

Efficacy of *Guggulu* and *Shallaki* based *Ksharasutra* with *Triphala Guggulu* orally in the management of *Bhagandara* w.s.r. to fistula-in-ano: A open labelled randomized comparative clinical study

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Abstract

Background: *Bhagandara* is a disease of ano-rectal region and can be correlated with fistula-in-ano. *Ksharasutra* (application of medicated thread) is being practiced for ano-rectal disorders, particularly in *Bhagandara*. *Guggulu*-based *Ksharasutra* has shown good results in previous studies. Literatures and experiments of *Shallaki* showed anti-inflammatory, antifungal, analgesic, wound healing properties and *Shallaki Nirya* (resin of *Boswellia serrate* Roxb.) is also having binding effect. Here, *Shallaki*-based *Ksharasutra* is used in comparison of *Guggulu*-based *Ksharasutra* with *Triphala Guggulu* orally for better outcome in the management of *Bhagandara*. **Aim:** The aim of this study was to evaluate and compare the efficacy of *Guggulu* and *Shallaki* based *Ksharasutra* with *Triphala Guggulu* orally in the management of *Bhagandara*. **Materials and methods:** Total 46 patients were registered and randomly allocated by computer generated chart by into three groups. In group A ($n = 15$), *Guggulu*-based *Ksharasutra* was applied in fistula-in-ano without any oral medication; in group B ($n = 16$), *Guggulu*-based *Ksharasutra* was applied with *Triphala Guggulu* orally; and in group C ($n = 15$), *Shallaki*-based *Ksharasutra* was applied with *Triphala Guggulu* orally. Patients were assessed for pain, discharge, itching and swelling in the affected region and unit cutting time (UCT) of fistulous tract. *Ksharasutra* was changed by railroad technique on weekly based follow-up till complete healing of the tract occurred. **Results:** In group A, relief in pain, discharge, and swelling was found and was statistically highly significant while insignificant result was found in itching after cut through of the fistulous tract and the same results were found in group B ($n = 14$) and group C ($n = 15$). The mean UCT was higher in group A (8.94 days/cm) than in group C (8.43 days/cm) and in group B (8.59 days/cm). **Conclusion:** *Shallaki* based *Ksharasutra* is more effective in cutting of fistula track while *Guggulu* based *Ksharasutra* is more effective in pain relief in the treatment of *Bhagandara*, along with oral *Triphala Guggulu* as compared to *Guggulu* based *Ksharasutra* with and without *Triphala Guggulu* orally.

Keywords: *Bhagandara*, fistula-in-ano, *Guggulu*-based *Ksharasutra*, *Shallaki*-based *Ksharasutra*, unit cutting time

Introduction

In *Ayurveda*, *Bhagandara* (fistula-in-ano) is mentioned as one among eight major diseases (*Ashto-Mahagada*).^[1] In spite of many available surgical and para-surgical modalities, the recurrence rate of fistula is 20%–30%.^[2] On the other hand, *Ksharasutra* (medicated thread) therapy is practiced for fistula-in-ano with least recurrence rate (3.33%).^[3] The globally famous text book, “Bailey and Love’s Short Practice of Surgery” included *Ksharasutra* as a treatment modality for fistula-in-ano.^[4] *Sushruta* had described the use of *Kshara* (alkaline ash) in *Bhagandara*.^[5] Later on Chakrapani and Bhavamishra had given detailed

description of preparation and application of *Ksharasutra* in *Bhagandara* (fistula-in-ano).^[6,7]

Ksharasutra is generally prepared with *Snuhi Ksheera* (latex of *Euphorbia nerifolia* Linn.), *Apamarga Kshara* (alkaline ash

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of *Achyranthes aspera* Linn.), and *Haridra* powder (*Curcuma longa* Linn.) which is called conventional *Snuhi*-based *Ksharasutra* but *Guggulu*-based *Ksharasutra* is found more beneficial than conventional *Ksharasutra* in previous studies.^[8] Moreover, *Snuhi Ksheera* is difficult to procure and preserve for long time. Hence, *Niryasa* (exudates) of *Guggulu* (*Commiphora mukul* Hook.) and *Shallaki* (*Boswellia serrata* Roxb.) were selected as alternative of *Snuhi* for preparing *Ksharasutra* in this study, as both are easily available and it is easy to prepare *Ksharasutra*. These are less irritant and have similar binding property as *Snuhi Ksheera*.^[9] In addition, *Guggulu* is used to treat *Vrana* (wound), *Apachi* (lymphadenitis), *Pidika* (boils), *Granthi* (cyst), *Shopha* (edema), etc.,^[10] which shows that *Guggulu* is having antiseptic, anti-inflammatory, and wound healing properties and all these properties may increase the therapeutic effect of *Guggulu*-based *Ksharasutra*.^[11] Hence, this study was conducted with the aim to evaluate and compare the efficacy of *Guggulu*-based *Ksharasutra* and *Shallaki*-based *Ksharasutra* with *Triphala Guggulu* in the management of *Bhagandara* (fistula-in-ano).

Materials and methods

Approval from Institutional Ethics Committee was taken before starting study vide letter no. PGT/7/-A/Ethics/2014-15/1538 dated September 2, 2014. The trial had been registered in the Clinical Trials Registry of India (CTRI) prospectively with registration no. CTRI/2016/04/006825 [Chart 1].

Total 46 cases of *Bhagandara* (fistula-in-ano) were registered from outpatient department and inpatient department of the Shalya Tantra Department, IPGT&RA, Jamnagar. They were randomly allocated into three groups adopting computerize randomization as follows:

- Group A ($n = 15$): Local application of *Guggulu*-based *Ksharasutra* alone was done
- Group B ($n = 16$): Local application of *Guggulu*-based *Ksharasutra* was done with *Triphala Guggulu* orally
- Group C ($n = 15$): Local application of *Shallaki*-based *Ksharasutra* was done with *Triphala Guggulu* orally.

Guggulu and *Shallaki* based *Ksharasutra* were prepared at the Department of Shalya Tantra by adopting standard API methods of *Ksharasutra* preparation.

Initial weight of 30-cm long Barbour surgical linen thread no. 20 was 0.2 gm. After preparation of *Guggulu* and *Shallaki* based *Ksharasutra*, it was 1.2 g and 0.9 g, respectively.

Common materials for preparation of *Ksharasutra* are as follows:

1. Barbour surgical linen thread number 20
2. *Apamarga Kshara* (solidified water soluble of *A. aspera* Linn.)
3. *Haridra* (*C. longa* Linn.) powder
4. *Ashodhita Guggulu* (*C. mukul* Hook.) exudate
5. *Ashodhita Shallaki* (*B. serrata* Roxb.) exudate.

Guggulu based *Ksharasutra* was prepared with *Guggulu* exudate and *Shallaki* based *Ksharasutra* was prepared with *Shallaki* exudate by replacing *Snuhi Ksheera*.^[12]

Triphala Guggulu was prepared at pharmacy of study center by adopting classical method.^[13]

Diagnostic criteria

Diagnosis was made on the basis of clinical complaints, per anal inspection, palpation, digital examination, proctoscopy, and required investigations as per specially designed research proforma.

Inclusion criteria

Patients of age between 20 and 60 years were included in this study.

Exclusion criteria

The patients with associated diseases like osteomyelitis of pelvic bone, chronic or acute ulcerative colitis, Crohn's disease, anorectal or any other malignancy, human immunodeficiency virus (HIV) and hepatitis B surface antigen (HbSAg)-positive cases, pregnant ladies and fistula other than ano-rectal and uncontrolled cases of diabetes mellitus, hypertension and tuberculosis were excluded from this study.

Investigations

Total leukocyte count, differential leukocyte count, hemoglobin, erythrocyte sedimentation rate, bleeding time, clotting time, fasting blood sugar, blood urea, serum creatinine, serum bilirubin, HIV, HbSAg and routine urine examinations were done in all patients before *Ksharasutra* application. Biopsy of the tissue of the tract was done in suspected cases of malignancy.

Methodology

Preoperative procedure

1. Written informed consent of every patient was taken before surgery
2. Patients were kept nil by mouth 6 h prior to procedure
3. Lignocaine sensitivity test was done (0.1 ml intradermal)
4. Injection tetanus toxoid 0.5 ml intramuscular was given
5. Part was prepared (local shaving) before operation
6. Proctoclysis enema was given in the morning on the day of surgery.

Operative procedure

Painting and draping of perianal area was done after giving low spinal anesthesia. In lithotomy position, first methylene blue dye was passed in the tract to locate the direction and course of fistula. Then, probing was done to confirm the communication for two openings, a malleable probe was inserted into the tract that reached to internal opening by applying least resistant area. After piercing the internal opening, the tip of the probe came out through the anal canal. In patients of group A and group B, *Guggulu* based *Ksharasutra* was applied, while in patients of group C, *Shallaki* based *Ksharasutra* was applied. The two free ends of *Ksharasutra* were tied over keeping it loose. In multi-branching or high anal fistula-in-ano, tract was partially excised for proper drainage. "T" bandage was applied after sterile dressing.^[14]

Postoperative procedure

1. Patients were kept nil by mouth and head low position was maintained for initial 6 h after surgery

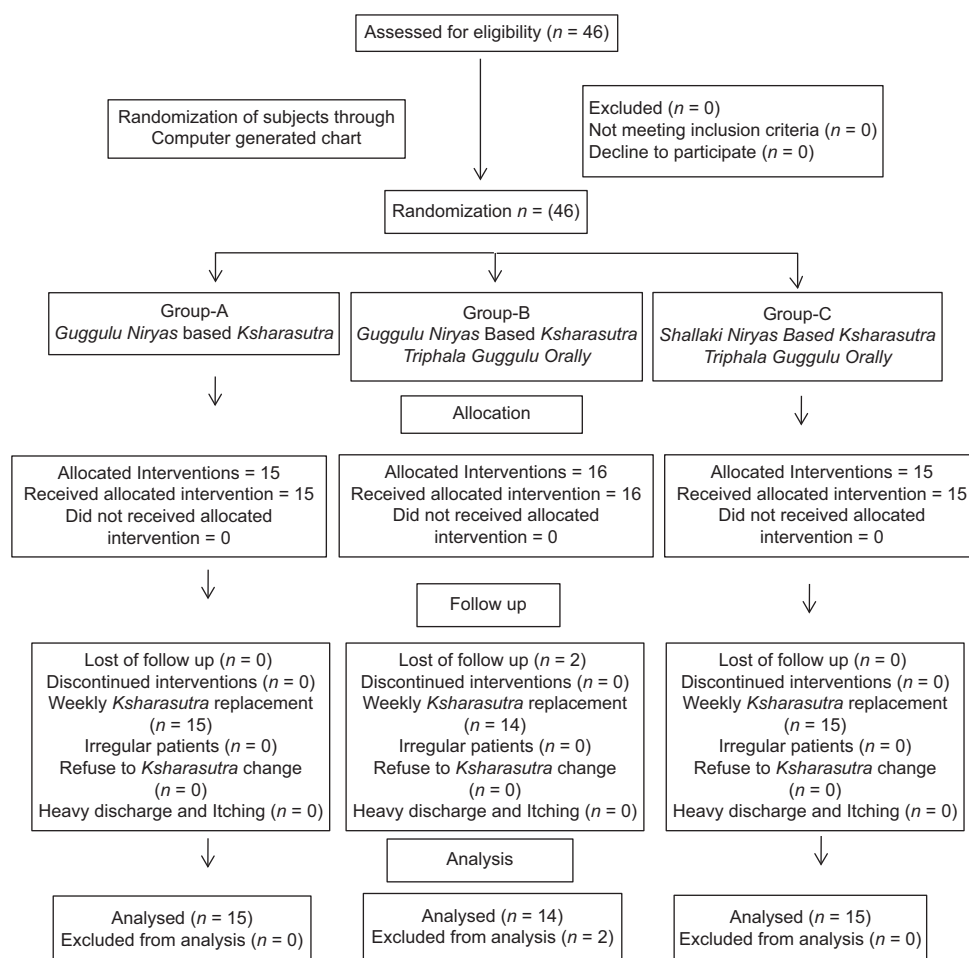


Chart 1: Consort Flow Chart

- Injection cefotaxime 1000 mg + sulbactam 500 mg intravenous two times a day in postoperative period and tablet aceclofenac 100 mg + paracetamol 325 mg + serratiopeptidase 15 mg were also given after meal two times a day for 3 consecutive postoperative days.
- Patients were advised to start warm water sitz bath with *Panchavalkala Kwatha* (*Nyagrodha* – *Ficus benghalensis* Linn., *Udumbara* – *Ficus glomerata* Roxb., *Ashwattha* – *Ficus religiosa* Linn., *Parisha* – *Thespesia populnea* Soland ex Correa, and *Plaksha* – *Ficus lacor* Buch.-Ham.) from the next day of operation
- 10 ml of *Jatyadi Taila*^[15] was administered per rectal two times a day, morning and evening after sitz bath
- Erandabhrishta Haritaki*^[16] powder, 5 g with lukewarm water at bedtime, was prescribed
- In patients of group B and group C, *Triphala Guggulu* 2 tabs of 500 mg, twice a day after meal with lukewarm water, were given
- Ksharasutra* was changed by railroad technique at every 7th day till cut through of tract.

Guggulu and *Shallaki* based *Ksharasutra* were prepared in the Department of Shalya Tantra, IPGT and RA, Jamnagar, and

Panchavalkal Kwatha, *Jatyadi Taila*, *Erandabhrishta Haritaki*, and *Triphala Guggulu* were prepared in Gujarat Ayurved University Pharmacy, Jamnagar, adopting standard API method of preparation. After healing of fistulous tract, all patients were followed till 1 month at weekly interval.

Criteria for assessment

The assessment was done on the basis of objective parameter, i.e., unit cutting time (UCT)^[17] [Tables 1-4] and subjective parameters such as relief in symptoms of pain, discharge, itching, and swelling [Tables 5-8].

Statistical analysis

The data obtained in clinical study were subjected to statistical tests such as Wilcoxon signed-rank test, Kruskal–Wallis Test, and ANOVA test with the help of Sigma State. After obtaining *P* value, it was observed as insignificant *P* > 0.05, significant *P* < 0.05, highly significant *P* < 0.01.

Observations

In the enrolled cases of *Bhagandara*, no patient had a history of diabetes mellitus, hypertension, and tuberculosis. All the patients were observed for type of *Bhagandara* according to classification given by Ayurvedic classics, and it was observed that maximum (41.03%) patients were having

Table 1: Number of external openings (n=46)

External openings	Number of patients			Total, n (%)
	Group A	Group B	Group C	
0	0	0	1	1 (2.17)
1	12	13	12	37 (80.43)
2	3	2	1	6 (13.04)
3	0	1	1	2 (4.34)
≥3	0	0	0	0
Total	15	16	15	46 (100.00)

Table 2: Types of fistula-in-ano (n=46)

Types of fistula-in-ano	Number of patients			Total, n (%)
	Group A	Group B	Group C	
Blind external	6	9	5	20 (43.47)
Blind internal	1	0	1	2 (4.34)
Complete	8	7	9	24 (52.17)
Total	15	16	15	46 (100.00)

Table 3: Clockwise position of external opening (n=46)

Clock wise position	Group A	Group B	Group C	Total, n (%)
1 O'clock	2	4	3	9 (15.25)
2 O'clock	1	0	0	1 (1.69)
3 O'clock	1	2	0	3 (5.08)
4 O'clock	3	1	2	6 (10.16)
5 O'clock	1	4	2	7 (11.86)
6 O'clock	4	3	1	8 (13.55)
7 O'clock	5	3	4	12 (20.33)
8 O'clock	0	0	2	2 (3.38)
9 O'clock	3	2	0	5 (8.47)
10 O'clock	1	0	0	1 (1.69)
11 O'clock	1	1	2	4 (6.77)
12 O'clock	0	1	0	1 (1.69)

Table 4: Course of the tract of fistula-in-ano (n=46)

Course of the tract	Number of patients			Total, n (%)
	Group A	Group B	Group C	
Radial	7	6	7	20 (43.47)
Curved	8	10	7	25 (54.34)
Horse shoe	0	0	1	1 (2.17)
Total	15	16	15	46 (100)

Table 5: Gradation for pain

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

Table 6: Gradation for discharge

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

Table 7: Gradation for itching

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

Table 8: Gradation for swelling

Grade	Parameter
0	No swelling
1	Swelling within 1×1 cm
2	Swelling within 2×2 cm
3	Swelling within 3×3 cm

Riju type of *Bhagandara*. [Table 4] As per contemporary medicine, among the case of *Bhagandara*, maximum cases were of low anal type fistula. All patients were examined for type of fistulous tract and number of external opening, and it was seen that maximum (52.17%) patients had complete type of fistulous tract and maximum (80.43%) patients had single external opening. [Table 2] Maximum (59.28%) patients had external openings at posterior side of anus. [Table 3].

Results

In this study out of 46 patients, total 44 patients completed the treatment, i.e., 15 patients in group A, 14 patients in group B, and 15 patients in group C. Two patients of group B were dropped out due to long distance of hospital from their home but continued treatment at their respective places. In group A ($n = 15$), the results on the symptoms of pain, discharge and swelling were found statistically highly significant while insignificant result was found in itching after cut through of the entire fistulous tract [Table 9]. The same statistical results were found in group B ($n = 14$) and group C ($n = 15$) [Tables 10 and 11]. On comparison between groups, no significant difference was found statistically [Table 12]. Moreover, all 44 registered patients completed the course of treatment and got relief.

After every change of *Ksharasutra*, the length of the thread was measured and recorded in research proforma. The individual patient's UCT was calculated and the comparison

Table 9: Effect of therapy in group A (n=15)

Symptoms	Mean±SD		Mean difference	SD	SEM	W	P
	BT	AT					
Pain	1.33±0.210	0.00±0.00	1.33	0.816	0.210	-91	0.001
Discharge	1.33±0.210	0.00±0.00	1.33	0.816	0.210	-91	0.001
Itching	0.26±0.118	0.00±0.00	0.266	0.457	0.118	-10	0.125
Swelling	1.26±0.153	0.00±0.00	1.267	0.593	0.153	-105	0.001

BT: Before treatment, AT: After treatment, SD: Standard deviation, SEM: Standard error of measurement, W: Wilcoxon signed-rank test value, P: Probability

Table 10: Effect of therapy in group B (n=14)

Symptom	Mean±SD		Mean difference	SD	SEM	W	P
	BT	AT					
Pain	1.50±0.138	0.00±0.00	1.462	0.518	0.143	-91	0.001
Discharge	1.78±0.186	0.00±0.00	1.786	0.699	0.186	-105	0.001
Itching	0.14±0.097	0.00±0.00	0.142	0.363	0.097	-3	0.500
Swelling	1.50±0.138	0.00±0.00	1.150	0.518	0.138	-105	0.001

BT: Before treatment, AT: After treatment, SD: Standard deviation, SEM: Standard error of measurement, W: Wilcoxon signed-rank test value, P: Probability

Table 11: Effect of therapy in group C (n=15)

Symptom	Mean±SD		Mean difference	SD	SEM	W	P
	BT	AT					
Pain	1.40±0.163	0.00±0.00	1.400	0.632	0.163	-105	0.001
Discharge	1.33±0.159	0.00±0.00	1.333	0.617	0.159	-120	0.001
Itching	0.40±0.190	0.00±0.00	0.400	0.736	0.190	-10	0.125
Swelling	1.20±0.144	0.06±0.00	1.133	0.516	0.133	-105	0.001

BT: Before treatment, AT: After treatment, SD: Standard deviation, SEM: Standard error of measurement, W: Wilcoxon signed-rank test value, P: Probability

Table 12: Comparative effect of therapy in between of three-group Kruskal-Wallis test (h) test and ANOVA (f) test used for comparison of all groups

Symptoms	H with two degree of freedom	P
Pain	0.466	0.792
Discharge	3.959	0.138
Itching	0.972	0.615
Swelling	2.163	0.339

P: Probability

Table 13: Mean unit cutting time: Table made by applying ANOVA test on unit cutting time of all groups

Group	Mean UCT (days/cm)	SD	SEM	F	P
Group A	8.94	2.574	0.665	0.173	0.842
Group B	8.59	2.739	0.732		
Group C	8.43	1.875	0.484		

Average UCT was low, i.e., 8.43 days/cm in group C, and high, i.e., 8.94 days/cm in group A but the analysis of the data showed ($P=0.842$) that there is not a statistically significant difference in UCT of all groups.

UCT: Unit cutting time, SD: Standard deviation, SEM: Standard error of measurement

was made with the mean UCT of all three groups. In group A, the mean UCT was 8.94 days/cm. In group B, the mean UCT was 8.59 days/cm, whereas in group C, the mean UCT was 8.43 days/cm. No adverse drug reaction was reported during the course of study and follow up period. No recurrence was observed in any patient during follow up [Table 14].

Discussion

Total 52.17% of patients were diagnosed as complete type of fistula due to recurrent infection and discharge present from fistulous tract. 43.47% of patients were diagnosed with blind external due to closing of the internal opening by fibrotic changes. The fistula-in-ano usually originates from a perianal abscess in the inter-sphincteric space and infection of anal gland (cryptoglandular infection). Due to the tone of internal sphincter, the duct cannot appropriately discharge so the abscess usually tracks down and opens through a fistulous tract at the perianal skin externally and some time it can get closed for time being.^[18] The position of external opening at posterior half was maximum i.e. 59.28% as anal glands are

Table 14: Overall effect of therapy

Result	Group A (%)	Group B (%)	Group C (%)	Total (%)
Cured	100 (15)	100 (14)	100 (15)	100 (44)
Recurrence	00	00	00	00
Total	100	100	100	100

There was no ADR reported during the course of study and follow-up period, No recurrence was observed in any patient during follow-up, Overall all three groups showed good results on Bhagandara with complete cure, but on the prospects of reduced unit cutting time, group C showed a better result than group A and B. ADR: Adverse drug reaction

4–8 in number and most of them are situated at posterior aspect of anal canal.^[19] The curved fistulous tracts were noted in 54.34% of patients as external openings are present at posterior part of anus which opens internally on midline at 6 O'clock (Goodsall's rule). Previous research work of Cirocco and Reilly also reported a similar finding.^[20] In all three groups, significant improvement was found on symptoms of pain, discharge and swelling and insignificant result found in itching. Insignificant result in itching might be due to continuous discharge from fistulous tract. *Triphala Guggulu* orally given in group B and group C did not showed any additional effect as compared to group A. Clinically, results of all three groups were almost similar and statistically insignificant difference was noted [Table 12].

The lowest UCT was found in group B which was 4 days/cm, where the length of the tract was 3 cm. The highest UCT was also found in group B which was 14 days/cm where the length of the tract was 10 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 minor in between groups, but on looking the group statistics, it was found that in group A, 7 patients and, in group B, 6 patients have UCT of 10 days/cm or more than 10 days/cm, while in group C, only in 2 patients, UCT was more than 10 days/cm that shows the effect of *Shallaki* based *Ksharasutra* in group C. UTC was least in group C as compare to other groups but *Shallaki* based *Ksharasutra* showed more pain as compare to other group. *Guggulu*-based *Ksharasutra* was comparatively smoother, because after preparation, *Guggulu Niryasa* consistency was soft and more uniform on thread that's why less irritant and less painful. In the comparison of UCT of Fistulous tract of all three groups, group C showed good cutting power but the healing of fistulous tract required its own time.

Overall, all three groups were effective in Bhagandara with complete cure. However, on the prospects ground of less UCT, group C was found better than group A and group B [Table 13].

Apamarga Kshara has properties of *Kshara*, i.e., *Chedana* (excision), *Bhedana* (incision), *Lekhana* (scrapping), and *Tridoshashghna* (alleviating all *Dosha*). *Haridra* powder has the properties such as *Rakta Shodhaka* (blood purifying),

Shothahara (anti-inflammatory), *Vatahara* (alleviate *Vata*) and *Vishaghna* (antimicrobial), and it is useful in *Vrana-Ropana* (wound healing).^[21] *Guggulu* has properties of *Laghu* (lightness), *Ruksha* (dryness), *Ushna-Veerya* (hot potency) and *Sara* (the quality of a substance which is responsible for flow), etc. It is *Kapha-Vatahara* (relives *Kapha* and *Vata*), *Kledahara* (remove moistness/soddening), and *Jantughna* (antimicrobial) and is useful in *Vrana* (wound), *Apachi* (lymphadenitis), *Pidika* (boils), *Granthi* (cyst), *Shopha* (edema), *Arsha* (piles), *Arbuda* (tumor) etc.^[22] *Shallaki Niryasa* has *Kashaya* (astringent taste), *Tikta Rasa* (bitter taste), *Ruksha* (dryness), *Laghu Guna* (lightness property), *Katu Vipaka*, *Ushna Veerya* (hot potency) and *Kapha-Pitta Shamaka* (relives *Kapha* and *Pitta*) properties. It is *Vrana-Shodhaka* (wound cleanser), *Vrana-Ropaka* (wound healer), and *Puyahara* and indicated in *Vrana* (wound), *Atisara* (diarrhea), *Timira* (errors of refraction/partial blindness), *Rakta-Pitta* (hemorrhagic disorder), *Kushtha* (various skin diseases), etc. Boswellic acid helps in getting rid of foul odor and eliminating any pest in the surroundings and makes wound healing faster.^[23] *Guggulu* helped in *Shodhana* and *Ropana* of path of fistulous tract. Due to *Jantughna* properties of *Guggulu* (*C. mukul*), it is also used for treatment of infection.^[24] Therefore, *Triphala Guggulu* act as anti-inflammatory, analgesic and antibiotic drug. *Panchavalkala Kwatha* sitz bath helped to reduce local congestion and inflammation and thus relieved pain by improving local circulation and promoting healing.^[25,26] *Jatyadi Taila* has *Shodhana* (wound cleaning) and wound healing properties and helped for wound healing in Bhagandara (fistula-in-ano).^[27,28] *Haritaki* (*Terminalia chebula* Retz.) has properties that is *Dipana* (metabolism enhancing effect), *Pachana* (digestive), and *Anulomana* (regularizing physiological movement) and helped to regulate bowel habits in all patients postoperatively.^[29]

The *Ksharasutra* has a combined effect of all ingredients by which it renders in cutting and healing of the fistulous tract. *Ksharasutra* cuts unhealthy portion of the tract and provides simultaneous healing. Hence, it UTS the track by weekly after changing *Ksharasutra* which is UCT. The *Ksharasutra* also helped to cut the fistulous tract by exerting mechanical pressure over the enclosed tissue.^[30] Healing from the base of the fistulous tract runs parallel to the cutting of tract. Ultimately, *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.

Conclusion

Guggulu based *Ksharasutra* and *Shallaki* (*B. serrata* Triana and Planch.)-based *Ksharasutra* both are found equally effective in the management of fistula-in-ano. *Shallaki* based *Ksharasutra* is more effective in cutting of fistula track while *Guggulu* based *Ksharasutra* is more effective in pain relief in the treatment on Bhagandara. Hence, it can be concluded that *Guggulu* based *Ksharasutra* can be used in cases of

Pitta predominant (*Ushtragreeva Bhagandara*) cases and *Shallaki*-based *Ksharasutra* can be used in recurrent and fibrosis cases of fistula more effectively.

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Conflicts of interest

There are no conflicts of interest.

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