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A COMPREHENSIVE REVIEW ON KSHARASUTRA: AYURVEDIC PRINCIPLES AND ITS CLINICAL APPLICATION IN BHAGANDARA (FISTULA-IN-ANO)

[1]Dr Maya Balasaheb Nagapurkar, M.S.(Surgery)

[2]Dr Kumudini Sukadev Sawale, Professor, Dept. Of Kayachikitsa, Ayurved Seva Sangh, Ayurved College, Ganeshwadi, Nashik

ABSTRACT

Ksharasutra, an ingenious para-surgical innovation of *Ayurveda*, represents a unique and effective treatment modality for *Bhagandara* (Fistula-in-Ano). Mentioned by *Acharya Sushruta* in *Sushruta Samhita*, it is considered one of the most successful and minimally invasive therapies in *Ayurvedic Shalya Tantra*. The procedure involves the use of a medicated alkaline thread prepared by repeated coating with *Apamarga Kshara*, *Snuhi Ksheera*, and *Haridra Churna*. It acts by simultaneous *Ksharana* (chemical debridement), *Chedana* (excision), and *Lekhana* (scraping) actions, promoting healing from the base. Modern surgical science identifies *Ksharasutra* therapy as a safe, economical, and effective alternative to conventional fistulectomy or fistulotomy procedures. The medicated thread gradually cuts through the tract, disinfects it, and promotes granulation tissue formation without causing extensive tissue loss. Thus, *Ksharasutra* provides faster healing, minimal recurrence, and negligible complications compared to surgical approaches. This review attempts to elucidate the conceptual foundation, mechanism of action, preparation process, and clinical relevance of *Ksharasutra* in *Bhagandara*, while correlating its principles with modern surgical and pathological perspectives.

KEYWORDS : *Ayurveda*, fistula in ano, *bhagandar, Ksharasutra*, fistulotomy.

INTRODUCTION

Ksharasutra is one of the prime contributions of *Ayurvedic Shalya Tantra*, originally described by *Acharya Sushruta* for the management of *Nadi Vrana* and *Bhagandara* [1]. It is a medicated thread that combines both mechanical and chemical actions to facilitate controlled debridement and healing of sinus tracts and anal fistulas. *Acharya Chakrapani* in *Charaka Samhita* and *Acharya Vagbhata* in *Ashtanga Hridaya* also mention the therapeutic importance of *Kshara* and *Ksharasutra* for chronic sinuses and *Arsha* (piles) [2,3].

In *Bhagandara*, the pathological communication between the rectum and perianal skin leads to chronic discharge, infection, and recurrence even after surgical excision. *Ksharasutra* provides a curative solution through its *Trividha Karma — Chedana* (cutting), *Bhedana* (splitting), and *Ropana* (healing). The medicated thread acts continuously until the entire tract is cut and healed by secondary intention.

From a modern surgical viewpoint, *Ksharasutra* can be compared to a medicated seton technique that provides gradual chemical cauterization and controlled cutting of the fistulous tract while minimizing sphincter damage [4]. Its unique combination of *Kshara* (alkali) and *Haridra* (antiseptic) ensures debridement, disinfection, and regeneration simultaneously, reflecting a perfect integration of surgical precision and pharmacological action [5,6].

MECHANISM OF ACTION

Ayurvedic Perspective

According to *Ayurvedic* philosophy, *Ksharasutra* acts by virtue of its *Tridosha Shamana* and *Shodhana* (cleansing) effects. The alkaline nature of *Kshara* neutralizes *Kapha* and *Pitta* aggravations, while the continuous presence of the medicated thread maintains *Srotoshodhana* (duct cleansing) and *Ropana* (healing). The *Kshara* performs *Chedana*, *Bhedana*, and *Lekhana*, thereby disintegrating necrosed tissues and facilitating healthy granulation [7,8].

The *Snuhi Ksheera* acts as a binding and penetrating medium, enhancing the potency of *Kshara*, while *Haridra* provides *Raktashodhana* (blood purification) and antimicrobial action. This synergistic combination ensures both chemical and biological sterilization of the tract.

Modern Physiological Explanation

Modern science explains *Ksharasutra*'s efficacy through continuous mechanical pressure and chemical cauterization. The alkaline coating leads to protein denaturation, dissolution of necrotic tissue, and stimulation of local immune response [9]. The sustained presence of the medicated thread in the tract maintains asepsis, promotes collagen synthesis, and enhances fibroblast proliferation [10]. Gradual cutting through the tract ensures minimal

trauma, preservation of sphincter integrity, and uniform healing, distinguishing it from conventional surgical excision [11].

PREPARATION AND PROCEDURE OF KSHARASUTRA

Ksharasutra is traditionally prepared using surgical linen thread (No. 20) coated 21 times with specific herbal materials — 11 coatings of *Snuhi Ksheera* (*Euphorbia neriifolia* latex), 7 coatings of *Apamarga Kshara* (*Achyranthes aspera* alkali) mixed with *Snuhi Ksheera*, and 3 final coatings of *Haridra Churna* (Turmeric powder). Each layer is air-dried before the next application to ensure uniformity and potency [12].

Procedure in Bhagandara:

The patient is positioned in lithotomy posture and the tract is probed with a malleable probe. The *Ksharasutra* is then threaded through the fistulous tract and tied externally, maintaining moderate tension. The thread is replaced every 7 days until the tract is completely cut through and healed by granulation. The average cutting and healing rate is approximately 0.8–1 cm per week [13].

This continuous process ensures simultaneous cutting and healing, thereby preventing infection, recurrence, and excessive scarring. The wound heals with minimal fibrosis and preservation of anal continence, a key advantage over conventional fistulectomy.

INDICATIONS

Ksharasutra therapy is most prominently indicated in *Bhagandara* (Fistula-in-Ano), which is considered a *Maharoga* due to its chronicity and tendency to recur. Other indications include *Nadi Vrana* (sinus tracts), *Arsha* (piles), *Dushta Vrana* (non-healing ulcers), and *Charma Arbuda* (benign skin growths) [14].

In the context of *Bhagandara*, it is particularly useful in:

- *Parks Fistula Types* (intersphincteric, transsphincteric)
- Chronic or recurrent fistulae after surgery
- Patients unfit for invasive operations
- Cases requiring minimal hospital stay

Modern studies have confirmed *Ksharasutra*'s superiority in terms of shorter healing time, lower recurrence, and preservation of sphincter function, compared to fistulectomy or seton techniques [15].

COMPARATIVE ANALYSIS WITH MODERN SURGICAL METHODS

Parameter	Ksharasutra (Ayurveda)	Seton / Fistulectomy (Modern)
Principle	Gradual chemical cutting and healing	Surgical excision or ligature cutting
Tissue Damage	Minimal, controlled	Moderate to extensive
Recurrence Rate	Very low	Relatively higher
Healing Process	Continuous cut and heal mechanism	Postoperative secondary healing
Hospitalization	Outpatient-based	Requires admission
Sphincter Preservation	Maintained	Risk of incontinence
Cost-Effectiveness	Highly economical	Costly instrumentation

Ksharasutra stands superior in terms of cost, safety, and outcome, providing a non-invasive, outpatient-based treatment option for fistula-in-ano [15].

DISCUSSION

The concept of *Ksharasutra* reflects the deep surgical understanding of ancient *Acharyas*, combining pharmacological potency with mechanical precision. The procedure achieves complete eradication of the fistulous tract by maintaining constant chemical debridement and asepsis. Several clinical studies have validated its efficacy, showing faster healing, lower recurrence, and minimal complications compared to modern surgeries [13,14].

The therapy's biochemical basis can be attributed to the saponins, alkaloids, and curcuminoids present in *Snuhi*, *Apamarga*, and *Haridra*, which exert proteolytic, anti-inflammatory, and antimicrobial effects. Continuous tissue contact with *Ksharasutra* stimulates collagen formation and neovascularization, promoting organized tissue regeneration. Unlike conventional surgical excision, *Ksharasutra* ensures healing from the base without leaving dead space, thus preventing reinfection.

From an integrative medicine viewpoint, *Ksharasutra* represents a model for sustainable surgical innovation — combining traditional pharmacotherapy with minimal invasion. Its inclusion in the Central Council for Research in Ayurvedic Sciences (CCRAS) guidelines further supports its scientific credibility. As modern proctology evolves, the technique exemplifies the principle of "cut, heal, and preserve," aligning perfectly with global trends toward natural and functional surgical care [15].

CONCLUSION

Ksharasutra, as described by *Acharya Sushruta*, stands as one of the most significant contributions of *Ayurvedic Shalya Tantra* to the field of surgery. Its clinical success in managing *Bhagandara (Fistula-in-Ano)* has been reaffirmed through numerous modern studies and institutional trials. The procedure provides an effective,

economical, and minimally invasive alternative to conventional fistulectomy, offering complete healing with minimal recurrence and preserved sphincter control. With ongoing standardization, clinical validation, and adaptation to modern protocols, *Ksharasutra* holds immense potential to bridge ancient surgical wisdom with modern-day clinical excellence. It exemplifies how traditional knowledge, when understood scientifically, can offer global healthcare solutions that are safe, sustainable, and patient-friendly ([15]).

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