importance to the anatomical relation of Bhagandara and says that, the Bhagandara localised in Pravahini and Samvarani Vali should be refused to treat. The explanation about the Bhagandara treatment in relation to the Guda Vali shows the height of knowledge of Ayurvedic scientists about the consequences of surgical management of fistula in ano and the deformities occurs thereafter.

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Khichadi with milk. 57.56% patients had Madhyama Koshtha this factor cannot be ignored because the nature of Koshtha depends on the nature of Agni Bala which may play an important role to disturb the Dosha and its related disorders [Table 1].

In preoperative assessment one patient was found HIV-positive and two patients were found to be HBsAg positive and they were excluded from the study. This showed the importance of preoperative screening before K.S. treatment. In this study it was observed that 30.31% patients had the chronicity of 1-2 years and 20.20% patients were afflicted from the disease for 2-3 years. The shyness of the patient delays the consultation and treatment particularly in cases of anorectal disorders. The disease in initial stage presents only with mild aching pain with some discharge and if neglected at this stage, it may turn to be high anal fistula with multiple tracts. 64.70% patients were diagnosed as low anal fistula and 35.30% patients were of high anal category. Maximum number of patients i.e., about 70% had the external openings at the posterior perineal triangle (5, 6, and 7 o’clock), as gravity causes the pus to get collected in the most dependent area, which in turn leads to the formation of abscess and ultimate fistulous opening at that particular region.

The adjuvant drugs were prescribed to achieve better outcome of the surgical management in all the groups. *Triphala Guggulu* helps in the post operative wound healing. During the entire trial period maximum for 5 months use of *Triphala Guggulu* was recorded and did not cause any adverse effect. *Gandhaka Rasayana* was found equally effective in preventing the infection as the chances of infection is high because there is presence of discharge from the tract till the thread is in situ. The specially designed Ano rectal chair was used for Avagaha Sveda (Sitz Bath). Avagaha Sveda helps in maintaining the hygiene of the perineal part and reduced the Shotha (inflammation) as well as pain. Matra
Table 6: Effects of *Snuhi Ksheera Sutra* (Group A): n=11

| Symptom             | Mean   | Standard deviation | SEM | T-value | P  | Statistical result |
|---------------------|--------|--------------------|-----|---------|----|--------------------|
| Pain                | 1.727  | 0.647              | 0.195 | 8.859   | <0.01 | S                  |
| Discharge           | 1.364  | 1.206              | 0.364 | 3.750   | <0.01 | S                  |
| Itching sensation   | 2.364  | 1.120              | 0.338 | 6.999   | <0.001 | HS                |
| Swelling            | 1.091  | 0.539              | 0.163 | 6.708   | <0.001 | HS                |
| Size of the wound   | 1.636  | 0.674              | 0.203 | 7.455   | <0.001 | HS                |

S: Significant, HS: Highly Significant

Table 7: Effects of *Tilanala Kshara Sutra* (Group B): n=11

| Symptom             | Mean   | Standard deviation | SEM | T-value | P  | Statistical result |
|---------------------|--------|--------------------|-----|---------|----|--------------------|
| Pain                | 2.091  | 0.701              | 0.211 | 9.898   | <0.001 | HS                |
| Discharge           | 2.091  | 1.136              | 0.343 | 6.104   | <0.001 | HS                |
| Itching sensation   | 1.455  | 0.934              | 0.282 | 5.164   | <0.001 | HS                |
| Swelling            | 1.273  | 0.467              | 0.141 | 9.037   | <0.001 | HS                |
| Size of the wound   | 1.455  | 0.688              | 0.207 | 7.016   | <0.001 | HS                |

HS: Highly Significant

Table 8: Effects of *Apamarga Kshara Sutra* (Group C): n=11

| Symptom             | Mean   | Standard deviation | SEM | T-value | P  | Statistical result |
|---------------------|--------|--------------------|-----|---------|----|--------------------|
| Pain                | 2.000  | 0.894              | 0.270 | 7.416   | <0.001 | HS                |
| Discharge           | 2.000  | 0.894              | 0.270 | 7.416   | <0.001 | HS                |
| Itching sensation   | 1.364  | 1.433              | 0.432 | 3.155   | <0.01  | S                 |
| Swelling            | 1.182  | 0.874              | 0.263 | 4.485   | <0.001 | HS                |
| Size of the wound   | 1.636  | 0.674              | 0.203 | 8.050   | <0.001 | HS                |

S: Significant, HS: Highly Significant

**Basti** of 10 ml *Jaati Kalpa Taila*, daily helped in *Shamana* of the aggravated Vata and provided soothing effect to ano rectum from pain with easy evacuation of stools.

**Discussion on results**

There are several factors, which affect the Unit Cutting Time (UCT) as follows:

1. UCT is less in submucosal, subcutaneous and low anal fistulae.
2. UCT is high in cases of fibrosed/tough scar tissue which generally created after the previous operation done for fistula in ano and in cases of high rectal fistulae and trans-sphincteric fistulae.
3. Presence of infection and inflammation delays the UCT.

When the UCT of all three groups were evaluated, the UCT of *Ksheera Sutra* was comparatively lower (7.42 days) to standard *Apamarga* group i.e., 8.82 days. But abscess was formed at the 2nd week in four patients of this group. The patients of this group also complained of burning sensation in the postoperative period and successive change of the thread for few hours. The *Snuhi Ksheera Sutra* (Group-A) can be effectively used in the cases of fibroed and recurrent cases of fistula as the tough scar of the previous operation is likely to offer resistance in the process of cutting and delay the process of healing as well. *Snuhi Ksheera Sutra* was not found much effective in reducing the pain scores compared to the standard group whereas, *Snuhi Ksheera Sutra* (Group-A) produced much discharge in the postoperative period compared to the other two groups i.e., Group-B and Group-C.

*Tilanala K.S.* (Group-B) showed a comparatively higher UCT of 9.76 days but it did not produce any complications like burning sensation and abscess in the postoperative period. Although *Kshara* is *Tridoshaghna* and due to *Visheshakriyavacharanaat* the *Tilanala K.S.* can also be used in *Pitta* patients effectively. *Tilanala K.S.* (Group-B) reduced the pain scores effectively compared to *Snuhi Ksheera Sutra* (Group-A). *E. coli* was found responsible for the infection which was proved in the pus culture report of the majority of patients and was effectively controlled by *Tilanala K.S.*

The K.S. threading is a minor procedure and could be carried out at OPD level. The expenses required for this modality are quite low and there is no need to hospitalize the patient for longer duration. It is a boon to the sufferer of this notorious disease ‘Bhagandara’ particularly who may not be able to access high-tech hospitals which requires much expenses.

**Conclusions**

- K.S. threading (KST) therapy is a radical cure in the treatment of Bhagandara without complications and recurrence.
- The UCT of *Snuhi Ksheera Sutra* (7.42 days) was lower due to its acidic nature compared to the standard *Apamarga K.S.* group (9.76 days) but the cutting was not corresponding to the healing rate. So the *Snuhi Ksheera Sutra* cannot be used as a substitution to *Apamarga K.S.* in the management in Bhagandara but it can be employed
in the recurrent fibrosed cases of Bhagandara.

- The UCT of Tilanala K.S. was higher (9.76 days) compared to the standard Apamarga group but it did not produce any complications like burning sensation, abscess, etc. The Tilanala K.S. can be effectively used in the management of Bhagandara in the place of Apamarga K.S. in its non availability.

- Statistically there was no much significant difference in efficacy of treatment between the three groups.

- No recurrence was seen in the 3 months of follow-up.

- There was no adverse effect of any of the drugs observed during the course of study.

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