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Research Article

COMPARATIVE EFFECT OF *KSHARASUTRA* ON MANAGEMENT OF *BHAGANDARA*

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ABSTRACT

Bhagandara is a chronic purulent inflammation usually affects perianal region, anal canal and rectum. It initially manifested by an abscess followed by continuous discharge of pus through the tract and leads to an unhealed condition. Improper care and negligence to the disease lead the patient to seriousness occasionally. Now-a-days, management of *Bhagandara* with *Ksharasutra* is gained popularity for its minimal invasive and complete cure of the disease but corrosiveness and pain during application of *Ksharasutra* still remain as a drawback to the approach. This study includes preparation of three types of *Ksharasutra* and comparative effect of *Ksharasutra* in the management of *Bhagandara*. Considering the above problem a thorough review was done in order to find out any solution to solve the purpose of *Ksharasutra* without pain. Further, it is also revealed that the corrosive agent usually in the preparation of *ksharasutra* is *Snuhi ksheera* (*Euphorbia nerifolia*). The relevant study proved that *ksharasutra* can also be prepared with *Guggulu* (*Comiphora mukulu*) and *Udumbara latex* (*Ficus glomerata*) instead of *Snuhi ksheera*. Thus evaluation of the effect of such *Ksharasutra* is not methodically done yet. In order to evaluate the effects of *ksharasutra* prepared out of *Guggulu* and *Udumbara latex* is selected for the purpose of the study.

KEYWORDS: *Bhagandara*, *Ksharasutra*, *Snuhi ksharasutra*, *Guggulu ksharasutra*, *Udumbara ksharasutra*.

INTRODUCTION

Bhagandara[1] is a chronic purulent disease usually affects *Bhaga* (pelvic, perianal region and around anus) and it proceeds initially with an abscess[2]. The pathological process of different types of *Bhagandara* are reviewed and resolved that different types of *Bhagandara* affect the surrounding tissues of ano-rectal region with varying course of tract and discharge of pus, fecal matter, urine and other byproducts through the sinus are the common clinical features[3]. Hence *Bhagandara* can be defined as a supportive secondary ulcerative manifestation to an eruption at ano-rectal, pelvic-rectal or perianal region which can be simulated with fistula-in-ano[4]. A *Saririka vranasopha* following the course of *shat Kriyakala*, *Bhagandara* initially exposes with a localized inflammatory lesion called *Pidika* which subsequently undergoes three important pathological stages *ama pachyamana* and *pakwa avastha*. *Bhagandara* has been described as five types [5] *Vatika bhagandara* (*Sataponaka*), *Paittika bhagandara* (*Ustragreeva*), *Kaphaja bhagandara* (*Parisravi*), *Sannipataja bhagandara* (*Sambukavarta*) and *Agantuja bhagandara* (*Unmargi*). Now-a-days, management of *bhagandara* by the use of *ksharasutra*[6-7] is gained popularity due to least reoccurrence. But due to unbearable pain, corrosiveness and burning sensation of *Ksharasutra* still remains as a problem to the approach. Considering the above problems, alternative approach to manage *Bhagandara* with the *Snuhi* [8] *Ksharasutra*, *Guggulu*[9] *Sharasutra* and *Udumber*[10] *Ksharasutra* has

been selected to evaluate the unbearable pain and burning sensation.

MATERIAL AND METHODS

Step 1: preparation of *ksharasutra* [11- 12]

Procedure 1: preparation of *Snuhi ksharasutra* (*Euphorbia nerifolia*)

Materials

- *Snuhi ksheera* (*latex of Euphorbia neriifolia Linn*.) (180ml), *Apamarga* (*Achyranthes aspera* L.) *kshara*[13] (150gm), *Haridra* (*Curcuma longa* L.) *churna*[14] (75 gm).
- Linen thread (30 meter), *Ksharasutra* cabinet, Gloves, Gauge piece, Container, Test tube.

METHOD

The linen threads (Gaze 20) are spread out over the hangers of the *Ksharasutra* frame. *Snuhi ksheera* was spread over all the threads with the help of a gauze piece and kept in *ksharasutra* cabinet for drying. The procedure was repeated after each drying of coating and it was limited to 11 times. Following 7 coatings of *Snuhi ksheera* with *Apamarga kshara* was smeared over the processed one. Accordingly three coatings of *Snuhi ksheea* with *Haridra churna* were spread over each thread and allowed to dry in *Ksharasutra* cabinet. The total number of smearing on each thread is *Snuhi ksheera* – 11 times, *Snuhi ksheera* + *Apamarga kshara* – 7 times, *Snuhi ksheera* + *Haridra churna* – 3 times.

Procedure 2: preparation of *Guggulu ksharasutra* (*Comiphora mukulu*)

Materials

- *Suddha guggulu* (100gm), *Apamarga kshara* (*Achyranthes aspara* L.) (150gm), *Haridra churna* (*Curcuma longa L.*) (75 gm).
- Linen thread (30 meter), *Ksharasutra* cabinet, Gloves, Gauge piece, Container, Test tube.

METHOD

The total number of smearing on each thread is *Suddha guggulu* (melted) – 11 times, *Suddha guggulu* (melted) + *Apamarga kshara* – 7 times, *Suddha guggulu* (melted) + *Haridra churna* – 3 times.

Procedure 3: preparation of *Udumbara ksharasutra* (*Ficus glomerata* ROXB.)

Materials

- *Udumbara ksheera* (180gm), *Apamarga kshara* (*Achyranthes aspara* L.) (150gm), *Haridra churna* (*Curcuma longa* L.) (75 gm).
- Linen thread (30 meter), *Ksharasutra* cabinet, Gloves, Gauge piece, Container, Test tube.

METHOD

The total number of smearing on each thread is *Udumbara ksheera* – 11 times, *Udumbara ksheera* + *Apamarga kshara* – 7 times, *Udumbara ksheera* + *Haridra churna* – 3 times.

Sterilization Sealing and Preservation

After the threads became dry were finally exposed to sunlight for 20-30 minutes every day for 3-7 days. Each *Ksharasutra* was kept inside a glass tube, sealed with cork and leveled for ready use.

Step 2: Clinical study of *Ksharasutra* on *Bhagandara*

Clinical study was done on 30 number of patients selected from the O.P.D. of Gopabandhu Ayurveda Mahavidyalaya, Puri. Therefore 30 patients of different age groups were randomly selected as per selection criteria for the study and divided into 3 groups. In each group 10 no. of patients were included.

Group A: contain 10 patients; Cases were treated with the *Snuhi ksharasutra* (*Snuhi Kshira* + *Apamarga Kshara* + *Haridra Churna*, standardised P.J. Despande)

Group B: contains 10 patients; Cases were treated with the *Guggulu KsharaSutra* (*Guggulu* + *Apamarga Kshara* + *Haridra Churna*)

Group C: contain 10 patients; Cases were treated with the *Udumber Ksharasutra* (*Udumber Kshira* + *Apamarga Kshara* + *Haridra Churna*)

CRITER FOR SELECTION OF PATIENTS

Inclusion Criteria

1. Patient suffering from *Bhagandara* without any systemic disease within the age group of 20-70 years of both sexes are selected for the study.
2. All the patients are differentiated according to age, sex, locality etc.

Exclusion Criteria

1. Patient suffering from secondary fistula-in-ano such as Tuberculosis, Osteomyelitic and Actinomycosis etc. are excluded.

2. Patient suffering from malignant fistula are excluded. Patient suffering from systemic disease such as Diabetes mellitus, AIDS and other venereal disease, Pott's disease, Anaemia and Hypoprotenaemia are excluded.

Diagnosis

The diagnosis for the patient selected for the treated group was as per the guideline and confirmed after fistulogram. Patient selected for treated group after diagnosis, formal pre-operative measures such as inj. Toxoid, local sterilization have to be made. The pathological investigations for each patient, the routine pathological investigation for all patients are to be made along with culture sensitivity test before the use of trial drug. All patients are advised to take normal healthy diet. The present clinical study is designed with 30 patients selected randomly. The healing efficacy is measured in the interval of 7 days, 14 days, 21 days and 30 days respectively.

Single Group Design

T_1G_1 (BT) vs. T_1G_1 (AT) effectiveness of T_1 shall be assessed

T_2G_2 (BT) vs. T_2G_2 (AT) effectiveness of T_2 shall be assessed

T_3G_3 (BT) vs. T_3G_3 (AT) effectiveness of T_3 shall be assessed

B.T. (Before Treatment), A.T. After Treatment

Assessment Criteria

Patient selected for clinical study are based on the assessment of following sign and symptoms.

(1) Discharge (2) Pain (3) Granulation tissue (4) Burning sensation (5) Length of tract.

Assessment Scale

The clinical sign as stated are examined and assessed the degree of affection and intensity in the first day, 7th day, 14th day, 21st and 30th day in order to know the effectiveness of the trial drug.

ASSESSMENT SCORE

Parameter with gradation Score

Table 1: The severity of gradation

Grade	Sign	Grade Point	Remark
G_0	-	0	Normal / Absent
G_1	+	1	Mild
G_2	++	2	Moderate
G_3	+++	3	Severe

Discharge (*Srava*)

The discharge of fistula is assessed by cotton pad (cotton pad made up of thin layer of cotton with the thickness equal to four fold of gauge) covered by gauge in a size of 2 cm × 2 cm. of 100mm thickness. The number of pads used till dryness of the fistula measures the discharge. Thus the assessment is objectively measured as follows. G_0 - No discharge (no spotting), G_1 - Mild discharge (discharge spotted the gauze pad less than 2), G_2 - Moderate discharge (discharge spotted the gauze pad more than 2), G_3 - Severe discharge (discharge spotted the gauze pad more than 5)

Pain (*Vedana*)

Being the subjective symptoms has been assessed in 10 point scale as per the patients' response.

G_0 - 0 No pain, G_1 - 1, 2, 3 Mild pains, G_2 - 4, 5, 6 Moderate pains, G_3 - 7, 8, 9, 10 severe pains

Granulation Tissue

Evidence of granulation tissue is clinically marked, formation of granulation tissue visually assessed.

G_0 - Healthy rosy colour granulation, G_1 - Slough with elevation of granulation, G_2 - Slough and diffused granulation, G_3 - Slough with no granulation

Burning Sensation

Being the subjective symptoms has been assessed in 10 point scale as per the patients' response.

G_0 - 0 No burning sensation, G_1 - 1, 2, 3 Mild burning sensations, G_2 - 4, 5, 6 Moderate burning sensations, G_3 - 7, 8, 9, 10 severe burning sensations

Length of tract

Length of tract is clinically measured by probing with gentle pressure. The part inside the tract from the external opening is measured in cm and graded as follow.

G_0 - Healed, G_1 - Length < 3 cm, G_2 - Length 3 – 6 cm, G_3 - Length > 6 cm.

OBSERVATION

1. It is deserved from the table no. 1, 2, 3 that the percentage of patients got improvement, discharge after treatment of 7 days (AT_1), 14 days (AT_2), 21 days (AT_3), 30 days (AT_4) of Gr. A patients were 10, 50, 80 & 90 respectively and that of Gr. B patients were

0,40,80 & 100 and that is Gr. C patients was 10,30,40 & 80. The percentage of the patient got improvement of pain; Burning sensation and Length of tract were 100, in all the groups at each follow period. The percentage of patients got improvement of granulation tissue at AT_1, AT_2, AT_3, & AT_4 were 20, 70, 100 & 100 in Gr. A 10, 60, 100 & 100 in Gr. B 10, 50, 80 & 100 respectively in Gr. C.

Table 2: Percentage of improvement of sign and symptoms after treatment in Gr. A

Sign and Symptoms	Group-A			
	AT_1%	AT_2%	AT_3%	AT_4%
Discharge	10	50	80	90
Pain	100	100	100	100
Granulation Tissue	20	70	100	100
Burning Sensation	100	100	100	100
Length of track	100	100	100	100

Table 3: Percentage of improvement of sign and symptoms after treatment in Gr. B

Sign and Symptoms	Group-B			
	AT_1%	AT_2%	AT_3%	AT_4%
Discharge	0	40	80	100
Pain	100	100	100	100
Granulation Tissue	10	60	100	100
Burning Sensation	100	100	100	100
Length of track	100	100	100	100

Table 3: Percentage of improvement of sign and symptoms after treatment in Gr. C

Sign and Symptoms	Group-C			
	AT_1 %	AT_2 %	AT_3 %	AT_4 %
Discharge	10	30	40	80
Pain	100	100	100	100
Granulation Tissue	10	50	80	100
Burning Sensation	100	100	100	100
Length of track	100	100	100	100

2. It is observed that the average percentage of improvement of sign & symptoms of Gr. A patients after treatment 7 days (AT_1), 14 days (AT_2), 21 days (AT_3) 30 days (AT_4) respectively were as follows. The percentage of improvement in Discharge was 5, 25, 40 & 70 of pain was 34.09, 68.18, 90.90 & 95.95 of Granulation tissue was 10.52, 42.10, 68.44 & 73.68 of Burning sensation was 33.33, 66.66, 83.33 & 91 and of length of tract was 15.67, 37.92, 57.67 & 70.55.
3. It is observed that the average percentage of improvement of sign & symptoms of Gr. B, patients after treatment 7 days (AT_1), 14 days (AT_2), 21 days (AT_3), 30 days (AT_4) were respectively of follows. The percentage of improvement in discharge 0, 17.39, 39.13 & 65.21, of pain was 25. 55.76, 84.61 & 98.07 of Granulation Tissue was 15.40, 55 & 70, of Burning Sensation was 30, 55, 77.5 & 87.5 and of Length of tract was 8.98, 21.27, 34.04 & 50.82.
4. It is observed that the average percentage of improvement of sign & symptom of Gr. C patients after treatment 7 days (AT_1), 14 days (AT_2), 21 days (AT_3), 30 days (AT_4) were respectively as follows. The percentage of improvement in discharge 5.26, 15.78, 21.05 & 47.36, of pain was 21.56, 45.09, 70.51 & 84.31, of granulation tissue was 6.25, 31.25, 50 & 68.75, of Burning Sensation was 37.5, 75, 97.91 & 100, and of Length of tract was 6.22, 14.66, 23.77 & 33.77.
5. It is observed from the table no. 4 that the clinical assessment of number of patients & percentage of cure after treatment of 7 days (AT_1) in Gr. A, Gr. B, & Gr. C are unsatisfactory improvement 10(100%) respectively.

Table 4: Clinical assessment of result after treatment 7 days (n=30)

Clinical Assessment	Group-A		Group-B		Group-C	
	f	%	f	%	f	%
Cure	0	0%	0	0%	0	0%
Max. improvement	0	0%	0	0%	0	0%
Moderate improvement	0	0%	0	0%	0	0%
Mild improvement	0	0%	0	0%	0	0%
Unsatisfactory	10	10%	10	10%	10	10%

6. It is observed from the table that no. 5 the clinical assessment of number of patients & percentage of improvement after treatment of 14 days (AT_2) in Gr. A was 1 (10%) moderate, 5 (50%) mild, 4 (40%) unsatisfactory improvement. The Gr. B & Gr. C are same improvement were noted as 4

(40%) mild, 6 (60%) unsatisfactory improvement after 14 days respectively.

Table 5: Clinical assessment of result after treatment 14 days (n=30)

Clinical Assessment	Group-A		Group-B		Group-C	
	f	%	f	%	f	%
Cure	0	0%	0	0%	0	0%
Max. improvement	0	0%	0	0%	0	0%
Moderate improvement	0	0%	0	0%	0	0%
Mild improvement	5	50%	4	40%	4	40%
Unsatisfactory	4	40%	6	60%	6	60%

7. It is observed from the table no. 6 that the clinical assessment of number of patients & percentage of Improvement after treatment of 21 days (AT_3) in Gr. A was 1 (10%) cure, 7 (70%) moderate & 2 (20%) mild improvement. In Gr. B were 3 (30%) moderate, 7 (70%) mild improvement & in Gr. C were 2 (20%) moderate, 7 (70%) mild improvement and 1 (10%) unsatisfactory improvement.

Table 6: clinical assessment of result after treatment 21 days (n=30)

Clinical Assessment	Group-A		Group-B		Group-C	
	f	%	f	%	f	%
Cure	1	10%	0	0%	0	0%
Max. improvement	0	0%	0	0%	0	0%
Moderate improvement	7	70%	3	30%	2	20%
Mild improvement	2	20%	7	70%	7	70%
Unsatisfactory	0	0%	0	0%	1	10%

8. It is observed from the table no.7 that the clinical assessment of number of patients & percentage of improvement after treatment of 30 days in Gr. A 4 (40%) cure, 1 (10%) maximum, 3 (30%) moderate and 2 (20%) mild improvement. In Gr. B were 3 (30%) maximum, 6 (60%) moderate and 1 (10%) mild improvement. In Gr. C were 9 (90%) moderate & 1 (10%) mild improvement.

Table 7: Clinical assessment of result after treatment 30 days (n=30)

Clinical Assessment	Group-A		Group-B		Group-C	
	f	%	f	%	f	%
Cure	4	40	0	0%	0	0%
Max. improvement	1	10	3	30	0	0 %
Moderate improvement	3	30	6	60	9	90
Mild improvement	2	20	1	10	1	10
Unsatisfactory	0	0%	0	0%	0	0%

DISCUSSION

Effect on Discharge

After one month of treatment in Gr. A 90% patients got 70% improvement in discharge, in Gr. B 100% patients got 65.21% improvement and in Gr. C patients 80% patients got 47.36% improvement. So the treatments in all the groups are highly significant after 30 days of treatment. Hence, all the three types are *ksharasutra* highly effective to reduce discharge after 30 days of treatment, but the *Snuhi ksharusutra* and *Gugulu ksharasutra* are also highly effective after 21 days of treatment and the *Gugulu ksharasutra* decreases in discharge in all the patients but the degree of decrement is slightly more in *Snuhi ksharasutra*.

Effect on Pain

After 30 days of treatment 100% patients also got improvement in all the groups but the percentage of improvements in pain is 98.07% in Gr. B patients, 95.45% in Gr. A patients and 84.31% in Gr. C patients. So the treatment in Gr. B *Guggula ksharasutra* is more effective than *Snuhi ksharasutra* to reduce pain and the *Udumbara ksharasutra* being highly effective, least effective than the other two.

Effect on Granulation of Tissue

It is found that after 30 days of treatment 100% patients got improvement in granulation of tissue in all the groups but the percentage of improvement are 73.68% in Gr. A patients, 70% in Gr. B patients and 68.75% in Gr. C patients. So it proves that *Snuhi ksharasutra* is most effective than *Guggula* and *Udumbara ksharasutra*. *Gugula ksharasutra* is more effective than *Udumbara ksharasutra*. From the statistical analysis it is observed that *Gugulu ksharasutra* is highly significant at 0.1% level after 14 days of treatment. *Snuhi kshrasutra* and *Udumbara*

ksharasutra are effective in same value after 21 days and 30 days of treatment respectively.

Effect on Burning Sensation

After 30 days of treatment, 100% patients of all the groups got improvement. But the percentage of improvement in Gr. C patients is 100%, Gr. A patients is 91% and in Gr. B patients is 87.5%. So the treatment of *ksharasutra* in Gr. C patients i.e. the *Udumbara* is most highly effective to reduce burning sensation than the other two types of *ksharasutra* and the *Snuhi ksharasutra* is comparatively more effective than the *Guggulu ksharasutra* to reduce burning sensation.

Effect on Length of Tract

After 30 days of treatment it is found that 100% of patients of all the groups got improvement but the percentage of improvement is 70.55% in Gr. A patients, 50.82% in Gr. B patients at 33.77% in Gr. C patients. So the *Snuhi ksharasutra* is most effective to reduce length of tract than the other two and *Guggulu kshara* sutra is more effective than *Udumbara ksharasutra*.

From clinical analysis it is found that after 30 days of treatment among Group A patients, out of 10 patients, 4 (40%) patients are cured, 1 (10%) patient got maximum improvement of sign and symptoms, 3 (30%) patients got moderate improvement and 2 (20%) patients got mild improvement. Among Group B patients 3 (30%) patients got maximum improvement, 6 (60%) patients got moderate improvement, 1 (10%) patients got mild improvement. Among Group C patients 9 (0%) patients got moderate improvement and 1 (10%) patient got mild improvement. Thus it proves the treatment in Group A patients is most effective than the treatment in Group B and Group C patients and the treatment in Group B patients is more effective than the treatment in Group C patients to reduce the sign and symptoms. The *Snuhi* based *ksharasutras* are comparatively effective than *Guggulu* and *Udumbara* based ksharasutras in the treatment of *Bhagandara*.

CONCLUSION

The clinical evaluation was carried out among 30 nos. of patients being divided into 3 groups viz. Group A, B and C. Randomized sample technique was used in selection of patients. The clinical results on comparison of each group with another was observed and resolved that the *ksharasutra* prepared out of *Guggulu* and *Udumbara* is better tolerable whereas unit cutting and healing time is better in patients treated with *Snuhi ksharasutra*. Thus it is declared that to avoid pain *ksharasutra* prepared out of *Guggulu* and *Udumbar* latex may be used in case of delicate and debilitating patients. The conclusion drawn out of the study is that three types of *Ksharasutra* prepared out of *Snuhi*, *Guggulu* and *Udumbar* latex are comparatively effective whereas latter two are less corrosive and maintains a minimal unit cutting time. Hence, the *Ksharasutra* prepared out of *Guggulu* and *Udumbar* latex are recommended in delicate patients and patients with debilitating condition.

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PHOTOGRAPHS

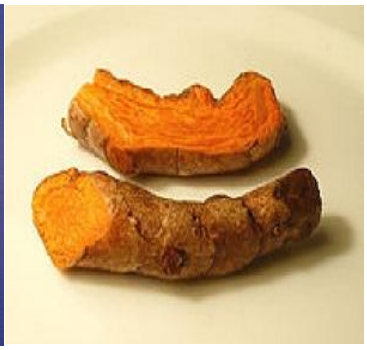
PREPARATION OF *SNUHI KSHARASUTRA*

Snuhi Plant

Snuhi Kshara

Apamarg Plant

Apamarg Kshara



Hridra Plant

Haridra Churn

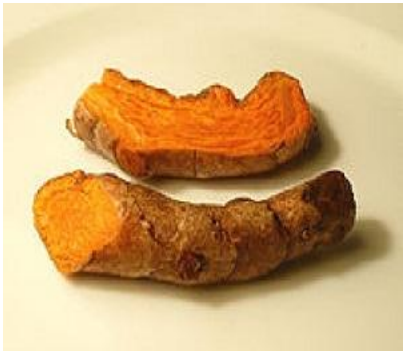
Snuhi Ksharasutra

PREPARATION OF *GUGGULU KSHARASUTRA*

Gugglu

Apamarg Plant

Apamarg Kshara



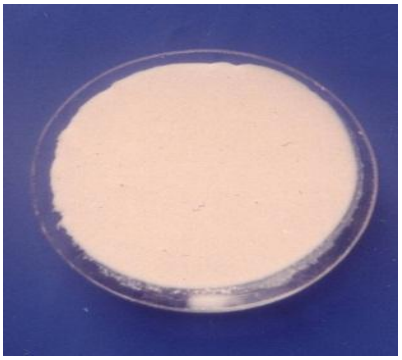
Hridra

Haridra Churna

Guggulu Ksharasutra

Preparation of *Udumbara ksharasutra*

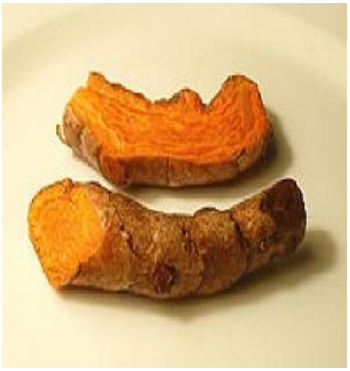
Udumbara Plant



Udumbra Kshara

Apamarg Plant

Apamarg Kshara



Hridra

Haridra Churna

Udumbara Ksharasutra

Before treatment and after treatment (30 days) with *Snuhi ksharasutra*

Before treatment and after treatment (30 days) with *Guggulu ksharasutra*