Original Article

Comparative clinical study of *Guggulu*-based *Ksharasutra* in *Bhagandara* (fistula-in-ano) with or without partial fistulectomy

Rakesh Kumar Meena, Tukaram Dudhamal, Sanjay Kumar Gupta[1], Vyasadeva Mahanta[1]

Department of Shalyatantra, I.P.G.T. and R.A., Gujarat Ayurved University, Jamnagar, Gujarat, [1]Department of Shalyatantra, AIIA, New Delhi, India

Abstract

Background: In Ayurveda, *Bhagandara* is considered as one of the grave disease by *Sushruta* due to more recurrence rate. *Ksharasutra* is para-surgical procedure which is found more effective in the management of fistula-in-ano. *Ksharasutra* is routinely prepared with *Snuhi Ksheera* (latex), *Haridra* powder and *Apamarga Kshara*. In conventional method collection of *Snuhi* latex is time consuming and laborious. *Guggulu* was selected as an alternative for preparation of *Ksharasutra* having similar binding property as *Snuhi* latex, and has antiseptic, anti-inflammatory and wound-healing properties. That is why, here, in this trial, the *Snuhi* latex was replaced by *Guggulu*. **Aim:** To evaluate the efficacy of *Guggulu* based *Ksharasutra* with and without partial fistulectomy in the management of *Bhagandara*. **Materials and Methods:** In this research study, 42 patients of *Bhagandara* (fistula-in-ano) were selected and randomly divided into two groups. In group-A ($n = 22$), patients were treated only with application of *Guggulu*-based *Ksharasutra* and in group-B ($n = 20$), partial fistulectomy was done and then *Guggulu*-based *Ksharasutra* was applied in remaining fistulous tract. After *Ksharasutra* application, patients were assessed for relief in symptoms such as pain, discharge, itching and swelling as subjective parameters and unit cutting time (UCT) as an objective parameter, on weekly follow-up basis and *Ksharasutra* was changed by railroad technique up to complete cut through of the tract. **Results:** In patients of group-A (plain *Guggulu*-based *Ksharasutra*), highly significant relief was seen in pain and discharge. The significant result was seen in itching while insignificant relief in swelling. In patients of group-B (partial fistulectomy with *Guggulu*-based *Ksharasutra*), relief in symptoms such as pain, discharge, and itching was statistically highly significant. The relief in swelling in this group was found statistically significant. The mean UCT was 8.85 days/cm in group-A, whereas the mean UCT was 8.19 days/cm in group-B. **Conclusion:** Partial fistulectomy with *Guggulu*-based *Ksharasutra* is better as compared to plain *Guggulu*-based *Ksharasutra* application in cases of *Bhagandara* (fistula-in-ano).

Keywords: *Bhagandara,* fistula-in-ano, *Guggulu*, *Ksharasutra*, partial fistulectomy

Introduction

In *Ayurveda*, *Bhagandara* (fistula-in-ano) is considered as one of the grave diseases and is included in list of eight major diseases (*Ashta Mahagada*).[1] The incidence of fistula-in -ano in rural area was grossly around 8.6 per 1 lakh population and male:female ratio was 11.8:1.[2] In many of the cases of fistula-in-ano, recurrence is seen after being treated by modern surgical conventional methods such as fistulectomy or fistulotomy. In spite of many surgical modalities available, the recurrence rate of fistula is very high, i.e., 20%–30%.[3] The globally famous Bailey and Love's Short practice of Surgery has included *Ksharasutra* as a treatment method for fistula-in-ano while describing various methods for treatment in its 25th edition.[4] *Kshara* or *Ksharasutra* is the best among all surgical and para-surgical measures. Nowadays, *Ksharasutra* is the first choice for treating the cases of fistula-in-ano. Many of the surgeons are referring patients of fistula-in-ano to *Ayurvedic* hospitals for *Ksharasutra* therapy, especially in recurrent and complex fistulae. *Ksharasutra* therapy requires a minimal setup, minimal equipment and instruments and is a minimal invasive para-surgical measure. Moreover, benefit to the patient is that patient remains ambulatory during the whole course of treatment. The Indian Council of Medical Research has validated this therapy by conducting multicentric research trial and concluded that *Ksharasutra* is better than conventional surgery in fistula-in-ano.[5]

Address for correspondence: Dr. Tukaram Sambhaji Dudhamal, Department of Shalyatantra, I.P.G.T. and R.A., Gujarat Ayurved University, Jamnagar - 361 008, Gujarat, India.
E-mail: drtsdudhamal@gmail.com

Access this article online

Quick Response Code:

Website: www.ayujournal.org

DOI: 10.4103/ayu.AYU_19_15

How to cite this article: Meena RK, Tukaram D, Gupta SK, Mahanta V. Comparative clinical study of *Guggulu*-based *Ksharasutra* in *Bhagandara* (fistula-in-ano) with or without partial fistulectomy. Ayu 2018;39:2-8.

The conventional *Apamarga Ksharasutra* is prepared with *Snuhi* latex, *Haridra* powder (*Curcuma longa* Linn.), and *Apamarga Kshara* (*Achyranthes aspera* Linn.). It is a well-proven method to treat fistula-in-ano and has been standardized by CCRAS, New Delhi. Moreover, recent studies have shown that *Guggulu*-based *Ksharasutra* is more beneficial than conventional *Apamarga Ksharasutra*.[6] However, *Snuhi* latex is difficult to procure as *Snuhi* latex collection requires a specific season, time and additional labor. Other problem is that *Snuhi* latex cannot be preserved for a long duration. *Shodhit Guggulu* (*Commiphora mukul* Hook ex stocks.) was selected as an alternative to Snuhi latex for preparation of *Ksharasutra* having binding property. *Guggulu* is also indicated in *Vrana* (wound), *Apachi* (adenitis), *Pidika* (boils), *Granthi* (cyst) and *Shopha* (inflammation),[7] which shows that *Guggulu* has antiseptic, anti-inflammatory and wound-healing properties and all these properties can increase the therapeutic effect of *Guggulu*-based *Ksharasutra*.[8-10] That is why, here, in this trial, *Snuhi* latex was replaced by *Guggulu.*

In cases of long fistulous tract, the duration of treatment is more. In total fistulectomy, the sphincter damage may result in incontinence in some cases and may have recurrence. After application of *Ksharasutra,* the total duration required for cutting and healing of fistulous tract is more. Hence, in this study, partial fistulectomy was done to maintain sphincter integrity and to reduce recurrence rate, *Ksharasutra* application was done in the remaining tract. Hence, this study was planned with aim to evaluate the efficacy of *Guggulu*-based *Ksharasutra* with and without partial fistulectomy in the management of *Bhagandara* (fistula-in-ano).

Materials and Methods

Selection of patients

A total of 42 diagnosed cases of *Bhagandara* (fistula-in-ano) were registered from out-patient and in-patient departments of Shalyatantra of IPGT and RA, Jamnagar, Gujarat, irrespective of age, sex occupation and religion.

Before conducting the clinical trial, approval from the Institutional ethics committee was taken, vide letter No. PGT/7/-A/Ethics/2013-14/1767 dated September 10, 2013. The trial has been registered in CTRI with registration no.: CTRI/2014/08/004807.

Diagnostic criteria

The diagnosis was made on the basis of symptoms such as boil at perianal region, pus discharge and perianal pain. Per anal examination findings revealing external opening and per rectal digital examination confirming internal opening of fistula-in-ano.

Inclusion criteria

Patients aged between 20 and 60 years diagnosed with *Vataja Bhagandara* (*Shataponaka*), *Pittaja Bhagandara* (*Ushtragreva*), *Kaphaja Bhagandara* (*Parisravi*), *Vata-Pittaja Bhagandara* (*Parikshepi*), *Vata-Kaphaja Bhagandara* (*Riju*) and *Arsho Bhagandara* [(*Kapha-Pittaja*) (piles fistula)], *Bhagandara* with *Parikartika* (fistula-in-ano with fissure-in-ano), all types of low anal fistula (length = 2–10 cm) were included.

Exclusion criteria

Patients suffering from *Sannipataja Bhagandara* (*Shambookavarta*) and *Agantuja Bhagandara* (*Unmargi*), fistula-in-ano associated with conditions such as uncontrolled hypertension, uncontrolled diabetes mellitus, osteomyelitis of hip bones, acute or chronic ulcerative colitis, crohn's disease, anorectal malignancy and tubercular fistula were excluded from the study. Positive cases of venereal diseases, human immunodeficiency virus (HIV) and HBsAg were excluded. Pregnant women were also excluded from the study. Patients having fistula other than anorectal region were also excluded.

Investigations

Following investigations were done in all patients before *Ksharasutra* application for fitness purpose.

Blood investigations

1. Hemogram: Total leukocyte count (TLC), differential leukocyte count (DLC), hemoglobin % (Hb%), erythrocyte sedimentation rate (ESR), bleeding time (BT), clotting time (CT)
2. Blood sugar: Fasting blood sugar (FBS), postprandial blood sugar (PPBS)
3. Renal function test: Blood urea, serum creatinine
4. Liver function test: Serum bilirubin, serum glutamic pyruvic transaminase (SGPT), serum glutamic oxalocetic transaminase (SGOT)
5. Venereal disease research laboratory (VDRL), HIV, Australia antigen (HBsAg).

Radiological investigations

1. TRUS (Trans Rectal Ultrasonography)
2. X-ray chest posterioanterior view to rule out pulmonary tuberculosis.

Other examinations

Urine and stool routine and microscopic examinations were done in all patients. The biopsy of the tissue of the fistulous tract was done in suspected cases of malignancy.

Materials

Ingredients and Preparation of Ksharasutra

1. Barbour surgical linen thread No. 20 (purchased from surgical store)
2. *Apamarga Kshara* (*Achyranthes aspera* Linn.)
3. *Haridra* powder (*Curcuma longa* Linn.)
4. Purified *Guggulu* (*Commiphora mukul* Hook ex stocks.).

All above ingredients (except Barbour surgical limen thread) were procured from the Pharmacy of Gujarat Ayurved University, Jamnagar.

Initially, 11 coatings of *Guggulu Niryasa* (resin) were done on linen Barbour threads, then seven coatings were done with *Guggulu* resin and *Apamarga Kshara* and finally three coatings

were done with *Guggulu* resin and turmeric powder. After each coating, the thread was dried in *Ksharasutra* cabinet and again coatings of above ingredients were done one by one. Total 21 coatings on the Barbour threads were done.

Methodology

In group-A, 22 patients and in group-B, 20 patients, of *Bhagandara* (fistula-in-ano) were enrolled and were allotted into two groups by computerized randomization method.

- 22 patients in group-A were treated with application of *Guggulu* based *Ksharasutra* under spinal anesthesia
- 20 patients in group-B were treated with application of *Guggulu*-based *Ksharasutra* along with partial fistulectomy under spinal anesthesia.

Pre-operative procedure

Written informed consent from each patient was taken before performing of surgery. Patients were kept nil orally from midnight. Xylocaine sensitivity test was done and injection tetanus toxoid (TT) intramuscular was given before surgery. Local perianal part preparation was done and proctolysis enema was given as per routine preoperative procedure.

Operative procedures

Under low spinal anesthesia (saddle block), *Ksharasutra* was applied in the fistula tract in patients of group-A. In patients of group-B, first partial fistulectomy was done and then *Ksharasutra* was applied in remaining part of the fistulous tract. Sterile pad and 'T' bandage were applied and the patients were shifted to the ward in conscious condition.

Postoperative procedures

Patients were kept in head low position and nil by mouth for about 6 h after surgery. Appropriate antibiotics and analgesics were given for 3 consecutive postoperative days.

Patients were advised to start warm water sitz bath with *Panchavalkala* decoction from the next day of operation.

- 10 ml of *Jatyadi* oil was administered per rectal two times a day, morning and evening after sitz bath
- *Triphala Guggulu* tablet 1 g/ 2 tab. (500 mg of each tab.) three times a day with warm water after food was also given
- *Haritaki* (*Terminelia chebula* Retz.) powder (4 g) and rock salt (1 g) at bedtime was also given in case of constipation.

Method of changing Ksharasutra

Ksharasutra was changed by railroad technique every 7th day at regular interval till the cut through of the entire fistulous tract. In fistulectomy, wound dressing was done after wash with *Panchavalkala* decoction and 10 ml of *Jatyadi* oil was administered per rectum.

Duration of therapy

Ksharasutra application is one stage of operation, but the total duration of treatment was different as the length of tract varies from patient to patient. Hence, therapy was continued till the fistulous tract got cut through with the *Ksharasutra*, and hence, the end point of the study was till complete healing of fistulous tract.

Follow-up

After cut through of the fistulous tract, patients were called for follow-up examination at 7th and 15th days and 1 month.

Criteria for assessment

The assessment was done on the basis of objective/subjective parameters such as relief in symptoms like pain, discharge, itching and swelling in the anal region and objective parameters, i.e., UCT [Tables 1-4].

UCT was calculated by using formula

$$\text{UCT} = \frac{\text{Total number of days required for complete cutting of tract}}{\text{Initial length of thread (tract) in cm}} = \text{days/cm}$$

Overall effect of therapy

91%–100% relief in sign and symptoms and healing of the fistulous tract was considered under complete remission. 76%–90% relief in sign and symptoms and healing of the fistulous tract was considered under marked improvement. 51%–75% relief in sign and symptoms and healing of the fistulous tract was considered under moderate improvement,

Table 1: Gradation for pain

Gradation	Description
Grade=0	No pain
Grade=1	Mild pain, can be tolerated without any medication
Grade=2	Moderate pain, requiring oral analgesics
Grade=3	Severe pain, not reliving with oral analgesics and required injection

Table 2: Gradation for discharge

Gradation	Description
Grade=0	No discharge
Grade=1	Mild discharge (wets 1×1 cm gauze piece)
Grade=2	Moderate discharge (wets 2×2 cm gauze piece)
Grade=3	Profuse discharge (wets >2×2 cm gauze piece)

Table 3: Gradation for itching

Gradation	Description
Grade=0	No itching
Grade=1	Negligible itching with 10-12 h gap
Grade=2	Occasional itching with 4-6 h gap
Grade=3	Frequent itching with 2-3 h gap

Table 4: Gradation for swelling

Gradation	Description
Grade=0	No swelling
Grade=1	Swelling within 1 cm×1 cm
Grade=2	Swelling within 2 cm×2 cm
Grade=3	Swelling within 3 cm×3 cm

while <25% relief in sign and symptoms and healing of the fistulous tract were considered under unchanged.

Statistical analysis

The data obtained in the clinical study was subjected to statistical tests, such as Wilcoxon signed-rank test which was applied to subjective parameters; paired '*t*'-test to assess the result before and after treatment in individual groups; and unpaired '*t*'-test to compare the result between two groups for objective criteria.

Observations

In this study, maximum (47.62%) patients were observed in age group of 31–40 years, which suggest that middle age group is more prone to suffer from fistula-in-ano. In surgical classic, it is mentioned that people in the third, fourth and fifth decades of life are commonly affected with fistula-in-ano.[11] In this study, maximum patients were male (88.1%) which go hand in hand with a study conducted by Sainio *et al*., which concluded that the prevalence rate is double in males as compared to females.[3] Rural patients were slightly move (61.9%) which might be due to their preference for a government hospital. Hindu religion patients were maximum (95.23%) having vegetarian diet (66.66%). Consumption of more spices and junk food might be responsible for *Bhagandara*. Previous studies also report similar findings.[12] The 42.85% patients were addicted to tobacco chewing, a common habit observed among the people of *Saurashtra*. It is proved that tobacco consumption affects the wound healing time. Although exact relation between tobacco consumption and *Bhagandara* is not much clear but it can be said that due to tobacco addiction, gastrointestinal tract disturbance occurs which causes constipation, which may later trigger the favorable conditions for *Bhagandara* formation.

Majority of the patients belonged to *Vata-Kaphaja Prakriti* (54.76%) and were affected with *Vata-Kaphaja* type of *Bhagandara* (26.19%) The pathogenesis of *Bhagandara* starts with the vitiation of *Vata Dosha* in all types of *Bhagandara,* and it implies that similar *Dosha Prakriti* individual are prone to suffer from *Bhagandara*.[13] The maximum number of cases (76.19%) had chronicity of disease for <1 year The blind external type of fistula-in-ano was observed in maximum (88.09%) patients. The fistula-in-ano usually originates from a perianal abscess in the intersphincteric space or infection of anal gland (cryptoglandular infection). Due to the tone of internal sphincter, the duct cannot aptly discharge, so the abscess usually tracks down and opens in the perianal skin externally.[14] The position of external opening at the posterior half was 57% while external opening at the anterior half of anus was 43%. The anal glands are 4–8 in number and most of them are situated at the posterior portion of anal canal.[15] The curved fistulous tracts were noted in 61.90% patients, as external openings at posterior part of anus are curved tract which open midline at 6 O'clock (Goodsall's rule). Previous research work of Cirocco and Reilly also reported the similar finding.[16]

Results

In group-A (n = 22), where *Guggulu*-based *Ksharasutra* was applied in fistula-in-ano without partial fistulectomy, provided highly significant relief in pain and discharge and significant result was found in perianal itching, whereas relief in swelling of the affected area was statistically insignificant [Table 5]. In group-B (n = 20), patients were treated with partial fistulectomy and then *Guggulu*-based *Ksharasutra* was applied in the remaining fistulous tract which provided relief in symptoms such as pain, discharge and itching, which was statistically highly significant. The relief in swelling in this group was statistically significant [Table 6].

The UCT was considered as the objective parameter to assess the result of the groups. After change of *Ksharasutra,* the length of the thread was measured and recorded in a research proforma. Individual patients UCT was calculated and the comparison was made with the mean UCT of both groups. In group-A, mean UCT was 8.85 days/cm where plain *Guggulu*-based *Ksharasutra* was applied. In group-B, mean UCT was 8.19 days/cm in which partial fistulectomy was done followed by *Guggulu*-based *Ksharasutra* [Table 7].

In this study, out of total 42 patients, 22 patients in Group-A and 20 in group-B had completed the treatment and had complete remission. There was no adverse drug reaction (ADR) during the study and follow-up period. No recurrence was observed in any patient during follow-up. Overall, both the groups provided significant results on *Bhagandara* in the regard of chief complaints and in reducing UCT, group-B was better than group-A.

Discussion

Conventional *Apamarga Ksharasutra* is a known medicine to treat *Bhagandara* (fistula-in-ano). Its efficacy has been established and standardized by Ayurvedic Pharmacopeia of India. In this study, *Guggulu*-based *Ksharasutra* was used for the management of *Bhagandara* in both groups. The main objective of this study was to compare the results of *Guggulu*-based *Ksharasutra* with and without partial fistulectomy.

In group-A, only *Ksharasutra* was applied which aids in cutting of the tract and pus drainage and hence, in most of the patients due to continuous drainage of pus, perianal itching persisted, so statistically significant relief was observed. In case of swelling of the tract or periphery, as *Ksharasutra* has *Chedhana* (excision), *Bhedana* (incision) and *Lekhana* (scrapping) properties, there may be continuous tissue inflammation. Hence, till complete cut through of the fistulous tract, the inflammation was noticed and hence, statistically, the result was insignificant on this parameter. However, inflammation was of mild in nature or grade-1 and it did not hampered the daily routine of the patients. Hence, in this group, although the result was insignificant, patients could do their daily routine activity without any complaints. In patients of group-B, partial fistulectomy was done; hence,

Table 5: Effect of therapy in Group-A (*n*=22)

Symptom	Mean		Mean difference	SD	SE	*P*	Significance
	BT	AT					
Pain	1.180.084	0.000.00	1.182	0.395	0.084	<0.001	HS
Discharge	1.090.091	0.000.00	1.091	0.426	0.091	<0.001	HS
Itching	0.500.127	0.000.00	0.500	0.598	0.127	0.002	S
Swelling	0.090.063	0.0460.05	0.046	0.213	0.046	1.000	IS

BT: Before treatment, AT: After treatment, SD: Standard deviation, SE: Standard error, HS: Highly significant, S: Significant, IS: Insignificant

Table 6: Effect of therapy in Group-B (*n*=20)

Symptom	Mean		Mean difference	SD	SE	*P*	Significance
	BT	AT					
Pain	1.600.112	0.000.00	1.600	0.503	0.112	<0.001	HS
Discharge	1.400.112	0.000.00	1.400	0.503	0.112	<0.001	HS
Itching	0.900.124	0.000.00	0.900	0.553	0.124	<0.001	HS
Swelling	0.400.112	0.000.00	0.400	0.503	0.112	0.008	S

BT: Before treatment, AT: After treatment, SD: Standard deviation, SE: Standard error, HS: Highly significant, S: Significant

Table 7: Mean unit cutting time

Group	Mean unit cutting time
Group-A	8.85 days/cm
Group-B	8.19 days/cm

from the remaining tract, the discharge and perianal itching were minimized due to open wound which facilitates complete drainage of pus. Hence, *Guggulu*-based *Ksharasutra* along with partial fistulectomy was more effective than only *Guggulu*-based *Ksharasutra* application in reducing symptoms such as pain, discharge, itching and swelling.

The shortest UCT was found in group-A which was 1.5 days/cm, where the length of the tract was 2.0 cm. The longest UCT was also found in group A which was 17.5 days/cm and the length of the tract was 7 cm. Although the length of the tract was small, even then it took more time to heal which shows the callous nature of healing of the fistulous tract. The mean difference between UCT was lilttle, i.e., 0.66 days/cm; however, further, it was found that in group-A, in 10 patients, UCT was >10 days/cm, while in group-B, only in 2 patients, UCT was >10 days/cm. This shows the additional effect of partial fistulectomy as it reduces UCT. It can be said that due to partial fistulectomy, particularly in long fistulas tract, the total duration was minimized due to early healing of fistulectomy wound and cutting of the remaining small tract. Hence, the patients of group-B showed better results as compared to patients of group-A.

Overall, both the groups showed good results in treatment of *Bhagandara* with complete remission. *Ksharasutra* is a para-surgical procedure having high success rate. Hence, in this study also, all patients were cured completely without any complications. However, on the prospects of relief in complaints and reducing the UCT, group-B (*Ksharasutra* application with partial fistulectomy) is better than group-A (*Ksharasutra* application only).

Probable mode of *Ksharasutra* action

In this clinical trial, *Guggulu*-based *Ksharasutra* was used in all patients of both the groups. The ingredients are *Guggulu* resin, *Apamarga Kshara* and *Haridra* powder. *Apamarga Kshara* has *Chedana* (excision), *Bhedana* (incision), *Lekhana* (scrapping) and *Tridoshaghna* (alleviating all *Dosha*) properties.[17] *Haridra* powder has the properties such as *Rakta Shodhaka* (blood purifier), *Shothahara* (anti-inflammatory), *Vatahara* (alleviate *Vata*) and *Vishaghna* (antimicrobial) and it is useful in *Vrana Ropana* (wound healing).[18] *Guggulu* has the properties such as anti-inflammatory, antimicrobial and healing thus helps in healing of fistula-in ano.[19]

Due to all above properties, *Guggulu*-based *Ksharasutra* have the properties such as *Chedana*, *Bhedana*, *Lekhana, Krimighna* (anti-anthelmintic), *Vrana Shodhaka* and *Vrana Ropaka*. The effect of *Ksharasutra* has combined effect of all ingredients and was found effective in cutting and healing of the fistulous tract. *Ksharasutra* cuts unhealthy portion of the tract and provides simultaneous healing due to above properties. Hence, it advances tract outward day by day and the length of the tract is cut by *Ksharasutra* which was measured as the UCT. Healing from the base of the fistulous tract runs parallel to the cutting of tract. Ultimately, 1 day, *Ksharasutra* comes out by cutting through the entire fistulous tract with simultaneous healing from its base. At last, a small linear scar remains at the site of fistula. *Guggulu*-based *Ksharasutra* has properties of excision of fistulous track, cleaning of the track and simultaneously healing of the tract due to its *Shodhana* and *Ropana* activity.

Probable mode of action of adjuvant drugs

Panchavalkala Kwatha (decoction)

All patients of both the groups were advised for *Avagaha Swedana* (warm water sitz bath) with 100 ml of *Panchavalkala*

decoction two times a day. It helped to clean the pus discharge and associated debris from the tract and also reduced local congestion and inflammation at perianal area. The ingredients of *Panchavalkala* decoction like *Vaṭa* (*Ficus benghalensis* Linn.), *Udumbara* (*Ficus glomerata* Roxb.), *Plakṣha* (*Ficus lacor* Buch Ham.), *Parisha* (*Thespesia populenoides* L.) and *Ashvattha* (*Ficus religiosa* Linn.) have predominant of *Kashaya Rasa* (astringent taste). Hence, when the decoction was used for sitz bath, it exhibited *Vrana Shodhana* and *Vrana Ropana* properties.[20] It also helped to maintain local hygiene of the anus and surrounding area and control the local infection.[21]

Jatyadi oil

Per rectal administration of 10 ml of *Jatyadi* oil two times daily after *Ksharasutra* was beneficial as it produced soothing effect at anal canal and lower part of rectum. In classic, *Jatyadi* oil is indicated in *Bhagandara* (fistula-in ano), *Upadansha Vrana* (syphilitic ulcer) and *Dushta Vrana* (infected wound) due to its *Shodhana* (cleaning) and *Ropana* (healing) properties.[22] So, local inflammation was reduced and the feces passed without much friction thus minimized the chances of infection.

Triphala Guggulu

Triphala Guggulu was prescribed in tablet form 1 g three times a day up to completion of the treatment in both groups. The ingredients of *Triphala Guggulu* are *Bibhitaki, Haritaki, Amalaki, Pippali* and *Shuddha Guggulu. Triphala Guggulu* has anti-inflammatory activity, so it helped in the postoperative pain management.[23]

Haritaki and Saindhava

This combination of drug was prescribed in all patients after *Ksharasutra* for initial 15 days regularly once daily with lukewarm water. *Haritaki* (*Terminalia chebula* Retz.) has properties such as *Tridoshaghna* (especially *Vata* pacification), anti-inflammatory, wound cleaning, wound healing, digestive, laxative, mild purgative and anthelminthic.[24] *Saindhava* (rock salt) has properties such as *Snigdha*, *Ushna* (hot in potency), *Tikshna* (penetrating), *Agni Deepaka* (digestive stimulant) and *Anulomaka* (laxative). Hence, due to these properties, patients had relief in indigestion and constipation.

Conclusion

Overall, in both the groups, *Guggulu*-based *Ksharasutra* was effective in *Bhagandara* with cure; however, on the prospects of relief in complaints and reducing the UCT, group-B (*Ksharasutra* application with partial fistulectomy) was better than group-A (*Ksharasutra* application only). The adjuvant drugs prescribed during the treatment that is sitz bath with *Panchavalkala* decoction, *Jatyadi* oil, *Triphala Guggulu*, *Haritaki* and *Saindhav* also play role in symptomatic relief. No recurrence was observed in any patient during follow-up of 1 month after complete cut through of fistulous tract however follow up for one year is needed.

Acknowledgment

We would like to acknowledge Prof. M.S. Baghel, Ex-Director, IPGT and RA, Gujarat Ayurved University, Jamnagar, and Prof. K.S. Dhiman, Director, IPGT and RA, Gujarat Ayurved University, Jamnagar.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Shastri A, editor. Sushruta Samhita of Sushruta, Sutra Sthana. Reprint edition. 12th ed., Ch. 33, Ver. 4. Varanasi: Chaukhambha Sanskrita Sanshtan; 2009. p. 163.
2. Vyas AK, Katlana A, Singh A, Thakur S, Yadav A. Incidence of Low Fistula in Ano and Results of Fistulotomy in Rural Tertiary Centre. Ann. Int. Med. Den. Res. 2017;3(3):28-30.
3. Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. Ann Chir Gynaecol 1984;73:219-24.
4. García-Aguilar J, Davey CS, Le CT, Lowry AC, Rothenberger DA. Patient satisfaction after surgical treatment for fistula-in-ano. Dis Colon Rectum 2000;43:1206-12.
5. Williams NS. The anus and anal canal. Bailey and Love's Short Practice of Surgery. 26th ed., Ch. 72. Taylor and Francis group, New York; 2008. p. 1266.
6. Shukla NK, Narang R, Nair NG, Radhakrishna S, Satyavati GV. Multicentric randomized controlled clinical trial of Ksharasutra (Ayurvedic medicated thread) in the management of fistula in ano. Indian J Med Res 1991;94:177-85.
7. Saxena V, Singh LA. Comparative study of three different types of kshara sutras in the management of Bhagandara (Fistula in ano). Int J Ayurveda Med Sci 2017;2:54-8.
8. Chunekar KC, editor. Shri Bhavmishra, Bhavaprakasha, Karpooradivarga/40, 41, Reprint edition. Varanasi: Chaukhambha Bharati Academy; 1995. p. 204.
9. Arora RB, Kapoor V, Gupta SK, Sharma RC. Isolation of a crystalline steroidal compound from *Commiphora mukul* and its anti-inflammatory activity. Indian J Exp Biol 1971;9:403-4.
10. Saeed MA, Sabir AW. Antibacterial activities of some constituents from oleo-gum-resin of *Commiphora mukul*. Fitoterapia 2004;75:204-8.
11. Williams NS, editor. The anus and anal canal. Bailey and Love's Short Practice of Surgery. 26th ed., Ch. 72. Taylor and Francis group, New York; 2008. p. 1259.
12. Gond P, Ashok K, Rajeshwari PN, Choudhary PC, Jitendra K. A comparative study of guggulu chitrak kshar – Sutra and snuhi apamarg kshar – Sutra in the management of fistula in ano. Anc Sci Life 2013;32 Suppl 2:S34.
13. Shastri A, editor. Sushruta, Sushruta Samhita, Nidana Sthana, Bhagandara Nidan, 4/6-10, Reprint Edition. Varanasi: Chaukhambha Sanskrita Sanshtan; 2009. p. 317,318.
14. Gordon P. Anorectal abscesses and fistula-in-ano. Principles and Practice of Surgery for the Coion, Recrum, Anus. 3rd ed., Ch. 9. United State of America: Karen Berger Publisher, USA; 2006. p. 192.
15. Goligher J. Surgical anatomy and physiology of the anus, rectum and colon. Surgery of the Anus Rectum and Colon. 5th ed. New Delhi: A.I.T.B.S. Publishers and Distributors; 2002. p. 9.
16. Cirocco WC, Reilly JC. Challenging the predictive accuracy of Goodsall's rule for anal fistulas. Dis Colon Rectum 1992;35:537-42.
17. Shastri A, editor. Sushruta, Sushruta Samhita, Sootra Sthana, Ksharapaka Vidhi Adhyaya, 11/3. Reprint Edition. Varanasi: Chaukhambha Sanskrita Sanshtan; 2009. p. 45.
18. Sharma PV, editor. Mahendra Bhaugik, Dhanvantari Nighantuh, Guduchayadivarga, 53,54,55. 5th ed. Varanaasi: Chaukhambha Orientalia; 2008. p. 25,26.
19. Misra B, editor. Shri Bhavmishra, Bhavaprakasha Nighantu, Karpooradivarga/40, 41, Reprint Edition. Varanasi: Chaukhambha

Bharati Academy; 2006. p. 204.
20. Misra B, editor. Shri Bhavmishra, Bhavaprakasha Nighantu, Vataadivarga/1-5 and 8-12 12, Reprint Edition. Varanasi: Chaukhambha Bharati Academy; 2006. p. 513-8.
21. Bhat KS, Vishwesh BN, Sahu M, Shukla VK. A clinical study on the efficacy of Panchavalkala cream in Vrana Shodhana w.s.r to its action on microbial load and wound infection. Ayu 2014;35:135-40.
22. Mishra SN, editor. Govind Das Sen, Bhaisajya Ratnavali, Mukharogadikar, 61/139-142. 2nd ed. Varanasi: Chaukhambha Surbharati Prakashan; 2011. p. 965.
23. Mishra SN, editor. Govind Das Sen, Bhaisajya Ratnavali, Vranashothadikar. 47/49. 2nd ed. Varanasi: Chaukhambha Surbharati Prakashan; 2011. p. 824.
24. Pandey GS, editor. Shri Bhavmishra, Bhavaprakasha Nighantu, Haritakyadi Varga/20, 30, 31, 32, Reprint Edition. Varanasi: Chaukhambha Bharati Academy; 2010. p. 5-6.