

# Evaluation of the Efficacy of Shigru Ksharasutra in the Management of Arshas

Dr. Debabrata Acharjee<sup>1</sup>, Dr. Sukesh A<sup>2</sup>

<sup>1</sup>PG Scholar, Department of PG Studies in Shalyatantra, Alva's Ayurveda Medical College & Hospital, Moodbidri, Dakshina Kannada, Karnataka, India

<sup>2</sup>MS (Ayu) Professor & Guide, Department of PG Studies in Shalyatantra, Alva's Ayurveda Medical College & Hospital, Moodbidri

**Abstract:** A hemorrhoidal condition, which affects the ano - rectal area and is characterised by engorgement of the hemorrhoidal venous plexus, is relatively prevalent. Due to the difficulties in managing it, the condition is categorized under Ashtamahagadas in the Ayurvedic classics and termed as Arshas. The classical characteristics of Arshas are consistent with the prolapse, bleeding, itching, and discomfort associated with haemorrhoids as signs and symptoms. Although haemorrhoids are not life - threatening, they are humiliating to have. As for the aetiology, pathology, symptomatology, kinds, management, and prognosis of Arshas, our classics provide ample information. Acharya Sushruta mentioned four therapeutic approaches for the therapy of Arshas, Acharya Chakrapani has cited the Ksharasutra as a therapy method which have the ability to cut and heal. Because it combines Shastrakarma and Ksharakarma, the Ksharasutra therapy has recently gained standardization and popularity. As a result, we may state that it is a more potent treatment option for Arshas. In light of Ksharasutra's efficacy in controlling Arshas, research into new medications for Kshara preparation is urgently needed in order to replace Apamarga with something better. Therefore, the goal of the current study is to assess the effectiveness of ShigruKsharasutra in the treatment of Arshas. 60 patients diagnosed with Arshas were selected. They were randomly allocated into two groups i. e. Group A (Standard group - ApamargaKsharasutra ligation) and Group B (Trial group - ShigruKsharasutra ligation). The effect of treatment was assessed on the basis parameters of like bleeding per rectum, pain, discharge, sloughing and falling of pile mass and tenderness of anus. The symptoms were completely relieved in all the 60 patients of both the groups within 21 days after the procedure. Those patients who underwent ApamargaKsharasutra ligation showed slight faster sloughing and falling of the pile mass than those who underwent ShigruKsharasutraligation. But both the Ksharasutras were having almost similar effect. There was no recurrence noticed till 60th post - operative day. This study established the effectiveness of Ksharasutra in the control of Arshas and identified ShigruKsharasutra as a powerful and effective substitute for ApamargaKsharasutra.

**Keywords:** Arshas, ShigruKsharasutra, Apamargaksharasutra, Hemorrhoids

## 1. Introduction

Arshas, a quite common problem, mentioned in all the Ayurveda classics & described in the "Ashta Mahagada", which mainly occurs in the Guda - pradesha. Guda is one among Sadyopranaharamarma which necessitates proper management. Arsha is difficult to cure and it causes trouble to the patients like an enemy. Arsha can be correlated to Haemorrhoids, a common anorectal problem characterized by a varicose condition of the haemorrhoidal plexus of veins situated in the loose submucous coat of anal canal and lower part of rectum. None the less the term hemorrhoid is commonly invoked to characterize the pathologic process of symptomatic hemorrhoid disease, instead of normal anatomic structures<sup>1</sup>. The classical features of Arshas have been found to correspond to the signs and symptoms of hemorrhoids, such as bright - red painless bleeding, mucus discharge, prolapse, pain only on prolapse.

Haemorrhoids constitutes about 50% of colorectal investigations<sup>2</sup> and if untreated can potentially pose serious medical problems. In India approximately 75% of the population affected<sup>3</sup>. Its incidence can be seen at any age and in both genders equally from the age 45 - 60<sup>[1]</sup>. Current statistics suggests nearly half of the world populations will experience hemorrhoids especially when they reach the golden age of fifty<sup>4</sup>. Some of the common treatment procedures adopted in modern medical science like, rubber band ligation, haemorrhoidectomy, injection therapy, cryosurgery, and Endo stapling techniques with having their

own limitations. The goal is to discover a safe & cost - effective treatment that avoids operational complications.

Acharya Sushruta has described chikitsa of Arshas which includes Bhashajakarma, Ksharakarma, Agnikarma and Sastrakarma<sup>5</sup>. Acharya Chakrapani has mentioned Ksharasutra<sup>6</sup> as a treatment modality in Arshas. Ksharasutra procedure has grown more standardized and popular in recent years. As a result, numerous Kshariya medicines have been studied but no satisfactory result is obtained. ShigruKshara is described under the Kshara - dasaka in Rajanighantu<sup>7</sup>. BhavaprakashNighantu describes<sup>8</sup>, Shigru having the properties Katu rasa, Tikshna Guna, Katu Vipaka and Ushna Virya, Madhur, Laghu, Kshara, Kapha - Vata Nashaka, Sotha Hara, Krimi Hara<sup>8</sup> properties. Raj Nighantu emphasizes Shothahara and Vedanahara properties of Shigru<sup>9</sup>. In Kshara form it attains Chedana, Bhedana and Lekhana properties.

Here an attempt is made to evaluate the efficacy of ShigruKsharasutra in the management of Arshas.

## 2. Objectives of the Study

The precise pathophysiology of 'haemorrhoids' formation is little known, despite the fact that it is thought of as a prevalent condition affecting the ano - rectal area. There are several therapies for this condition, ranging from surgical procedures to modifications in food and lifestyle. So it's crucial to read the literature on the illness Arshas with

current references in mind. The following goals and objectives guided the study's methodology.

- 1) To evaluate the efficacy of *ShigruKsharasutra* in the management of *Arshas*.
- 2) To evaluate the efficacy of *ShigruKsharasutra* in comparison with standard *Apamargaksharasutra* in the management of *Arshas*.

### 3. Research Hypothesis

$H_0$  - *ShigruKsharasutra* is not having significant effect on *Arshas*

$H_1$  - *ShigruKsharasutra* is having significant effect on *Arshas*

### 4. Methodology

In the present clinical study, a comparative study is done to evaluate the efficacy between *Apamarga* and *ShigruKsharasutra* in the management of *Arshas*.

#### Source of Data:

60 Patients of *Arshas* attending the OPD and IPD of Alva's Ayurveda College and Alva's Health Centre, Moodubidire were selected.

#### Method of Collection of data:

60 patients suffering from *Arshas* fulfilling the diagnostic and inclusion criteria were divided randomly into two equal groups A and B. 20 patients were treated with *ShigruKsharasutra* and 20 with *ApamargaKsharasutra*.

A GROUP: Patients of this group is treated with *ApamargaKsharasutra*

B GROUP: Patients of this group is treated with *ShigruKsharasutra*

#### Diagnostic Criteria

- 1) Mamsankura–Mass per anus
- 2) Rudhira srava - Bleeding per anus
- 3) Guda marganirodham - Obstruction in the anal canal
- 4) Mucous discharge per anus

Proctoscopic evaluation

- Number of pile mass
- Position of pile mass

#### Inclusion Criteria

- The patients having classical symptoms of *Arshas* were selected.
- Patients were selected between the age group of 16 - 60 years of either gender, irrespective of religion, occupation, and socio - economic status.
- Controlled systemic illness like Hypertension, Diabetes Mellitus

#### Exclusion Criteria

- Patients suffering secondary to inflammatory diseases like Ulcerative colitis and Crohn's disease.
- Haemorrhoids associated with Fissure in Ano, Fistula in Ano, Anal stricture, Perianal abscess, Malignancy and Polyps.
- Patients suffering from HIV, Tuberculosis and Ca of rectum.
- Pregnant women.

#### Patient Examination:

##### Inspection

Position: Lithotomy position.

#### Digital Rectal Examination

#### Proctoscopy examination

#### Laboratory Investigations:

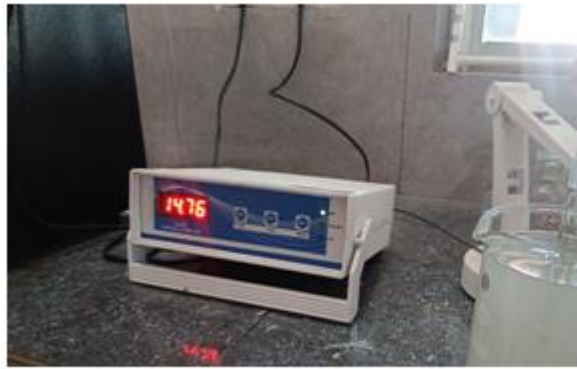
Haemoglobin %, Random blood sugar, Bleeding time, Clotting time, HIV, HbSAg

#### Preparation of Kshara

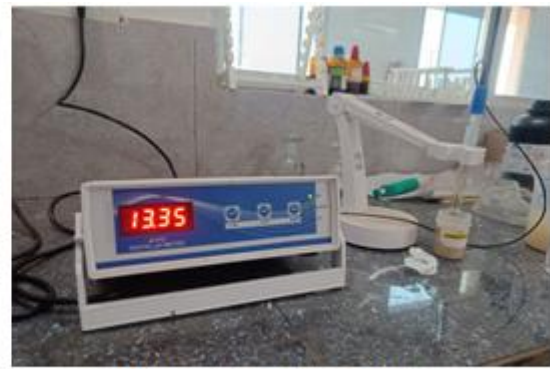
Ingredients of Kshara

Sl. No	<i>ApamargaKshara</i>	Quantity	<i>ShigruKshara</i>	Quantity
1	<i>Apamargaash</i>	1 Kg	<i>Shigruash</i>	748 g
2	<i>Water (6times)</i>	6L	<i>Water (6times)</i>	4.45L
<i>PrakshepaDravya</i>				
3	<i>Shukti</i>	100 g	<i>Shukti</i>	60 g
4	<i>Chitrakamula Churna</i>	1 g	<i>Chitrakamula Churna</i>	0.6 g
5	<i>BidaLavana</i>	1 g	<i>BidaLavana</i>	0.6 g
6	<i>VacaChurna</i>	1 g	<i>VacaChurna</i>	0.6 g
7	<i>AtivishaChurna</i>	1 g	<i>AtivishaChurna</i>	0.6 g

pH of prepared *Apamargateekshnapratisaraneeyakshara* was 14.76 and *Shigruateekshnapratisaraneeyakshara* was 13.35 in "ELICO LI 120 pH meter".



APAMARGA KSHARA PH – 14.76



SHIGRU KSHARA PH 13.35

**Preparation Of Ksharasutra:**

The surgical Barbour linen thread no 20 was tied on the hanger and the ksharasutra preparation procedure as follows,

Group A - <i>Apamarga Ksharasutra</i>	Group B - <i>Shigru Ksharasutra</i>
<i>Snuhi Ksheera</i> - 11coatings	<i>SnuhiKsheera</i> - 11coatings
<i>Snuhi Ksheera</i> + <i>Apamarga Kshara</i> 7 - coatings	<i>SnuhiKsheera</i> + <i>Shigru Kshara</i> - 7 coatings
<i>Snuhi Ksheera</i> + <i>Haridra Churna</i> 3 coatings	<i>Snuhi Ksheera</i> + <i>Haridra Churna</i> 3 coatings

After finishing the coating on the threads 21 times, they were dried well in the cabinet and cut to required size, packed and sealed.



BARBOUR LINEN  
THREAD NO 20



SHUHI KSHEERA



HARIDRA



Ksharasutra sterilization  
by UV



Application on Thread



Ksharasutra Cabinet



**Procedure for Group - A and Group - B**



- Positions of pile masses were assessed using proctoscope.
- Catch hold: Skin was retracted with Alle’s tissue holding forceps and exposed the pile mass. Then the pile mass was held with the help of Pile - holding forceps.
- Trans fixation and Ligation:
- Each pile mass was transfixed by passing the curved round bodied needle mounted with Kshara Sutra (For Group A - *ApamargaKshara Sutra* and Group B - *ShigruKshara Sutra*) at its base. After trans fixation of *Kshara Sutra*, the pile mass was ligated anteriorly and posteriorly with adequate knots. After ligation the pile mass was placed in position.
- Proper haemostasis achieved.
- Pressure packing was done using *Yashtimadhutaila*.
- Then the patient was shifted to the recovery room.

**Materials required**

*Apamarga Ksharasutra, Shigru Ksharasutra, Dwicchidra Arshoyantra, Anaesthetic gel (2% lignocaine gel), Local anaesthetic drug (Inj. Lignocaine 2%), Syringe with needle, Betadine solution, Spirit, Sponge holding forceps, Curved round bodied needle, Needle holding forceps, Alli’s tissue holding forceps, Pile holding forceps, Scissors, Mosquito forceps, Kidney tray, Towel clips, Cut and hole towels, Sterilized Cotton Swabs, Gauze, Adhesive plasters.*

**Poorvakarma**

- Obtained informed consent from the patient.
- Patient was kept orally nil for 4 hours, prior to the procedure.
- Perianal part was shaved and prepared.
- Soap water enema was given 2 hours prior to the procedure.

**Pradhanakarma**

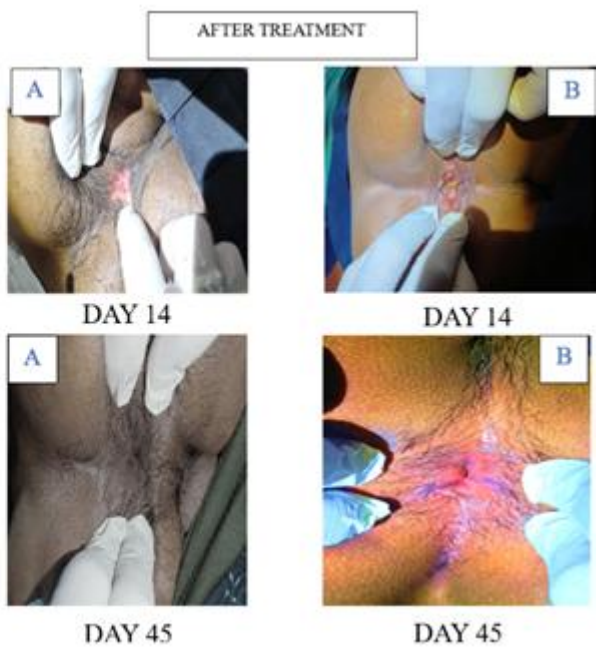
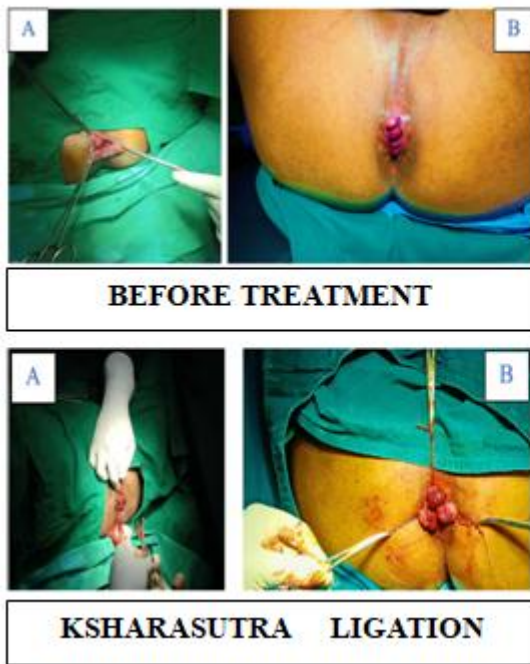
- The patient made to lie down in lithotomy position on the operation table.
- Part was cleaned with Betadine and Spirit; and the area was draped with sterilized cut and hole towels.
- Local Anaesthesia Infiltration done (2% lignocaine injection)
- Anus was dilated using local anaesthetic gel (lignocaine 2%)

**Paschatkarma**

- Patient was allowed to maintain nil orally after the procedure for 2 - 3 hours.
- Monitored for post - operative bleeding.
- Temperature, Pulse Rate, Respiratory Rate and Blood Pressure were monitored.
- Packing removed after 3 to 4 hours.

8 hours after the procedure:

- Hot water sitz bath was given for 10 - 15 minutes twice daily.
- 10 ml of *Yashtimadhutaila* applied per rectally twice daily.
- Tab *TriphalaGuggulu* - one tablet (250mg) thrice a day after food.
- Tab *GandhakaRasayana* one tablet (125mg) thrice a day after food.
- *TriphalaChoorna* 2 teaspoon with warm water at bed time.
- Tab. OJEN OZ (Antibiotics) given, 1 tablet BD for 5 days for both the groups
- SALT COMPOSITION - [Ofloxacin (200mg) + Ornidazole (500mg) ]
- Tab. Zerodol SP 1 tab SOS given for the first day only.
- SALT COMPOSITION - [Aceclofenac (100mg) + Paracetamol (325mg) + Serratiopeptidase (15mg) ]



### 5. Observation

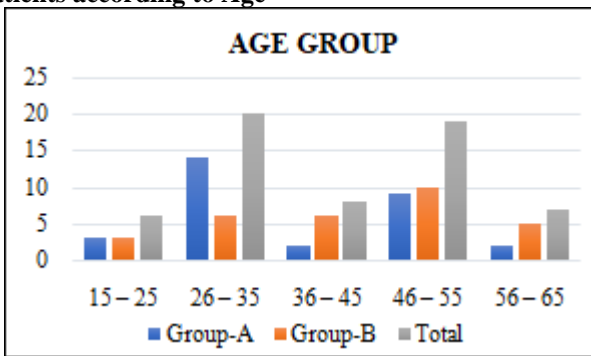
60 patients suffering from *Arshas* fulfilling the inclusion and exclusion criteria were selected for this study and were randomly categorized into two equal groups:

- Group - A (*ApamargaKsharasutra* ligation)
- Group - B (*ShigruKsharasutra* ligation)

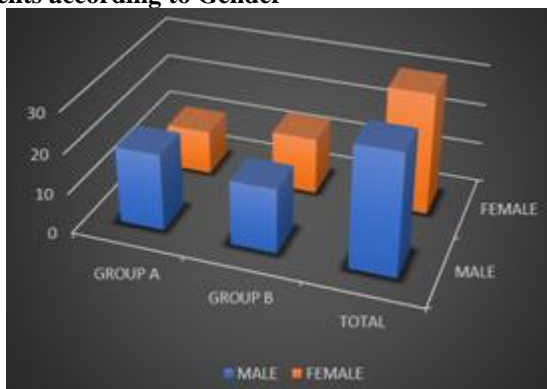
There were no dropouts in this study. The observations made are as follows.

#### Distribution of 60 Patients

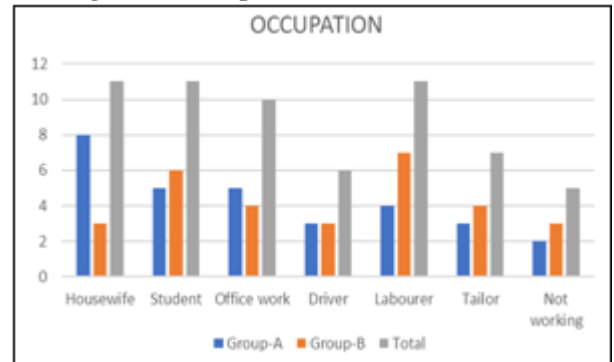
##### Patients according to Age



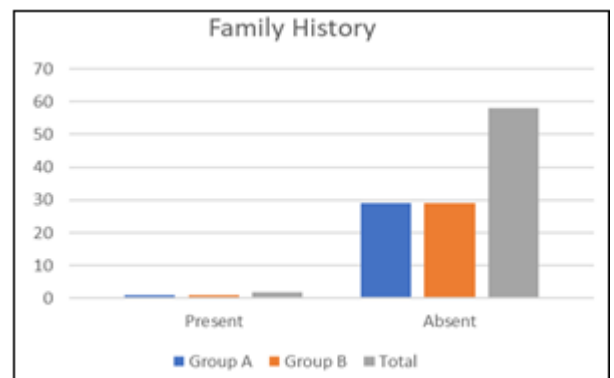
##### Patients according to Gender



##### According to the Occupation



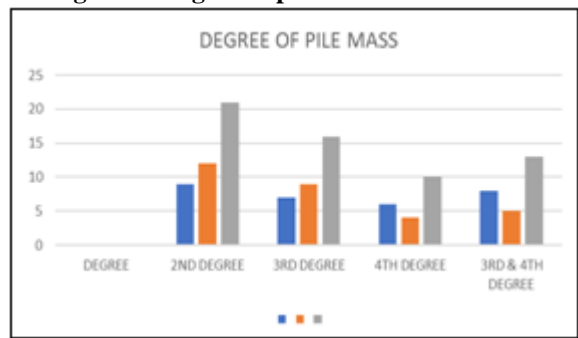
##### Patients According to the Family History



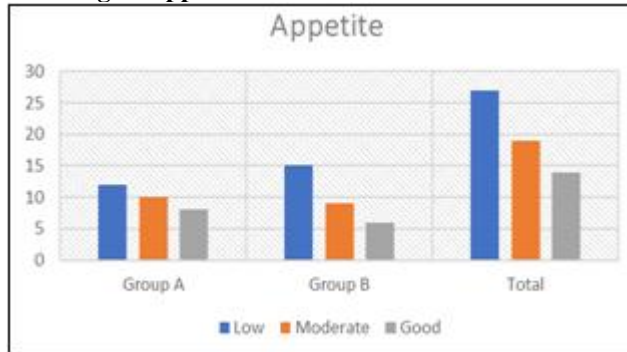
According to the Diet Habit



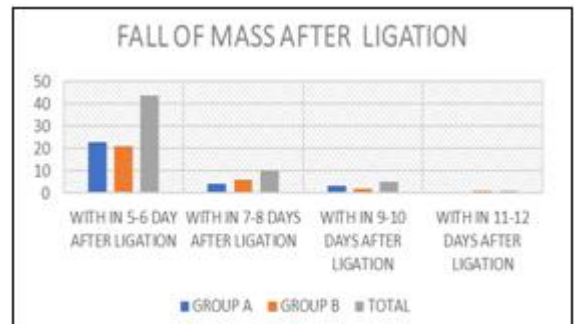
According to the degree of pile mass



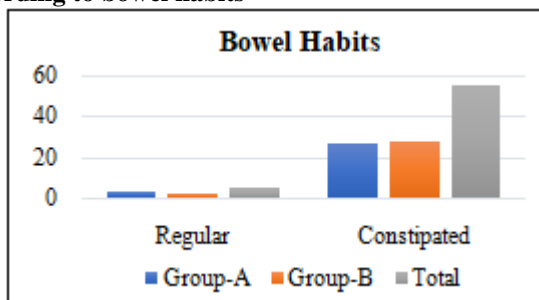
According to Appetite



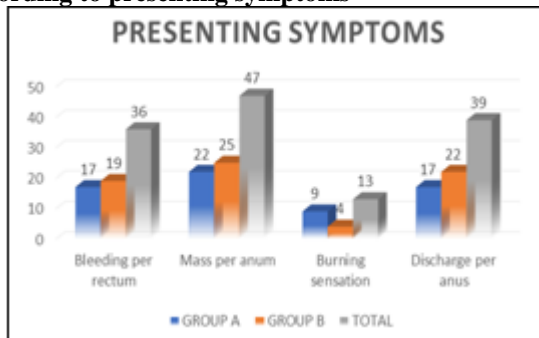
According to the fall of pile Mass Healing of resulting wound after fall of mass



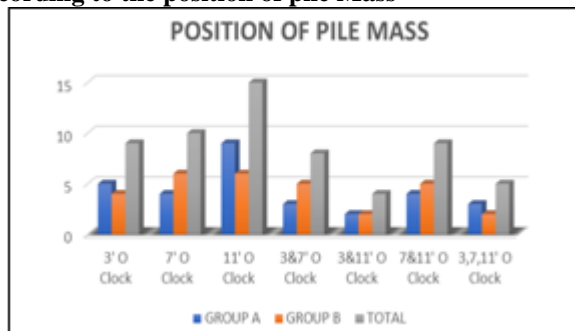
According to bowel habits



According to presenting symptoms



According to the position of pile Mass



6. Results

The study was carried out in 60 patients of *Arshas* in 2 equal groups; of which 30 patients belongs to the standard group were treated using *Apamarga Ksharasutra*, i. e Group A, and 30 patients belonged to the Trial group were treated using a *Shigru Ksharasutra* i. e. Group B. The data were collected from the patients post operatively on 3rd day, 7th day, 14th day and 28th day.

Assessment of the condition was done based on detailed proforma adopting standard scoring method of subjective and objective parameters. Pre and post comparison was done by Wilcoxon sign rank test, Friedman test, Comparison between the groups A & B was done by Mann - Whitney U test. STATA Version 3 was used for the statistical analysis.

Percentage Relief in Group A

Cure rate in group A	Total Patients	%
Complete cure (100%)	30	100
Marked Improvement (75 - 99%)	0	0
Moderate improvement (50 - 74%)	0	0
Mild improvement (25 - 49%)	0	0
No improvement (1 - 24%)	0	0

**Percentage Relief in Group B**

Cure rate in group B	Total Patients	%
Complete cure (100%)	30	100
Marked Improvement (75 - 99%)	0	0
Moderate improvement (50 - 74%)	0	0
Mild improvement (25 - 49%)	0	0
No improvement (1 - 24%)	0	0

- Out of 60 patients, 100 % patients got cured.
- Group A and Group B got 100% relief.

**Overall Effect of the Treatment**

Cure rate overall	Total Patients	%
Complete cure (100%)	60	100
Marked Improvement (75 - 99%)	0	0
Moderate improvement (50 - 74%)	0	0
Mild improvement (25 - 49%)	0	0
No improvement (1 - 24%)	0	0

- Out of 60 patients, 100 % patients got cured.

**Comparative effect of the treatment**

Parameter	Group	3rd day	7th day	14th day	28th day
Pain	A	-	56.7	100	100
	B	-	70	100	100
Discharge	A	93.5	100	100	100
	B	93.5	100	100	100
Tenderness	A	-	40	100	100
	B	-	30	100	100
Sloughing & falling of pile mass	A	0.0	100	100	100
	B	0.0	100	100	100
Bleeding	A	93.9	100	100	100
	B	78.1	100	100	100

- Group A and Group B got 100% relief.

**7. Discussion**

Hemorrhoid is a common ano - rectal disease which develops when the venous drainage from the anal canal is altered. This will cause the venous plexus and the surrounding tissue to dilate and promotes outgrowth of rectal mucosa from the rectal wall. It is a quite common health problem pertaining to the ano - rectal region, and the disease is progressively increasing nowadays. Even though it is not life threatening but if left untreated haemorrhoids can become fatal. It can be correlated to *Arshas* in Ayurvedic classics.

References about *Arshas* is available in ancient literatures including *Vedas*, *Samhitas* and various other texts.

**8. Discussion on Mode of Action**

The procedure of "*Ksharasutra ligation*" is similar to haemorrhoidectomy in contemporary medical science. Because of the *Ksharana* guna, *Kshara* cauterizes the pile mass directly.

Along with *Kshara*, here we have the added effects of *Snuhi ksheera* and *Haridra*. *Kshara* and *ksheera* present in *ksharasutra* produces debridement of tissue by way of proteolytic enzymes present in it. The coagulation of protein in the haemorrhoidal plexus leads to disintegration of haemoglobin into heam and globin. The *Ksharasutra* exerts mechanical strangulation over the haemorrhoidal vein, which leads to necrosis of haemorrhoidal mass. Synergy of

corrosive effect and strangulation effect results in decrease in the size of pile mass and necrosis of haemorrhoidal tissue. This tissue slough out as blackish mass along with sutra in 5 - 10 days. Later the tissue becomes fibrosed with scar formation. This fibrosis permanently obliterates the haemorrhoidal vein, and recurrence of haemorrhoids is prevented. The resulting ulcer will heal consequently.

The advantages of *Ksharasutra* ligation are less chances of stricture formation due to minimum raw area, less chances of recurrence, fewer chances of post - operative infections and comparatively faster healing of resulting wound after sloughing and falling of the mass.

**Mode of Action of Shigru Ksharasutra**

*Shigru* is having qualities of *Katu tikta rasa*, *Tikshna*, *Ruksha*, *Laghu*, *Grahi*, *Ushna*, *Picchila guna*, *Ushna virya* and *Katu vipaka*. Moreover it is having *shothahara* and *vedanashamaka*, *kshata hara*, *krimighna* properties as mentioned in classics. In *Kshara* form even it attains the quality of *Chedana*, *Bhedana* and *Lekhana*. *Shigru* possess almost the same qualities of *Apamarga*. Still it possess the property of alleviating *Pitta & Kapha*. In *Kshara* form it possess extra *Lekhana guna*, which helps in eradicating *Dushita mamsa* and enhances healing.

**9. Discussion on Clinical Study**

In this study 60 patients of *Arsha* were selected and randomly divided into two equal groups of 30 patients.

1) Group A - *Apamarga ksharasutra* ligation

2) Group B - *Shigru ksharasutra* ligation

- Based on this study it was observed that *Arshas* was present in almost all age groups.
- Incidence of *Arshas* was more observed in people who follow mixed diet, rather than vegetarian diet.
- There was marked reduction in symptoms like pain and bleeding in both groups.
- Anal stricture and fecal incontinence were not observed in both the groups.
- Slightly increased tenderness was present initially in both the groups because of the post - operative wound.
- Faster sloughing and falling of pile mass was observed in both the groups that is within one week
- Wound healing after fall of mass was good in both standard and trial groups (maximum 2 - 3 weeks). In both the groups, after the falling of mass wound healing occurred in all patients within 3 weeks.
- But this is not sufficient to draw a conclusion because, the sample size is small.

**10. Discussion on Observations**

- 1) **Age:** Maximum of 33.33% of patients are in the age group of 26 - 35 years and the 2nd maximum of 31% belonging to the age group of 46 - 55 years. 13.33 % of the patients belonged to the age group 36 - 45 years. This may be due to the reason that, most of the people of this middle age group belong to working class. Long time sitting, strenuous work, irregular and unwholesome food in this particular age group might

be the triggering factors.

- 2) **Sex:** Haemorrhoids are believed to affect men and women equally. In this study male was found (58.33%) and Female (41.66%). Predominancy in males. This may be due to the reporting of more male patients to the Ano Rectal Clinic.
- 3) **Occupation:** Maximum of 18.33% of the patients were hard labourers with strenuous works and equal 18.33% Housewives, second maximum of 16.66% patients were engaged with office works. In people who are doing office works prolonged sitting, avoidance of natural urges due to inevitable circumstances, irregular food habits, due to post delivery etc. may be the reason for haemorrhoids; and vigorous physical activity is a direct etiology for the disease.
- 4) **Family History:** Only 3.33 % of the patients had family history. Usually hereditary factor involvement is present in the manifestation of haemorrhoids
- 5) **Diet:** 55 % of patients were of mixed diet. Intake of meat, fish, more spices etc lead to Arshas as they contain more protein and less fibre and are ushna and vidahi.
- 6) **Appetite:** Among 60 patients 45% & 38.66% of patients were having low and moderate appetite respectively which together contribute 90%. This point towards the role of Mandagni. Sushruta explained this point as “*Visheshathai Mandagni*” as a causative factor in the manifestation of Arshas.
- 7) **Nature Of Bowel Habits:** In this series a maximum of 91.66% of patients were having constipated bowel. Constipation and prolonged straining are widely believed to cause haemorrhoids because hard stool and increased intra abdominal pressure could cause obstruction of venous return, resulting in engorgement of haemorrhoidal plexus.
- 8) **Presenting Symptoms:** Symptoms like Mass per anum 78.33%, 60% Bleeding per rectum, discharge 65%, Burning 21%
- 9) **Position of Pile Mass:** In the case of position of pile mass in majority of patients 16.66%, had pile masses at double positions 7 & 11 O Clock Position. The reason is clear rectum is supplied by middle rectal, inferior rectal and superior rectal veins corresponding to 3, 7 and 11 o'clock positions. Engorgement of rectal venous plexus as a result of excess pressure over blood vessels due to straining is called hemorrhoids.
- 10) **Degree of Pile Mass:** 35% of patients were with 2nd Degree hemorrhoids, 26% with 3rd degree haemorrhoids and 16.66% 4th degree and 21.66% with 3rd and 4th degree haemorrhoids together.
- 11) **Fall of Mass After Ligation:** In group A, by 7th day the pile masses have fallen off in 76.66% of patients. By 14th day it became 100%. That is in group A, complete sloughing and falling of pile masses occurred within 5 - 8 days. In group B, by 7th day the pile masses have fallen off in 70% of patients. That is in group B, complete sloughing and falling of pile masses occurred within 6 - 12 days. By 14th day it became 100%. This can be due to the slight decreased pH value of Shigru kshara, compared to the standard.
- 12) **Healing Of Wound:** In group A, after falling of mass, in 90% of patients healing of wound occurred within 1

- 2 weeks and in 10% of patients healing occurred within 2 - 3 weeks. In group B, after falling of mass, in 80% of patients healing of wound occurred within 1 - 2 weeks and in 20% of patients healing occurred within 2 - 3 weeks.

- 13) **Recurrence:** No recurrence of pile mass was noticed until 60th post operative day in both the groups.

## 11. Discussion on Results

In terms of PAIN, Group A *Apamarga kshara* showed statistically highly significant difference in on 7th day, 14th day & 28th day. ( $p < 0.001$ ) from 0th day, ie before treatment. Group B showed statistically significant difference in terms of pain on 14th day & 28th day ( $p < 0.001$ ) from 0th day.

On 3rd day, both the groups were found to be statistically highly significant, but clinically insignificant, because of the aggravated pain due to surgery. On comparison between the groups, group A showed better effect than group B

In terms of BLEEDING, Both groups A & B have shown statistically highly significant changes in bleeding on 3rd, 7th, 14th & 28th day, from compared to before treatment. Since the base of haemorrhoidal masses were ligated, bleeding was nil after the treatment, from 3rd day of observation in both group A & group B.

In terms of DISCHARGE, Both groups A & B, Statistically revealed that the difference between the two groups on day 3 was not statistically significant ( $z = - 0.64$ ,  $p = 0.522$ ). Subsequently, on day 7 (D7) and throughout the remaining days (D14 and D28), both groups consistently reported a discharge grade of 0, indicating a successful and stable outcome. Overall, the study indicates that both Group A and Group B achieved favorable discharge grades, and there were no significant differences between the groups in their discharge status during the observation period.

In terms of TENDERNESS, Group A showed statistically significant difference on 3rd day, 14th day & 28th day. Group B showed statistically significant difference on 3rd day, 7th day, 14th day & 28th day. On comparison of day 3 & day 7, day 3 & day 14, day 3 & day 28, group B showed statistically highly significant difference ( $p < 0.001$ ). On comparison of day 14 & day 28, group A & B both showed highly significant difference ( $p < 0.001$ )

In terms of SLOUGHING & FALLING OF PILE MASS, statistical tests provides, an analysis of the changes in sloughing and falling of pile mass grades between Group A and Group B throughout the study period.

At the start of the study (BT D0), both groups had a similar grade of 1 for sloughing and falling of pile mass, with no reported standard deviation, and a median of 1. The interquartile ranges (IQR) for both groups were 0 - 1, indicating a relatively consistent initial condition.

As the study progressed, on days 3 (D3) and 7 (D7), both groups maintained a grade of 1, suggesting no substantial variation within each group. Moreover, the Mann - Whitney



U test did not indicate any significant differences between Group A and Group B on these days.

This pattern continued throughout the study, with both groups reporting a grade of 0 for sloughing and falling of pile mass on days 14 (D14) and 28 (D28).

These results indicate that there were no noticeable differences between the two groups in terms of sloughing and falling of pile mass grades over the observation period, and both groups achieved a favorable outcome with sloughing and falling of the pile mass. Which is clinically highly significant

In group A & group B, all the signs and symptoms like pain, bleeding, discharge, tenderness & sloughing and falling of pile mass got statistically significant changes from the 1st assessment day.

There was 100% relief in all the signs and symptoms in both the groups on 28th post - operative day.

On comparison, Pain analysis suggests both the Group A & B it is indicated a statistically significant difference between both the groups on day 7 ( $z = 2.22$ ,  $p = 0.027$ ). Subsequently, on days 14 (D14) and 28 (D28), both groups reverted to a pain grade of 0, demonstrating consistency and no significant variation in their pain levels.

Discharge analysis suggests, that both Group A and Group B achieved favourable discharge grades, and there were no significant differences between the groups in their discharge status during the observation period.

Tenderness, analysis indicates that there was a noticeable disparity in tenderness between Group A and Group B on day 7, with Group A reporting lower tenderness scores compared to Group B.

Bleeding analysis suggests, Group A achieved a faster and more substantial reduction in bleeding compared to Group B on day 3, while both groups attained similar favourable results with no bleeding by the end of the study

Sloughing and falling of the pile mass indicate that there were no noticeable differences between the two groups in terms of sloughing and falling of pile mass grades over the observation period, and both groups achieved a favourable outcome with sloughing and falling of the pile mass.

There was no post - operative infection, recurrence of any symptoms and other complications noted until 60th post - operative day.

Both the Ksharasutras showed significant effect over 2nd, 3rd and 4th degree haemorrhoids. *Shigru ksharasutra* have almost similar effect with the standard *Apamarga ksharasutra*. So *Shigru Ksharasutra* can be used as an alternative for *Apamarga ksharasutra* in the management of haemorrhoids.

## 12. Conclusion

*Kshara* is alkaline in nature and its value (pH) ranges from 7 - 14. pH of *Apamarga kshara* used in this present study was 14.76 and that of *Shigru Kshara* was 13.35. *Ksharasutra* ligation was performed in Group A and Group B using *Apamarga* and *Shigru ksharasutra* respectively. The synergic action of mechanical strianguation by sutra, corrosive effect of *Kshara* and proteolytic action of *Snuhiksheera* results in cauterization and necrosis of haemorrhoidal tissue. This necrosed tissue sloughs out as a blackish mass along with sutra in 5 - 10 days. After that the tissue becomes fibrosed with scar formation. The haemorrhoidal vein obliterates permanently and there is no recurrence of haemorrhoids. The *Ksharasutra* does not allow any bacterial multiplication in its presence, due to its anti bacterial action.<sup>1, 12</sup> Recurrence was not noticed in the entire study period, including followup. There were no post surgical complications observed. While comparing the result of both standard group and trial group showed statistically significant results.

Overall study suggests that both the groups are having equal efficacy and potency in the management of Arshas. So *Shigru ksharasutra* can be used as an alternative for *Apamarga ksharasutra*. Thus null hypothesis  $H_0$  is rejected and alternative hypothesis  $H_1$  is accepted. i. e. *Shigru ksharasutra* is having significant effect on *Arshas*.

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