



A CLINICAL STUDY TO EVALUATE THE EFFICACY OF APAMARGA KSHARA SUTRA LIGATION IN FIGURE-OF-EIGHT TECHNIQUE IN THE MANAGEMENT OF BHAGANDARA W.S.R. FISTULA-IN-ANO

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How to cite this Article: 1*Dr. Shreya Sharma, 2Dr. H. S. Bali, 3Dr. Arjun Gupta. (2026). A Clinical study TO Evaluate the Efficacy of Apamarga Kshara Sutra Ligation in Figure-of-Eight Technique in the Management of Bhagandara W.S.R. Fistula-in-Ano. World Journal of Pharmaceutical and Life Sciences, 12(10), 01–06.

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Article Received on 27/08/2026

Article Revised on 17/09/2026

Article Published on 01/10/2026

ABSTRACT

Bhagandara, one of the *Ashtamahagada* described by *Acharya Sushruta*, is a chronic anorectal disorder that closely resembles fistula-in-ano in modern medicine. Despite numerous surgical techniques such as fistulotomy, fistulectomy, LIFT, VAAFT, fistula plug etc., recurrence postoperative pain, prolonged healing, and sphincter injury remain major concerns. *Apamarga Kshara Sutra* therapy is an established Ayurvedic treatment known for its low recurrence and sphincter preservation; however, its prolonged healing time remains a significant limitation. The present clinical study evaluates a modified Figure-of-Eight *Kshara Sutra* ligation technique designed by Dr. H.S. Bali (Professor and H.O.D, Department of post graduate studies in Shalya Tantra, Jammu institute of Ayurveda and Research, Nardani, Jammu) to accelerate healing while retaining the advantages of conventional *Kshara Sutra* therapy. The study demonstrated significantly shorter healing duration and lower Unit Cutting Time (UCT) in the modified technique, suggesting improved therapeutic efficiency.

KEYWORDS: *Bhagandara*, *Fistula-in-Ano*, *Apamarga Kshara Sutra*, Figure-of-Eight Technique, Ayurveda, Unit Cutting Time.

INTRODUCTION

Bhagandara has been described extensively in the *Sushruta Samhita* as a disease involving tearing of the *Bhaga*, *Guda*, and *Basti* regions and is also one of the *Ashtamahagada*.^[1] It commonly begins as a painful perianal abscess (*Pidika*) that eventually ruptures, resulting in a chronic discharging sinus known as *Bhagandara*.^[2]

In modern medicine, *Bhagandara* closely correlates with fistula-in-ano, a chronic inflammatory tract connecting the anal canal with the perianal skin. The condition significantly affects patients' quality of life due to

persistent discharge, pain, discomfort, and frequent recurrence.

The reported incidence of fistula-in-ano is approximately **8.6 cases per 100,000 population**, with higher prevalence among males than females and a mean age of onset around 38 years.^[3]

- In ayurvedic classics *Bhagandara* is considered as one of the *Ashtamahagada* i.e. it is very difficult to cure *Bhagandara*, it is one of the commonest disease that occurs in anorectal region. It does *Darana* of

accelerating healing. Moreover when this *kshara sutra* ligation is done in figure of eight technique it will significantly reduce the duration of healing period thus aiding in speedy recovery.

MATERIALS AND METHODS

- This clinical study included patients diagnosed with fistula-in-ano attending the outpatient and inpatient departments of Jammu Institute of Ayurveda and Research, Nardani, Jammu and affiliated hospitals. A total of 30 patients were taken for this study and their results were analysed.

Patients satisfying the diagnostic criteria were enrolled after detailed clinical examination and laboratory investigations. For this study only low lying were taken and patients suffering from any systemic illness were excluded. The age group selected for this criteria was 18 to 60 years of age.

The study compared
Group A (15 patients)

- *Apamarga Kshara Sutra* Ligation using Figure-of-Eight Technique

Group B (15 patients)

- Patients were assessed using standardized clinical parameters including:
- Pain
 - Burning sensation
 - Itching
 - Discharge
 - Inflammation
 - Healing duration
 - Unit Cutting Time (UCT)

Figure-of-Eight *Kshara Sutra* Technique

The modified technique involves creation of a central window within the fistulous tract.

The *Kshara Sutra* is then passed in a Figure-of-Eight configuration, effectively dividing a single tract into two independent segments.

This modification allows

- Simultaneous cutting
- Simultaneous drainage
- Simultaneous healing
- Reduced effective tract length
- Faster tract obliteration

without compromising sphincter integrity.

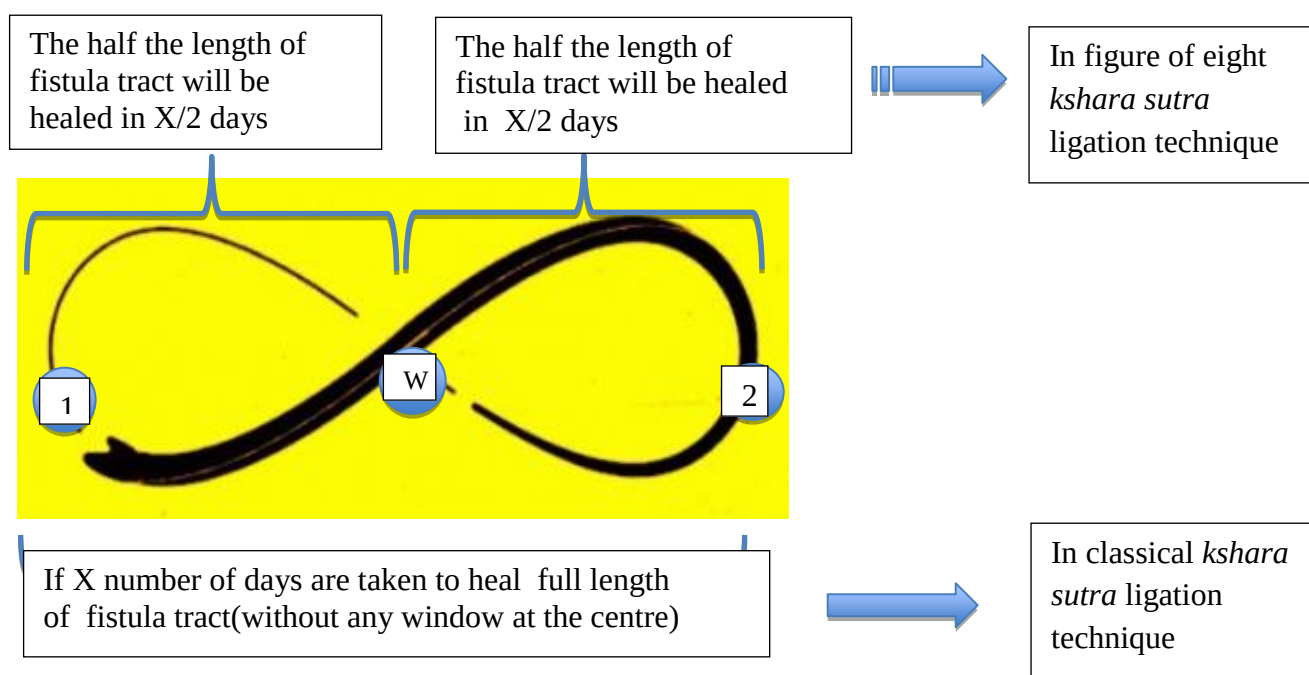
In the Figure-of-8 *Kshara Sutra* technique, an additional window is created at the midpoint of the fistulous tract.

The *Kshara Sutra* is then passed in such a manner that a figure-of-8 configuration is formed, effectively dividing

the original fistulous tract into two independent segments. Although a single *Kshara Sutra* issued, it acts on two separate tract segments simultaneously. The **medicated thread exerts mechanical pressure on the tissues while the alkaline drugs coated on the *Kshara Sutra* produce chemical cauterization**. Continuous pressure causes gradual ischemic necrosis and controlled tissue cutting whereas the *Kshara* coating facilitates debridement of unhealthy tissue and destruction of residual infective foci. By creating a central window, the tract is subdivided into proximal and distal segments.

Consequently, cutting and healing occur simultaneously at two different levels. This effectively increases the tissue-contact area of the *Kshara Sutra* and

nearly doubles the cutting action compared with conventional *Kshara Sutra* therapy. The thread also maintains adequate drainage throughout the treatment period, preventing accumulation of pus and reducing the possibility of secondary abscess formation. Repeated replacement of *Kshara Sutra* further enhances chemical cauterization, promotes healthy granulation tissue formation and accelerates fibrosis of the tract. As both tract segments are subjected to simultaneous cutting and healing, the overall length of tissue requiring sequential cut-through is reduced. This results in a reduction in Unit Cutting Time (UCT) and total treatment duration. Progressive fibrosis and healing from the base ultimately lead to obliteration of the fistulous tract with preservation of sphincter integrity.



MODE OF ACTION IN CLASSICAL KSHARA SUTRA LIGATION

Mechanical Pressure + Chemical Cauterization → Debridement & Drainage → Granulation Tissue Formation → Fibrosis & Tract Obliteration → Healing with Minimal Recurrence.

Apamarga Kshara Sutra is a medicated thread therapy widely employed in the management of *Bhagandara* (fistula-in-ano). Its therapeutic efficacy is attributed to the **combined effects of mechanical pressure** exerted by the thread and the **pharmacological actions of its coatings, namely Apamarga Kshara**.^[6] **Snuhi Ksheera**.^[7] and **Haridra**.^[8] Once the *Kshara Sutra* is placed within the fistulous tract, it exerts **continuous pressure on the surrounding tissues, leading to gradual and controlled cutting of the tract**. Simultaneously, the **alkaline nature of Apamarga Kshara**.^[9,10] **produces chemical cauterization** of the unhealthy tissue lining the fistulous tract.

This action facilitates the destruction and removal of necrotic tissue, epithelial lining, fibrotic tissue, and infected anal gland remnants that are responsible for the persistence and recurrence of the disease as most anal rectal fistulae are secondary to cryptoglandular infection caused by enteric bacteria.^[11] The caustic and debriding properties of *Kshara* help in liquefying slough and unhealthy tissue, thereby promoting continuous drainage of pus and other inflammatory exudates. This prevents the accumulation of infected material within the tract and creates an unfavorable environment for microbial proliferation. The *Snuhi Ksheera* acts as a binding medium and enhances the sustained release and penetration of the active ingredients into the tract. *Haridra*, known for its antiseptic, anti-inflammatory, and wound-healing properties, further contributes to infection control and reduction of local inflammation. As the unhealthy tissue is progressively removed, healthy granulation tissue begins to develop from the base of the tract. The tract heals gradually from its depth towards the surface while the thread continues its controlled cutting

action. This simultaneous cutting and healing process prevents the formation of large raw areas and minimizes tissue damage. Ultimately, fibrosis and obliteration of the fistulous tract occur, leading to complete healing. By eliminating the primary source of infection and promoting healing from within, *Apamarga Kshara Sutra* significantly reduces the chances of recurrence, making it an effective and minimally invasive treatment modality for *Bhagandara*.

RESULTS

Baseline demographic and clinical characteristics were comparable between both study groups.

Independent Samples t-Test Comparing Baseline Characteristics and Clinical Parameters Between Group A and Group B (n = 30)

Parameter	Mean Difference (C-D)	t-value	df	p-value	Significance
Hb	-0.307	-0.663	28	0.513	NS
TLC	-117.200	-0.480	28	0.635	NS
ESR	0.267	0.592	28	0.559	NS
FBS	0.800	0.436	28	0.666	NS
Tract Size (BT)	0.327	1.239	28	0.226	NS
Pain (BT)	0.400	1.629	28	0.115	NS
Burning Sensation (BT)	-0.067	-0.374	28	0.711	NS
Itching (BT)	-0.067	-0.276	28	0.785	NS
Discharge (BT)	0.333	1.357	28	0.186	NS
Inflammation (BT)	0.067	0.302	28	0.765	NS
Healing Days	-10.333	-5.455	28	<0.001*	HS
UCT	-2.938	-22.397	28	<0.001*	HS

The independent samples t-test was performed to compare the baseline characteristics and treatment outcomes between Groups A and B.

No statistically significant differences were observed between the two groups regarding baseline haemoglobin ($p = 0.513$), TLC ($p = 0.635$), ESR ($p = 0.559$), FBS ($p = 0.666$), tract size ($p = 0.226$), pain ($p = 0.115$), burning sensation ($p = 0.711$), itching ($p = 0.785$), discharge ($p = 0.186$), or inflammation ($p = 0.765$). These findings indicate that both groups were comparable at baseline.

However, a highly significant difference was observed in **healing duration** between the groups ($t = -5.455$, $p < 0.001$). Group A showed a significantly shorter healing period than Group B, with a mean difference of **10.33 days**.

Similarly, **UCT scores** differed significantly between the groups ($t = -22.397$, $p < 0.001$), with Group A demonstrating substantially lower UCT scores than Group B.

The independent samples t-test confirms that Groups A and B were statistically comparable with respect to baseline haematological, biochemical, and clinical characteristics. Significant differences were observed only in treatment outcomes, namely **healing duration** and **UCT score**, both favouring Group A.

However, significant differences were observed following treatment.

Group A demonstrated

- Mean healing duration: **24.13 ± 4.29 days**

Group B demonstrated:

- Mean healing duration: **34.47 ± 5.95 days**

Thus, the modified technique reduced healing time by approximately **10.33 days**.

Similarly,

- Group A UCT: **5.36 ± 0.32 days/cm**
- Group B UCT: **8.30 ± 0.39 days/cm**

DISCUSSION

The present study demonstrates that modifying the conventional *Kshara Sutra* procedure through Figure-of-Eight ligation significantly enhances treatment efficiency.

Creation of a central window divides the tract into two functional segments, permitting simultaneous tissue cutting and healing.

This modification reduces treatment duration without sacrificing the well-established benefits of conventional *Kshara Sutra* therapy, including:

- Minimal recurrence
- Preservation of anal sphincter
- Continuous drainage
- Healthy granulation
- Reduced tissue damage

The significantly lower Unit Cutting Time observed in the modified technique suggests greater biological efficiency and improved patient comfort.

CONCLUSION

Both conventional and Figure-of-Eight *Apamarga Kshara Sutra* techniques were effective in treating *Bhagandara* (fistula-in-ano).

However, the Figure-of-Eight technique demonstrated superior clinical outcomes by significantly reducing Unit

Cutting Time and overall healing duration while maintaining complete symptom resolution.

The modification represents a simple, economical, minimally invasive, and sphincter-preserving advancement in *Kshara Sutra* therapy and has the potential to improve patient compliance and quality of life.

Future studies involving larger sample sizes and long-term follow-up are recommended to further validate these findings.

Future Scope

- Multicentric randomized controlled trials.
- Larger sample sizes.
- Long-term recurrence studies.
- Evaluation in complex fistula-in-ano.
- Comparative studies with modern minimally invasive procedures.

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