



KSHARA KARMA IN AYURVEDA: A COMPREHENSIVE REVIEW OF CLASSICAL PRINCIPLES, PREPARATIONS, CLINICAL APPLICATIONS AND MODERN EVIDENCE

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Abstract :

Kshara Karma represents one of the most distinctive *Anushastra* (para-surgical) procedures in Ayurveda, utilizing alkaline herbal or herbomineral preparations for chemical cauterization. Derived primarily from the ashes of selected medicinal plants, *Kshara* possesses the dual capacity to destroy vitiated tissues while promoting healing. Classical texts, especially the *Sushruta Samhita*, describe *Kshara* as superior among sharp and subsidiary instruments because it simultaneously performs *Chedana* (excision), *Bhedana* (incision) and *Lekhana* (scraping). Two principal forms exist: *Pratisaraniya Kshara* for external application and *Paniya Kshara* for internal use. Modern practice has refined these into specialized formulations such as *Ksharasutra*, *Ksharavarti* and *Ksharapicchu*, which are widely employed in proctology for *Arsha* (hemorrhoids), *Bhagandara* (fistula-in-ano) and *Nadi Vrana* (sinus tracts). Preparation involves controlled incineration of plant material, aqueous extraction of the alkaline fraction, repeated filtration and concentration, often with potentiating agents to achieve *Mridu* (mild), *Madhyama* (moderate) or *Tikshna* (strong) potency. Clinical studies and meta-analyses demonstrate high success rates, particularly for *Ksharasutra* in fistula-in-ano, with low recurrence and minimal sphincter damage compared with conventional surgery. Advantages include minimal invasiveness, cost-effectiveness, outpatient feasibility and suitability for patients reluctant to undergo open surgery. Contraindications include extreme age, debility, bleeding disorders, pregnancy and application over *Marma* (vital points). Complications such as excessive burning or incomplete action are largely avoidable with proper technique and post-procedure care. This review synthesizes classical descriptions from *Sushruta Samhita*, *Charaka Samhita* and *Ashtanga Hridaya* with contemporary clinical evidence, preparation protocols, indications, mechanisms and limitations.

Kshara Karma continues to offer a rational, evidence-supported alternative within integrative surgical practice, warranting further standardized research and wider clinical adoption.

IndexTerms - Anushastra; Arsha; Ayurvedic para-surgery; Bhagandara; chemical cauterization; Kshara Karma; Ksharasutra; Pratisaraniya Kshara

INTRODUCTION

Ayurveda classifies therapeutic interventions into *Aushadha* (medicinal), *Shashtra* (surgical) and *Anushastra* (para-surgical) modalities. Among the *Anushastra* procedures, *Kshara Karma* occupies a pre-eminent position. Acharya Sushruta, often regarded as the father of surgery, devoted an entire chapter in the Sushruta Samhita to *Ksharapaka Vidhi* (the method of preparing *Kshara*) to the preparation and application of *Kshara*, declaring it superior to ordinary sharp instruments because of its ability to perform excision, incision and scraping simultaneously while also exerting *Tridosahara* (balancing of the three bodily humors) and *Shodhana* (purifying) actions¹. The term “*Kshara*” itself derives from the root meaning “to dissolve” or “to melt away,” reflecting its capacity to liquefy and remove morbid tissue without the extensive trauma associated with open surgery².

Historically, the procedure is rooted in the Sushruta Samhita (circa 600 BCE to the early centuries of the Common Era), with additional references in Charaka Samhita, Ashtanga Hridaya and later texts of the *Laghutrayi*¹⁻³. Sushruta classified *Kshara* into *Pratisaraniya* (external) and *Paniya* (internal) forms and further graded external *Kshara* by potency. Classical indications span anorectal disorders, chronic ulcers, warts, certain tumors and selected internal conditions such as urinary calculi and abdominal masses. The procedure was designed for conditions where pure surgical intervention carried high risk of bleeding, infection or functional loss, or where patients were fearful of the knife^{4,5}.

In contemporary practice, *Kshara Karma* has found particular utility in proctology. *Ksharasutra* therapy for fistula-in-ano has been subjected to multi-center trials under the Indian Council of Medical Research and has demonstrated lower recurrence rates and better sphincter preservation than fistulectomy^{15,16}. Application of *Pratisaraniya Kshara* for internal hemorrhoids offers an outpatient alternative to rubber-band ligation or sclerotherapy with comparable or superior symptom control^{13,18}. Despite this evidence base, standardization of preparation, potency assessment and long-term outcome reporting remains incomplete. This review therefore examines classical foundations, preparation methodology, clinical applications, mechanisms of action, modern evidence, limitations and future directions, aiming to present a balanced synthesis for both Ayurvedic and integrative practitioners.

MATERIALS AND METHODS

This review is based on a structured examination of classical Ayurvedic literature and contemporary scientific publications. Primary classical sources included *Ksharapaka Vidhi* (Sushruta Samhita, *Sutrasthana* Chapter 11), *Sutrasthana* Chapter 30 of Ashtanga Hridaya, Charaka Samhita and relevant commentaries by Dalhana and others¹⁻³. Secondary sources comprised peer-reviewed review articles, clinical trials, case series and meta-analyses published in journals indexed in PubMed, Scopus, Google Scholar and Ayurvedic databases approximately between 2000 and 2025. Search terms included “*Kshara Karma*,” “*Ksharasutra*,” “*Pratisaraniya Kshara*,” “*Apamarga Kshara*,” “Ayurvedic chemical cautery,” and combinations with “hemorrhoids,” “fistula-in-ano” and “anorectal.” Inclusion criteria prioritized textual descriptions of preparation, indications, contraindications and procedural steps, as well as clinical studies reporting efficacy, safety, recurrence and comparative outcomes. Exclusion criteria encompassed purely anecdotal reports without methodological detail and non-peer-reviewed commercial literature. Data were extracted on

classification, preparation protocols, clinical applications, reported outcomes and adverse events, then synthesized narratively.

CLASSIFICATION AND PREPARATION OF KSHARA

Classical Classification

Classical texts divide *Kshara* according to mode of use and potency. *Pratisaraniya Kshara* is intended for local application and is further subdivided into *Mridu* (mild), *Madhyama* (moderate) and *Tikshna* (strong) grades according to the intensity of alkaline action required^{1,2}. *Paniya Kshara* is administered internally in carefully controlled doses for selected systemic conditions. Specialized dosage forms developed in clinical practice include *Ksharasutra* (medicated alkaline thread), *Ksharavarti* (alkaline wick or cone) and *Ksharapicchu* (alkaline swab or tampon)^{5,6}. These formulations extend the classical concept to allow sustained, controlled delivery of the alkaline principle.

Preparation Protocol

Preparation follows a meticulous sequence described by Sushruta. Suitable plants—commonly *Apamarga* (*Achyranthes aspera*), *Palasha* (*Butea monosperma*), *Kutaja* (*Holarrhena antidysenterica*), *Snuhi* (*Euphorbia nerifolia*), *Arka* (*Calotropis procera*), *Kadali* (*Musa paradisiaca*) and others—are collected in the appropriate season, preferably middle-aged specimens free of insects and disease^{1,7}. The *Panchanga* (whole plant or specified parts) is dried and incinerated in a controlled fire, often with limestone. The resulting ash is mixed with six times its volume of water (or cow's urine for stronger preparations) and allowed to stand. The supernatant is filtered repeatedly (classically twenty-one times) through cloth. The filtrate is then concentrated by gentle heating. For *Tikshna Kshara*, additional potentiating agents such as *Chitraka* (*Plumbago zeylanica*), *Danti* or limestone ash are incorporated^{8,10}. The final product is a fine alkaline powder or paste whose pH typically exceeds 9.5–10.5. Quality is assessed by classical organoleptic criteria (color, consistency, taste) and, in modern settings, by pH measurement and alkalinity titration.

Ksharasutra preparation is more elaborate. Surgical linen thread (commonly Barbour No. 20) receives successive coatings: eleven layers of *Snuhi* latex, seven layers of *Snuhi* latex mixed with *Apamarga Kshara*, and three final layers of *Snuhi* latex with *Haridra* (*Curcuma longa*) powder^{5,19}. Each layer is dried under controlled hygienic conditions before the next is applied. The finished thread is sterilized and stored in sterile glass tubes. The alkaline and herbal components together confer simultaneous cutting, cauterizing, antimicrobial and anti-inflammatory properties that distinguish the thread from ordinary setons.

INDICATIONS AND CONTRAINDICATIONS

Indications

Pratisaraniya Kshara is classically indicated for *Arsha* (internal hemorrhoids), *Bhagandara* (fistula-in-ano), *Nadi Vrana* (sinus), *Dushta Vrana* (chronic non-healing ulcers), *Charmakeela* (warts), *Arbuda* (certain benign growths), *Tilakalaka*, external abscesses and selected oropharyngeal conditions such as *Upajihva*, *Adhijihva* and *Rohini*^{1,6,7}. *Paniya Kshara* finds use in *Gulma* (abdominal masses), *Ashmari* (urinary calculi), *Udara*, *Agnimandya*, *Gara Visha* and certain toxicological conditions^{2,3}. *Ksharasutra* is particularly valued for complex, high and horse-shoe anal fistulae, where it permits gradual cutting with simultaneous drainage and healing of the tract^{15,16}. Additional modern applications reported in case series include pilonidal sinus, mucocoele, nasal polyps, aural keloids and selected gingival hyperplasia¹⁷.

Contraindications

Contraindications include extreme youth or old age, *Durbala* (general debility), *Garbhini* (pregnancy), *Ritumati* (menstruation), *Raktapitta* (bleeding diatheses), *Prameha* (uncontrolled diabetes), *Bhiru* (fearfulness) that precludes cooperation, acute inflammatory states and systemic infection^{1,2,6}. Application over *Marma* points, *Sira* and *Dhamani* (major vessels), *Snayu* (tendons), *Sandhi* (joints), *Tarunasthi* (cartilaginous structures), the throat, umbilicus or regions of sparse soft tissue is prohibited. These restrictions reflect the corrosive nature of *Kshara* and the need to protect vital or delicate structures¹.

PROCEDURE OF KSHARA KARMA

The classical procedure comprises *Purva Karma* (pre-operative preparation), *Pradhana Karma* (main procedure) and *Paschat Karma* (post-operative care)^{1,6}. Pre-operative steps include thorough clinical and proctoscopic assessment, bowel preparation with mild laxatives, tetanus prophylaxis when indicated, local or regional anesthesia as required, and protection of surrounding healthy tissue with cotton swabs or oil. For internal hemorrhoids, a lubricated slit proctoscope exposes the pile mass. *Kshara* is applied with a *Shalaka* (specialized applicator) for a duration measured in *Matra* (classically approximately 100 *Matra*), or until the tissue assumes *Pakvajambuphala Varna* (the blackish-red color of a ripe jamun fruit)^{1,13}. Excess *Kshara* is neutralized with acidic substances such as *Nimbu Swarasa* (lemon juice) or *Kanji*. The patient is observed for *Samyak Dagdha Lakshana* (signs of adequate cauterization): cessation of bleeding or discharge, lightness of the part and subsidence of disease features.

For fistula-in-ano, the *Ksharasutra* is passed through the external and internal openings using a probe and is secured. The thread is changed and tightened at weekly intervals. Progressive cutting and healing of the tract occur at a measurable unit cutting time, typically several millimeters per week, until the tract is completely divided and the wound heals by secondary intention with minimal scarring^{15,16,19}. Post-operative care emphasizes warm sitz baths, local application of *Jatyadi Taila* or *Madhuyashti Taila* (soothing medicated oils), dietary regulation to avoid constipation, and gradual return to normal activity. Follow-up continues until complete epithelialization and functional recovery are confirmed.

DISCUSSION

Mechanisms of Action

Kshara acts through the qualities (guna) and actions (karma) described for it in the classical texts. Sushruta derives the term from *Kshanana* (destruction) and *Ksharana* (dissolution), and describes *Kshara* as *Ushna* (hot), *Tikshna* (sharp), *Pachana* (digestive), *Darana* (splitting), *Vilayana* (liquefying), *Shodhana* (cleansing), *Ropana* (healing) and *Lekhana* (scraping), while remaining *Tridosahara* (balancing of the three bodily humors)^{1,6}. Through *Chedana*, *Bhedana* and *Lekhana*, it removes *Dushta* (vitiated) tissue, clears the obstructed channels and prepares the site for healthy repair, which is why a single preparation can excise, drain and heal. Sushruta also holds that *Kshara* can reach sites where *Shastra* (surgical instruments) cannot, such as the interior of the anal canal.

From a modern perspective, the principal mechanism is chemical cauterization by a strong alkali with a pH above 9.5. On contact, the hydroxide and carbonate ions of *Kshara* cause alkaline hydrolysis of tissue proteins and saponification of membrane lipids, producing a liquefactive and coagulative necrosis largely confined to the area of contact^{4,5}. Denaturation of proteins within small vessels leads to thrombosis, which explains the hemostasis and the shrinkage of *Arsha* (hemorrhoidal) masses. The necrosed tissue then sloughs, leaving a clean bed that heals by secondary

intention. The high pH also denatures bacterial and host enzymes, leaving a debrided, relatively sterile surface. Neutralization with *Nimbu Swarasa* (lemon juice) halts the reaction, so the depth of action can be controlled, and this is the basis for grading *Kshara* as *Mridu* (mild), *Madhyama* (moderate) or *Tikshna* (strong).

On the pile mass in *Arsha*, this produces sclerosis: thrombosed vessels are replaced by fibrous tissue, which fixes the mucosa to the underlying layer and prevents prolapse, combining the effect of sclerotherapy with chemical excision of the mass.

In *Ksharasutra* therapy, the action is chemico-mechanical. The thread, coated with *Snuhi* latex, *Apamarga Kshara* and *Haridra*, lies within the *Bhagandara* (fistulous) tract. Its gentle, continuous tension produces pressure necrosis, while the alkali released gradually from the coating cauterizes the tract wall, destroying the epithelialized lining and unhealthy granulation tissue. Because the tract is cut slowly while fibrosis and healing proceed behind the thread, the sphincter fibers are not divided abruptly, and this accounts for the low rates of incontinence reported^{15,16}. The thread also keeps the tract open for continuous drainage of pus and residual cryptoglandular infection, which reduces the risk of recurrent abscess formation. Granulation and re-epithelialization then close the wound from the base upward.

The herbal constituents contribute further. *Snuhi* latex contains proteolytic enzymes and other compounds with reported antimicrobial and tissue-digesting activity, while *Haridra* supplies curcuminoids with antibacterial, anti-inflammatory and wound-healing properties. The alkaline environment is itself bacteriostatic, limiting secondary infection, and the anti-inflammatory action reduces edema and pain, supporting *Ropana* (healing)^{5,19}. Together, these effects explain how *Kshara Karma* destroys morbid tissue, secures hemostasis, controls infection and promotes repair within one procedure. Because the effect is local and graded by potency, outcomes depend on the correct choice of grade, contact time and neutralization. Standardized pharmacodynamic studies are still needed to quantify each of these actions.

Clinical Evidence in Hemorrhoids (Arsha)

Multiple clinical studies have evaluated *Pratisaraniya Kshara*, particularly *Apamarga Tikshna Kshara*, in first- and second-degree internal hemorrhoids^{13,18}. Randomized comparisons with sclerotherapy and infrared coagulation have shown that *Kshara* application produces more rapid reduction in pile mass size and earlier cessation of bleeding in many patients. In one open-label trial, complete remission of symptoms occurred in a higher proportion of patients treated with *Apamarga Kshara* than with infrared coagulation or oral *Arshohara Vati*¹⁸. Case reports with long-term follow-up (up to eight years) have documented durable resolution of internal hemorrhoids without recurrence after a single or limited series of applications combined with dietary and lifestyle measures¹³. *Ksharasutra* ligation has also been compared favorably with conventional hemorrhoidectomy, offering reduced postoperative bleeding, shorter hospital stay and lower cost, although pain during the period of ligation remains a consideration¹⁴.

Clinical Evidence in Fistula-in-Ano (Bhagandara)

Ksharasutra therapy for fistula-in-ano constitutes the most robustly studied application of *Kshara Karma*. A landmark multi-center randomized controlled trial conducted under the Indian Council of Medical Research demonstrated significantly lower recurrence rates with *Ksharasutra* compared with conventional fistulectomy (approximately 3–4% versus 11% in one large series)¹⁵. Meta-analyses of subsequent trials confirm high cure rates, negligible rates of anal incontinence and acceptable unit cutting times¹⁶. The technique is especially advantageous in complex, recurrent and high fistulae where sphincter preservation is paramount. Progressive cutting allows continuous drainage, reducing the risk of abscess formation, while the alkaline and herbal coatings promote fibrosis and healing of

the tract. Patient acceptability is generally high once the temporary discomfort of weekly thread changes is explained^{15,16,19}.

Other Applications and Safety

Case series document successful use of *Kshara* in pilonidal sinus, chronic non-healing ulcers, warts and selected lesions in *Shalakya Tantra* (ophthalmic and otorhinolaryngological practice)¹⁷. Safety data indicate that when classical contraindications and technique are observed, serious complications are uncommon. Transient burning, mild discharge and temporary discomfort are expected; *Atidagdha* (excessive) or *Heenadagdha* (insufficient) cauterization can usually be corrected by neutralization or re-application^{1,6}. Sphincter function is preserved in the great majority of fistula cases treated with *Ksharasutra*. Cost-effectiveness is frequently cited as a major advantage in resource-limited settings^{5,14}.

Limitations and Challenges

Despite encouraging evidence, several limitations persist. Standardization of *Kshara* potency across manufacturing centers remains incomplete; variation in plant source, incineration conditions and potentiating agents can alter alkaline strength and clinical response^{8,10}. Many published trials are single-center, open-label or of modest sample size. Long-term comparative data against modern minimally invasive techniques (laser, video-assisted anal fistula treatment, ligation of intersphincteric fistula tract) are still limited. Training requirements for consistent, safe application are non-trivial, and the procedure is not universally available outside specialized Ayurvedic surgical units. Regulatory and quality-control frameworks for *Kshara* preparations continue to evolve^{4,5}.

Integration with Contemporary Practice

Kshara Karma occupies a unique niche between purely conservative medical management and radical open surgery. Its minimally invasive character, low capital equipment requirement and favorable sphincter-preservation profile make it particularly suitable for selected anorectal conditions in both primary and tertiary care settings^{15,16}. Patient-centered outcomes also favor *Kshara* modalities in many settings. Reduced need for general anesthesia, shorter hospital stays or fully outpatient management, and lower direct costs are repeatedly highlighted in comparative series. For patients with co-morbidities that elevate surgical risk, or for those who decline conventional operative intervention, *Kshara Karma* provides a culturally acceptable and clinically effective alternative. Nevertheless, successful outcomes depend on accurate diagnosis, appropriate case selection, and operator experience. Inadequate training can lead to incomplete tract management or excessive tissue injury; therefore structured apprenticeship under experienced *Shalya* practitioners remains indispensable.

Looking ahead, priority research areas include multi-center randomized trials with standardized *Kshara* preparations, head-to-head comparisons against laser and video-assisted techniques, long-term functional outcome assessment using validated continence and quality-of-life instruments, and pharmacokinetic studies of residual alkaline and herbal components after local application. Development of quality-control monographs for *Apamarga* and other commonly used *Ksharas*, together with training curricula recognized by national regulatory bodies, will further consolidate the place of this ancient yet still relevant para-surgical science in contemporary healthcare^{4,5,16}.

CONCLUSION

Kshara Karma, as elaborated by Acharya Sushruta and refined through centuries of clinical practice, remains a scientifically coherent and clinically effective para-surgical modality¹. Its alkaline mechanism enables controlled chemical cauterization that simultaneously excises pathological tissue, achieves hemostasis and promotes subsequent

healing. Strongest contemporary evidence supports its use in internal hemorrhoids of lower grades and, especially, in fistula-in-ano, where *Ksharasutra* therapy offers high cure rates, low recurrence and excellent sphincter preservation^{13,15,16}. Advantages of minimal invasiveness, cost-effectiveness and outpatient applicability are substantial. Proper patient selection, adherence to classical contraindications, standardized preparation and meticulous technique are essential to maximize benefit and minimize risk. Further multi-center randomized trials, pharmacokinetic and pharmacodynamic characterization of *Kshara* preparations, and formal training pathways will strengthen the evidence base and facilitate wider, safer adoption. Within an integrative framework that respects both classical wisdom and modern methodological rigor, *Kshara Karma* continues to merit a recognized place in the surgical management of selected anorectal and related disorders.

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