

**COMPARATIVE CLINICAL STUDY ON EFFECT OF PAPAYA KSHEERASUTRA  
WITH APAMARGA KSHARASUTRA IN THE MANAGEMENT OF BHAGANDARA  
(FISTULA IN ANO)**

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Article Received on 11/04/2020

Article Revised on 01/05/2020

Article Accepted on 22/05/2020

**ABSTRACT**

**Background:** Bhagandara (Fistula-in-ano) is a common disease occurring in Ano-rectal region it is considered as one among the Mahagada (very difficult to cure). **Aim and Objective:** To compare the efficacy of Papaya Ksheera Sutra & Apamarga Kshara Sutra in the management of Bhagandara (Fistula in Ano). It consist of Papaya latex extract (Papain) Haridra (Curcuma longa). **Materials and Methods:** In this study, 40 patients of Bhagandara (Fistula in Ano) were selected and randomly allocated into two groups. In Control group (n = 20), Apamarga Kshara Sutra (Thread of *Achyranthes aspera* linn.) application was done and in treated group (n = 20), Papaya Ksheera Sutra (thread of *Carica Papaya* extracts) application was done. The study was open prospective interventional clinical trial. Patients were assessed for 1. Unit Cutting Time of fistulous track, 2. Pain, 3. Discharge, 4. Healing of the wound after cut through. **Results:** Patient in treated group, with Papaya Ksheera Sutra (PKS) took more time for unit cutting time of fistulous track than control group of Apamarga Kshara Sutra (AKS), In patients with group PKS have better relief in pain and irritation at the wound site than group AKS, In group PKS have better reduction in size of wound & discharge than group AKS. **Conclusion:** The study concluded that Papaya Ksheera Sutra is a effective of choice for the management of Bhagandara (Fistula in ano)

**KEYWORDS:** Bhagandara, Papaya Ksheera Sutra, Apamarga, Haridra, Fistula in ano.**INTRODUCTION**

Bhagandara derives its name from two words 'Bhaga' and 'Darana' where the literal meaning of Bhaga is been used for different entities like Vasti, Guda, Yoni, Mehana or the area between scrotum and anus and Darana means splitting or discontinuity with severe pain in any part of the body and the name Bhagandara is so because they tear the region of perineum, rectum and pelvis, the premonitory symptoms are pain in pelvic bone, itching, burning sensation, and swelling in anus region. The disease starts as a Pidika or boil which suppurates and bursts open to lead Bhagandara, the prevalence rate of fistula-in-ano is 8.6 cases per 1,00,000 population. The prevalence in men is 12.3 cases per 1,00,000 population, and in women 5.6 cases per 1,00,000 population. The male-to-female ratio is 1.8:1. The mean age of patients is 38.3 years

The Kshara Sutra therapy was practiced and used since long time with great success and negligible recurrences.

Papaya (*Carica Papaya*), Papaya latex extract (Papain) has properties of wound healing by debridement of necrotising tissues, allows healthy granulation for tissue development and reduces inflammatory reactions and pain of wound, it is also used for tissue having black necrotic tissue slough or unhealthy granulation tissue and also has Antibacterial, Ant inflammatory, and proteolytic properties.

Considering its action there may be less discharge and pain during the treatment compared to other Kshara sutra. So the present study had been taken up to know the effect of Papaya Ksheera sutra in the management of Bhagandara.

**MATERIALS AND METHOD**

**Source of data:** Patients who fulfil the inclusion criteria will be selected from OPD and IPD of Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan.

**Methods of collection of data**

Diagnostic criteria: Diagnosis will be made on the basis of Samanya Lakshana of Bhagandara Like - discharge through an opening around anal canal, swelling, pain.

Inclusion criteria: Clinical signs and symptom of all types of Bhaganadara, Age group between 12-70years, Ready to sign Consent for study.

Exclusion criteria: HIV and HBsAg positive patients., Secondary fistula due to, Ulcerative colitis, Crohn's disease, Tuberculosis, Hidradenitis Suppurativa, Carcinoma of rectum, Carcinoma Anal canal, Diabetes Mellitus.

**Plan for study****Groups and Treatment**

40 Patients of Bhagandara will be assigned into two groups for study.

Group-A (20 Patients): The patients of this group will be applied with Apamarga Ksharasutra. Group B (20 Patients): The patients of this group will be applied with Papaya Ksheera Sutra. The Ksharasutra will be changed once in a week till complete cutting of the tract. There after the patients will be followed till complete healing of the track is achieved.

**Duration of the treatment**

It will depend on the length of fistulous tract.

**Assessment criteria:** 1. Unit Cutting Time = Total No. of days taken for cut through /Length of track in cms Day's/cm =..., 2. Pain, 3. Discharge, 4. Healing of the wound after cut through.

**Statistical tests:** The collected data will be tabulated and analyzed using statistical package for social sciences (SPSS) version 20. Data related to demographics and vital case history will be analyzed using descriptive statistics. Study with two groups analysed by unpaired T-test, Wilcoxon's signed rank test and as Post hoc test with Bonferroni's Correction, Friedman's test for follow ups till completion of treatment.

**Method of preparation of Papaya Ksheerasutra**

The technique of preparation of Papaya Ksheerasutra is the same as Apamarga Ksharasutra explained by the Department of Shalya-Shalakya, IMS, Banaras Hindu University, Varanasi. The Papaya Ksheerasutra will be prepared by repeated 21 coatings in which 11 coatings of Papaya Ksheera (latex of *Carica papaya*), 7 coating of Papaya latex extract (Papain) and 3 coatings of Haridra churna (Turmeric powder) will be applied.

For this purpose a surgical linen thread No.20 will be spread throughout the lengthwise in the Ksharasutra hangers. Each thread on the hanger will be smeared with Papaya Ksheera soaked in gauze piece. Then these wet threaded hangers will be placed in Ksharasutra cabinet for drying. Again the same process will be repeated daily, till eleven such coatings with Papaya Ksheera alone are accomplished.

The 12<sup>th</sup> coating will be done by first smearing the thread with Papaya Ksheera and in wet condition the thread will be passed through the Papaya latex extract. Then it will be placed into the cabinet for drying. This process will be repeated daily till seven coatings of Papaya Ksheera and Papaya latex extract (Papain) are achieved.

Finally three coatings will be given with Papaya Ksheera and Haridra Choorana in the same way. Thus the twenty one coatings over the thread will be done to prepare Papaya Ksheerasutra use in this study.

**Method of Application of Papaya Ksheerasutra**

First the patient will be kept in lithotomy position after anaesthesia perianal region will be cleaned with antiseptic lotions and draped. Later gloved finger will gently be introduced into the rectum. Then a suitable selected probe will be passed through the external opening of fistula. The tip of the probe will be forwarded along the path of least resistance and will be guided by the finger in rectum to reach into the lumen of anal canal through the internal opening and its tip will be finally directed to come out of anal orifice. Then a suitable length of Papaya Ksheerasutra will be taken and threaded into the eye of probe. Thereafter the probe will be pulled out through the anal orifice, to leave the thread behind in the fistulous track. The two ends of the thread will be then tied together with a moderate tightness outside the anal canal.

**Change of Papaya-Ksheera Sutra**

All patients were instructed to take hot sitz bath before changing the thread. The Papaya-Ksheera Sutra was changed at weekly interval. The thread is tied to the previously applied Papaya-Ksheera Sutra in position towards outer end of the knot. Then an artery forceps is applied inner end to the same knot. Then the old thread is cut between the artery forceps and the knot. Pulling of the artery forceps along with the thread ultimately replaces the old thread by Papaya-Kshara Sutra. Then the two ends are ligated and bandaging was done. This procedure is done by Railroad technique. The same procedure is followed for successive changes of Papaya-Ksheera Sutra at weekly interval.

**OBSERVATIONS AND RESULT**

The efficacy of Papaya-Ksheera Sutra and Apamarga Kshara Sutra have been studied in 40 patients of Fistula-in-ano, divided into two groups, control group (Group A) - Apamarga Kshara Sutra and treated group (Group B) - Papaya-Ksheera Sutra were applied.

All 40 patients of fistula-in-ano have been analysed for age, sex, occupation, habitat, nature of diet, Doshic Prakriti, type of Bhagandara, type of fistula-in-ano, position of the external openings, length of fistulous track and recurrent cases.

The length of the Papaya-Ksheera Sutra was measured after each change and was noted in every case. After few

days of therapy, this Sutra comes out with the knot intact. This stage is known as Cut Through. The Average Unit Cutting Time (U.C.T.) of treated group (Papaya-Ksheera Sutra) was calculated and compared with control group (Apamarga Kshara Sutra). The analysis of average unit cutting time was noted in relation to age, length of track, and previous history of operation and different 'O' clock position in each group.

The process of healing was started with the cutting of the track during the course of treatment. However, the small area was still remained to heal completely at the end of total cut through which took 1-2 weeks in treated groups in complete closure of the wound and where as 2-3 weeks was taken for healing completely in control group.

Friedman's test with Bonferroni correction was applied to analyze the significance of change in within the group.

Wilcoxon signed rank test was conducted for post Hoc with Bonferroni correction applied resulting in a significance level set at  $p < 0.01$  on parameters which show significance in Friedman's test to interpret the time of significant change.

Mann Whitney test to analyze the significance of change in between the group.

a) Assessment of Pain in comparison to Group A and B. - There was statistically highly significant difference of pain in the wound with  $\chi^2(2) = 49.521$ ,  $p = .000$  by Friedman test. Post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied resulting in a significance level set at  $p < 0.01$ . In AT-BT Pain was reduced in 18 patients, increase in none and no change in 2 hence the reduction of pain was highly significant with ( $Z = -4.146$ ,  $p = 0.000$ ).

**Table 1: Friedman Test for difference in the Pain.**

Parameter AKS	N	$\chi^2(2)$	df	P Value	Remarks
Pain	20	48.018	3	0.000	S

**Table 2: Friedman Test for difference in the Pain.**

Parameter PKS	N	$\chi^2(2)$	df	P Value	Remarks
Pain	20	34.156	3	0.000	S

**Table 3: Wilcoxon signed-rank tests for Group A-AKS.**

Parameter AKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Pain of Wound 2 <sup>nd</sup> - 1 <sup>st</sup> week	6	3.50	21.00	0	0.00	0.00	14	20	-2.449	0.014	NS
Pain of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	10	6.00	60.00	1	6.00	6.00	10	20	-2.714	0.007	S
Pain of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	7	4.50	31.50	1	4.50	4.50	14	20	-2.121	0.034	NS
Pain of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	16	8.50	136.00	0	0.00	0.00	4	20	-3.664	0.000	S

**Table 4: Wilcoxon signed-rank tests for Group B-PKS.**

Parameter PKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Pain of Wound 2 <sup>nd</sup> - 1 <sup>st</sup> week	11	9.50	171.00	0	0.00	0.00	9	20	-3.839	0.000	S
Pain of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	14	6.50	65.00	2	6.50	13.00	6	20	-2.309	0.001	S
Pain of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	18	4.64	32.50	1	3.50	3.50	2	20	-2.126	0.003	S
Pain of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	20	10.50	210.00	0	0.00	0.00	0	20	-3.994	0.000	S

**Table 5: Man -Whitney U Test for difference in the Pain of the wound.**

	Pain of Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	Pain of Wound 2 <sup>nd</sup> week	3 <sup>rd</sup> - Pain of Wound 3 <sup>rd</sup> week	4 <sup>th</sup> - Pain of Wound 4 <sup>th</sup> week	Pain of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week
Mann-Whitney U	189.500	81.000	73.000	54.000	
Wilcoxon W	399.500	291.000	283.000	264.000	
Z	-0.321	-3.422	-3.659	-4.405	
Asymp. Sig	0.748	0.001	0.000	0.000	
Exact Sig	0.779	0.001	0.000	0.000	

b) Assessment of discharge in comparison with Group A and B.-

There was statistically highly significant difference in discharge of the wound with  $\chi^2(2) = 42.295$  and  $p = .000$  by Friedman test. Post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied resulting in a significance level set at

$p < 0.01$ . Post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied resulting in a significance level set at  $p < 0.01$ . In AT-BT discharge was reduced in 15 patients, increase in 0 & no change in 5, hence reduction of discharge was highly significant with ( $Z = -3.717$ ,  $p = 0.000$ ).

**Table 6: Friedman Test for difference in discharge of the wound.**

Parameter AKS	N	X <sup>2</sup> (2)	df	P Value	Remarks
Discharge of the wound	20	46.247	3	0.000	S

**Table 7: Friedman Test for difference in discharge of the wound**

Parameter PKS	N	X <sup>2</sup> (2)	df	P Value	Remarks
Discharge of the wound	20	49.521	3	0.000	S

**Table 8: Wilcoxon signed-rank tests for Group A-AKS.**

Parameter AKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Discharge of Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	4	2.50	10.00	0	0.00	0.00	16	20	-2.000	0.046	NS
Discharge of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	14	7.50	105.00	0	0.00	0.00	6	20	-3.742	0.000	S
Discharge of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	4	2.50	10.00	0	0.00	0.00	16	20	-2.000	0.046	NS
Discharge of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	20	10.50	210.00	0	0.00	0.000	0	20	-4.300	0.000	S

**Table 9: Wilcoxon signed-rank tests for Group B-PKS.**

Parameter PKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Discharge of Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	9	5.00	45.00	0	0.00	0.00	11	20	-3.000	0.003	S
Discharge of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	9	5.00	45.00	0	0.00	0.00	11	20	-3.000	0.003	S
Discharge of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	10	5.50	55.00	0	0.00	0.00	10	20	-3.162	0.002	S
Discharge of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	20	10.50	210	0	0.00	0.00	0	20	-4.053	0.000	S

**Table 10: Man -Whitney U Test for difference in the Discharge of the wound.**

	Discharge of Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	Discharge of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	Discharge of Wound 4 <sup>th</sup> -3 <sup>rd</sup> week	Discharge of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week
Mann-Whitney U	146.000	193.500	145.000	200.000
Wilcoxon W	356.000	403.500	355.000	410.000
Z	-1.666	-0.195	-1.739	0.000
Asymp. Sig	0.096	0.845	0.082	1.000
Exact Sig	0.149	0.862	0.142	1.000

c) Assessment of Size of the wound in comparison with Group A and B. -There was a statistically highly significant difference in size of wound with  $\chi^2(2) = 34.343$ ,  $p = .000$  by Friedman test. Post hoc analysis with

Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied resulting in a significance level set at  $p < 0.01$ .

**Table 11: Friedman Test for difference in the Size of the wound.**

Parameter PKS	N	X <sup>2</sup> (2)	df	P Value	Remarks
Size of the wound	20	44.787	3	0.000	S

**Table 12: Friedman Test for difference in the Size of the wound.**

Parameter AKS	N	X <sup>2</sup> (2)	df	P Value	Remarks
Size of the wound	20	51.261	3	0.000	S

**Table 13: Wilcoxon signed-rank tests for Group A-AKS**

Parameter AKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Size of the Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	3	2.00	6.00	0	0.00	0.00	17	20	-1.732	0.083	NS
Size of the Wound of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	14	7.50	105.00	0	0.00	0.00	6	20	-3.742	0.000	S
Size of the Wound of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	10	5.50	55.00	0	0.00	0.00	10	20	-3.162	0.002	S
Size of the Wound of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	20	10.50	210.00	0	0.00	0.00	0	20	-4.072	0.000	S

**Table 14: Wilcoxon signed-rank tests for Group B-PKS.**

Parameter PKS	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Remarks
	N	MR	SR	N	MR	SR					
Size of the Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	3	2.00	6.00	0	0.00	0.00	17	20	-1.732	0.083	NS
Size of the Wound of Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	12	6.50	78.00	0	0.00	0.00	8	20	-3.464	0.001	S
Size of the Wound of Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	16	3.00	15.00	0	0.00	0.00	4	20	-2.236	0.005	S
Size of the Wound of Wound 1 <sup>st</sup> - 4 <sup>th</sup> week	19	10.00	190.00	0	0.00	0.00	1	20	-4.264	0.000	S

**Table 15: Man -Whitney U Test for difference in the Discharge of the wound.**

	Size of the Wound 2 <sup>nd</sup> -1 <sup>st</sup> week	Size of the Wound 3 <sup>rd</sup> - 2 <sup>nd</sup> week	Size of the Wound 4 <sup>th</sup> - 3 <sup>rd</sup> week	Size of the Wound 1 <sup>st</sup> - 4 <sup>th</sup> week
Mann-Whitney U	145.000	154.000	131.000	105.000
Wilcoxon W	355.000	364.000	341.000	315.000
Z	-1.739	-1.431	-2.062	-2.795
Asymp. Sig	0.082	0.153	0.039	0.005
Exact Sig	0.142	0.221	0.063	0.009

## DISCUSSION

The Kshara Sutra therapy was practiced and used more than four decades with great success and practically with almost negligible problems that we are facing during Collection of Apamarga plant is very difficult because it is a seasonal plant, not available in a single place and time taking process and produces much burning pain during primary and successive changes. So the present study has been done to propose the efficacy in the field of preparation of Kshara sutra.

Therefore, in the present study, the Papaya Ksheera has been replaced by Apamarga Kshara, which is known for its Krimighna, Vranahara, Gudarogajith properties. So, the method of preparation of Papaya-Ksheera sutra was same as standard Apamarga ksheera sutra technique established in our department.

On the basis of successful management of Fistula-in-ano by Kshara sutra it has become an accepted technique worldwide since it has been tried at many surgical centres now.

Fistula in ano has been defined as an abnormal track communicating between two epithelial surfaces. It is one of those diseases, which though not fatal, may cause great inconvenience to the person.

In modern surgery, great emphasis is ascribed to Hippocrates (460-356 BC), for having described fistula in ano and its management by setons. But it is quite important to note here that Sushruta (1500-1000BC) described in detail the etiology, pathology, signs and symptoms, varieties, etc., of the disease. The correct description of blind internal, blind external fistula, the detailed techniques of surgery i.e. excision or fistulectomy, goes to show the advancements that had taken place in the management of fistulae. The present day techniques are just a reflection of his principles.

In the present study total cases were divided into 40 cases into 2 groups. First group (Group A) as control group, second group (Group B) as treated group. In Group A, Apamarga ksheera sutra (Snuhi ksheera, Apamarga Kshara and Haridra churna) were used and in Group B, Papaya-ksheera sutra (Papaya ksheera, Papaya ksheera(Latex) powder and Haridra churna) was used. 20

cases were included in each group, which were treated on the line of previous works and study carried out on various parameters including clinical findings and unit cutting time (in days/cm) to know the exact duration of treatment.

The observation of Papaya-ksheera sutra have been made on different parameters of study like age group, sex, incidence, chronicity of disease, different types of Prakriti, different types of Bhagandara, recurrent cases after surgical operations, number of fistulous openings and quadrants.

According to clinical symptomatology, it was seen that there were maximum 33 cases (82.5%) reported as Parisravi Bhagandara, 10% were Riju, and 7.5% Arsho Bhagandara. No cases were found in Ustragreeva, Parikshepi Shambukavarta and Unmargi Bhagandara. (Table No. 30).

The maximum 57.5% patients were suffering from interspincteric fistula, 25% in transpincteric fistula, 12.5% in submucous and 5% in subcutaneous fistula. (Table No. 31).

The maximum number of cases (77.5%) were reported with duration of illness of less than 1 year, 17.5% cases were in between 1-2 years, 5% of cases were in chronicity of 2-3 years. (Table No. 32).

The incidence of associated disease like Diabetes, Cardiac disease were found in 12.5% cases. Among these Cardiac diseases 7.5%, and 5% diabetes.

Analysis of patients in relation to associated lesions (55%) showed that 25% cases were perianal abscess, 15% patients were having anal fissure and sentinel tag, 15% cases suffered with haemorrhoids. Anorectal abscess can be complicated by fistula-in-ano, most of the patients with fistula-in-ano develop from sepsis originated in the glands of anal canal at the dentate line.

The maximum number (68.88%) of openings were located in posterior half in which 31.25% were right lower quadrant and 35.42% were in the left lower quadrant, Number of anal glands are more commonly infected in posterior half and presence of sepsis, fissure



is a source of infection which is a prevalent factor in posterior aspect of anal canal. This may be probable reason for higher incidence of anal fistula in posterior half. On probing in the present, 27 cases (67.5%) were of Blind external, 10 cases (25) were Complete fistulas and 3 cases (7.5%) were Blind internal.

Clinical findings like pain, local inflammatory changes, discharge, etc. were observed during primary and successive application of medicated thread in control and thread groups. The severity of pain and local inflammatory conditions like oedema, induration, granulation tissue, healing time after cut through were analysed and was less in treated group as compared to control group.

Average unit cutting time in control group A is 8.67 cm and treated group B is 9.35cm. Pain felt by the patients at the time of changing thread and subsequent change of Papaya-Ksheera Sutra was very less in compared to Apamarga Kshara Sutra, 31.8% patients complained less degree of pain in Group B compared to 20.50% patients in Group A. Assessment of granulation tissue was proper in Group B compared with Control group A. Status of discharge in comparison with Group A and B, there was no much Mean difference in both the groups hence both are having significant on discharge. Status of wound healing in both groups after 7 days of cut through is 33% of cases in Group B as compared to 12% of cases in Group A. The total average U.C.T. was more in control group A than treated group B.

#### Healing of Wounds/Ulcers

Papaya is having properties like Krimighna and Vranashodhana. known healer of wounds/ulcers and also plays a role in the initial debridement of non-healing ulcers, effective promoter in enhancing tissue repair and wound healing. On the other hand, Apamarga not having Krimighna and vranashodana properties.

It signifies that Papaya is a best tissue healing promoter which helps in fast wound healing.

Other symptoms like pain, burning sensation, edema, inflammation, hyper granulation were less and after cut through the wound healing was faster in the treated group (1-2 weeks) compared to (2-3 weeks) in control group.

#### Principle of papaya-ksheera sutra

The principle involved in the use of Papaya-ksheera sutra is, a wire cutting through a block of ice. The ice is still adherent after division by the wire. So by tightening the Kshara sutra and permitting it to cut through number of days during this therapy gradual cutting and healing takes place simultaneously looks like the ice is still adherent after division by the wire.

The principle behind changing the Kshara sutra after 7 days, here we can hypothetically explain that shareera is

composed of Sapta Dhatus and it takes 24 hours for cutting each Dhātu.

#### Papaya-Ksheera Sutra'S Mechanism of Action

The mode of action of Kshara sutra therapy in the management of Bhagandara is as follows:

1. By application by Papaya-Ksheera sutra it does cutting (by tying) layer by layer and there is continuous drainage of fistulous track which helps in healing.
2. The medicaments which are used to prepare the thread will dissolve the fistulous tissue of the track (Debridement by the Ksharana process) and Papaya stimulates the healthy granulation tissue for healing.
3. Kshara sutra-in-situ encourages healing by new granulation tissue formation from the base.
4. Important factor is it maintains continuous aseptic condition of the track for about 6 days.
5. It not only cut the tissue, but also does continuous drainage of the wound, which enables to lay the track open.

#### CONCLUSION

The aim of present study is to find out the efficacy and applicability of Papaya-Ksheera Sutra in the management of Bhagandara. Based on the clinical statistical data, it may be concluded as follows:

1. There was a marked reduction of symptoms to pain, irritation, inflammation, burning sensation and local reactions in treated group as compared to control group.
2. Availability, collection problems have been trespassed by the present method.
3. Economical, minimised the problems of preparation and application of Ksheera Sutra.
4. Wound healing after cut through was faster in control group (1-2 weeks) as compared to (2-3 weeks) in treated group.

No recurrences of cases were reported during the six months of follow up study. So, Papaya Ksheera Sutra can be considered as a better alternative in place of Apamarga Kshara Sutra because it has more acceptability, easily available, preservable, less burning pain while changing of the Kshara Sutra, irritation and better wound healing property after cut through.

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