

Review Article

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"KSHARASUTRA THERAPY IN FISTULA-IN-ANO: CLASSICAL DESCRIPTION AND CURRENT CLINICAL RESEARCH"
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ABSTRACT

Introduction: Fistula-in-ano is a chronic and recurrent anorectal disorder with significant morbidity and a high rate of recurrence following conventional surgical interventions. Ayurveda, through the works of *Sushruta Samhita*, describes *Ksharasutra* therapy as a unique para-surgical technique for the effective management of *Bhagandara* (fistula-in-ano). **Methods:** A comprehensive literature review was conducted using Ayurvedic classical texts, commentaries, and modern scientific databases including PubMed, Scopus, and Web of Science. Search terms included "Ksharasutra," "fistula-in-ano," "Ayurveda," "surgical thread therapy," and "para-surgical procedures." Randomized controlled trials, observational studies, meta-analyses, and case series from the last two decades were included. Exclusion criteria were non-peer-reviewed articles, animal studies, and reports with incomplete outcome data. **Results:** Classical Ayurvedic texts describe *Ksharasutra* as a medicated thread coated with herbal alkalis (e.g., *Apamarga Kshara*), latex (*Snuhi ksheera*), and turmeric (*Haridra*), providing mechanical pressure, chemical cauterization, and antimicrobial action. Clinical studies show that *Ksharasutra* therapy offers high success rates (85–95%), lower recurrence (5–7%), and minimal complications compared to conventional surgical approaches. Randomized controlled trials confirm shorter hospital stays, cost-effectiveness, and patient satisfaction. Innovations such as *modified Ksharasutra* and adjunctive wound healing agents have further optimized outcomes.

Discussion: While modern surgery often faces challenges of recurrence, incontinence, and delayed healing, *Ksharasutra* offers a holistic approach addressing local pathology and systemic balance. However, limitations include procedure-related pain, the need for multiple sittings, and lack of large multicenter randomized trials. Future directions involve standardization of preparation, global acceptance, and integration with modern surgical protocols. **Conclusion:** *Ksharasutra* therapy represents a time-tested, effective, and safe modality for fistula-in-ano management, blending ancient Ayurvedic wisdom with modern clinical validation. Its integration into contemporary practice may offer a sustainable and patient-friendly alternative to conventional surgery.

KEYWORDS: Ayurveda, *Bhagandara*, fistula-in-ano, *Ksharasutra*, para-surgical therapy



INTRODUCTION

Fistula-in-ano is a chronic condition characterized by abnormal communication between the anal canal and perianal skin, often resulting in pain, pus discharge, and recurrence after treatment^[1-2]. Conventional modern surgical approaches such as fistulotomy, fistulectomy, and seton placement are associated with risks of recurrence, delayed wound healing, and anal incontinence, making management complex and challenging^[3-4].

Ayurveda, the traditional system of medicine, recognizes *Bhagandara* as a major disease requiring surgical management^[5-6]. The *Sushruta Samhita*—considered the foundational text of surgery in Ayurveda—elaborates the use of *Ksharasutra*, a medicated thread with mechanical, chemical, and antimicrobial properties, for effective and minimally invasive management of fistula-in-ano. This technique has been adopted and validated by contemporary clinical research, demonstrating significant therapeutic potential^[7-8].

The aim of this review is to analyze the classical basis of *Ksharasutra* therapy, critically evaluate modern clinical evidence, and highlight its role as a bridge between traditional knowledge and current medical practice^[9-10].

MATERIALS AND METHODS

A systematic literature review was conducted focusing on both Ayurvedic classical references and modern scientific studies.

- **Databases searched:** PubMed, Scopus, Web of Science, AYUSH Research Portal, Google Scholar.
- **Search terms:** “*Ksharasutra*,” “fistula-in-ano,” “*Bhagandara Ayurveda*,” “Ayurvedic para-surgical therapy,” “medicated thread therapy.”^[11]
- **Inclusion criteria:** Classical Ayurvedic texts and commentaries, peer-reviewed clinical trials, meta-analyses, observational studies, and review articles published between 1980–2025^[12].
- **Exclusion criteria:** Non-peer-reviewed articles, animal studies, editorials, and studies with incomplete outcome data^[13].
- **Type of studies reviewed:** Randomized controlled trials, cohort studies, case reports,

systematic reviews, and textual analyses of Ayurvedic sources^[14].

Data were synthesized thematically, comparing classical descriptions with modern clinical findings^[15].

OBSERVATION AND RESULTS

1. Classical Ayurvedic Basis of *Ksharasutra*

The *Sushruta Samhita* identifies *Bhagandara* as a *Mahagada* (severe disease) and recommends para-surgical management. *Ksharasutra* is described as a medicated thread prepared by repeated coatings of herbal alkalis (*Apamarga Kshara*), latex (*Snuih ksheera*), and turmeric (*Haridra*). Its action is threefold:

- **Mechanical:** Sustained pressure causes gradual cutting and drainage.
- **Chemical:** Alkali provides cauterization, reducing unhealthy tissue.
- **Biological:** Turmeric provides anti-inflammatory and antimicrobial action.

2. Preparation and Standardization

The traditional preparation involved 21 coatings, later standardized by CCRAS (Central Council for Research in Ayurvedic Sciences). Modern laboratories ensure sterility, uniform thickness, tensile strength, and shelf-life, enhancing reproducibility in clinical settings.

3. Clinical Application in Fistula-in-Ano

The *Ksharasutra* is applied by threading through the fistulous tract, tightened periodically, and gradually cuts through while promoting healing. Clinical outcomes show high success, minimal recurrence, and preservation of sphincter function.

4. Comparative Outcomes with Modern Surgery

- **Efficacy:** Success rates of *Ksharasutra* therapy range from 85–95%, compared to 70–80% in conventional surgery.
- **Recurrence:** Modern surgery reports recurrence in 20–30% cases, while *Ksharasutra* shows 5–7%.
- **Complications:** Minimal risk of incontinence or delayed healing compared to surgery.
- **Hospital Stay:** Outpatient-based therapy reduces cost and hospital burden.

5. Randomized Controlled Trials and Clinical Evidence

Several RCTs have validated *Ksharasutra*:

- Studies at Banaras Hindu University (BHU) demonstrated significantly lower recurrence and higher patient satisfaction.
- Comparative studies showed quicker healing and lower complications than fistulotomy/fistulectomy.
- Systematic reviews support its efficacy, although larger multicenter trials are still required.

6. Recent Innovations and Modifications

- **Modified Ksharasutra:** Use of different herbal combinations for faster healing.
- **Adjunct Therapies:** Integration with sitz baths, wound dressings, and systemic Ayurveda formulations.
- **Hybrid Approaches:** Combination of surgical techniques with *Ksharasutra* for complex fistulae.

7. Patient-Reported Outcomes

High levels of satisfaction have been recorded due to affordability, lower recurrence, and avoidance of invasive surgery. However, pain during tightening sessions remains a challenge.

8. Limitations and Challenges

- Lack of uniform global standards.
- Procedure-related discomfort.
- Requirement of trained Ayurvedic surgeons.
- Limited acceptance in mainstream global surgical practice.

DISCUSSION

The integration of *Ksharasutra* into modern clinical practice reflects a successful example of evidence-based validation of Ayurvedic surgery. Compared to conventional surgical procedures, *Ksharasutra* offers unique benefits: it preserves sphincter function, prevents recurrence, and is cost-effective^[16].

Modern medicine focuses largely on surgical excision and drainage, which, while effective, often compromise sphincter integrity. In contrast, *Ksharasutra* allows gradual cutting and simultaneous healing, reducing chances of recurrence and incontinence^[17].

Pharmacological studies on the ingredients confirm antimicrobial (turmeric), caustic (alkali), and wound-healing (latex) properties, validating classical claims. Clinical trials reinforce these findings, although most are single-center studies with limited sample sizes^[18]. Challenges remain in terms of pain management,

patient compliance, and need for repeated sessions. Standardization of preparation methods and quality control remain critical for global acceptance. Future prospects lie in developing hybrid protocols where *Ksharasutra* is integrated with modern imaging and surgical precision for complex cases^[19].

Thus, *Ksharasutra* represents a paradigm of integrative medicine, blending ancient surgical wisdom with modern scientific validation, and holds promise for wider global acceptance^[20].

CONCLUSION

Bhagandara (fistula-in-ano) continues to challenge clinicians due to its recurrent nature and potential complications. *Ksharasutra* therapy, described in the *Sushruta Samhita*, stands out as an effective, safe, and economical approach validated by decades of clinical research. The medicated thread works through mechanical cutting, chemical cauterization, and antimicrobial action, offering superior outcomes compared to conventional surgery.

Modern research confirms its efficacy, with high cure rates, low recurrence, and minimal complications. Standardization by CCRAS and incorporation into postgraduate surgical curricula have strengthened its scientific base. Patient acceptance remains high due to affordability and effectiveness.

However, limitations such as pain during therapy, requirement of skilled practitioners, and absence of large-scale global trials remain barriers. The way forward lies in multicenter RCTs, international collaborations, and integration of *Ksharasutra* into evidence-based surgical guidelines.

In conclusion, *Ksharasutra* therapy exemplifies the successful translation of classical Ayurvedic surgical knowledge into modern clinical practice. Its broader adoption may revolutionize the management of fistula-in-ano, reducing recurrence and improving patient quality of life.

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