

Role of *Kshara Kalpana* in Ayurvedic Surgical Practices: A Narrative Review of Preparation Modalities

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Abstract

In Ayurveda, *Kshara Kalpana* (medicated alkali) holds a significant place, especially in the field of Shalya Tantra, where it is referred to as an efficient replacement to traditional surgical procedures. *Kshara* preparations, which have their references in traditional Ayurvedic texts, are alkaline compounds primarily derived from plant sources that are noted for their *Chhedana* (excision), *Bhedana* (incision), and *Lekhana* (scraping) qualities. These formulations have been modified over time into different dosage forms to meet a range of clinical needs. The purpose of this narrative review is to examine and summarize the traditional and modern literature on *Kshara Kalpana* preparation techniques, emphasizing their applicability in surgical practice. To learn more about the sources, preparation techniques, categorization, and standardization of *Kshara*, published research articles, review papers, and classical Ayurvedic texts, such as *Sushruta Samhita* and related texts, were analyzed. Understanding the reasoning behind various preparation methods, such as *Paneeeya Kshara* (oral), *Pratisaraneeya Kshara* (for local application), and *Kshara*-based formulations, as well as their intended therapeutic applications, has been emphasized. According to the review, different preparation techniques affect *Kshara's* potency, safety, and clinical usefulness. To guarantee effectiveness while reducing side effects, traditional methods place a strong emphasis on careful raw material selection, regulated processing, and exact formulation. Reproducibility and quality control are further enhanced by modern modifications and analytical research.

Key Words: Alkali, *Kshara Kalpana*, Narrative review, surgical Practices, Shalya Tantra

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Introduction

Kshara, a caustic and alkaline substance, is derived from the ashes of medicinal plants and holds a significant place in Ayurvedic medicine. Its therapeutic applications have been extensively documented by *Acharya Sushruta* in the ancient text, *Kshara Paka Vidhi Adhyaya*, where he dedicated an entire chapter to its preparation and uses a distinction not found in other classical Ayurvedic writings. The term *Kshara* is derived from its unique ability to cause *Ksharana* (destruction) of tissue, specifically *Mamsa* (muscle) and other *Dhatus* (bodily tissues), making it a potent tool in treating various medical conditions.

Kshara is classified as one of the *Anu Shastras* (subtle instruments) and is considered a vital *Upakrama* (treatment) for *Vrana* (wounds). Its ability to perform procedures such as *Chhedana* (excision), *Bhedana* (incision), and *Lekhana* (scraping) positions it as a superior instrument among sharp and subsidiary tools in Ayurvedic therapy. Furthermore, it is recognized for

its efficacy in addressing *Tridosha* imbalances (*Vata*, *Pitta*, and *Kapha*), which are believed to be the root cause of many disorders in the body.

In Ayurveda, *Kshara* is traditionally applied in two primary forms oral (*Paneeeya*) and local (*Pratisaraneeya*) making it versatile in treating a wide range of conditions both internally and externally. *Acharya Sushruta's* classification of *Kshara* includes various types based on its method of administration and concentration, such as *Mrudu* (mild), *Madhyama* (moderate), and *Teekshna* (sharp), each catering to different therapeutic needs.

The general properties of *Kshara*, also referred to as Biosalt, include its alkaline nature, antacid properties, diuretic effect, purifying and purgative action, and its ability to balance excess doshas. These properties make *Kshara* an essential therapeutic tool in Ayurveda.

This narrative review explores the different modalities of *Kshara* preparation, its classification, and the medicinal applications of this unique substance,

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shedding light on its continued relevance and efficacy in modern Ayurvedic practices.

Search strategy:

The present narrative overview employed a comprehensive literature search to identify relevant scholarly literature pertaining to the *Kshara* and its different therapeutic modalities. The search undertaken in this article encompassed the utilization of well-established databases like PubMed, Scopus, and AYUSH research portal. Articles published in last 25 years has been included for the review. The process of selecting search terms and keywords has been carried out with careful attention to include all aspects of the subject matter, including synonymous phrases, variants, and related concepts. The approach utilized for conducting the search is meticulously documented and published in adherence to established protocols, assuring transparency, and facilitating the replication of the process. The search terms employed in the search encompassed

1. *Kshara* OR *Kshar* OR *kshara* OR Medicated Alkali OR medicated alkali
2. *Pratisaraneeya Kshara* OR *Pratisaraneeya kshara* OR *Pratisaraniya Kshara* OR *Pratisaraniy Kshar*
3. *Paneeya Kshara* OR *Paneeya Kshara* OR *PaniyKshara* OR *PaneeyaKshara* OR *PaneeyaKshara* OR *PaneeyaKshara* OR *PaneeyKshara*
4. *KsharaKarma* OR *Ksharakarma* OR *Ksharakarm* OR *Ksharakarm* AND *Arsha* OR *Arsah* OR *Arsa* OR *Haemorrhoids* OR *Piles*
5. (*Ksharasutra*) OR (*Ksharasutra*) OR (*Ksharasutra*) AND (*Anal Fistula*) OR (*anus fistula*) OR (*anal fistula*) OR (*anal fistulae*) OR (*fistula ani*) OR (*perianal fistula*) OR (*Fistula-in-ano*)
6. *KsharaTaila* OR *Ksharataila* OR *Kshara tail* OR *Ksharataila*
7. *Kshara Pichu* OR *Ksharapichu* OR *KsharaPichoo* OR *Ksharapichoo*
8. *KsharaVarti* OR *Ksharavarti*
9. *KsharaPlota* OR *KsharaPlota* OR *Ksharaplot* OR *Kshara plot*
10. *KsharaBasti* OR *Ksharabasti*

Search outcome

The search yielded a total of 16 publications, out of which 11 were considered relevant to the specified keywords. A Scopus search using identical terms yielded a total of 13 articles, of which 11 articles were found to be directly relevant to the keywords employed. Of the 29 papers that were discovered, only 17 articles were deemed suitable for inclusion in the synthesis of this current narrative review article. This present review will exclusively consider journal articles written in the English language that directly focus on *Kshara* as an intervention. These selected articles were synthesized to generate the content for the review. The publications considered in this study encompass various types of *Kshara* preparation. This narrative

review encompasses a comprehensive compilation of 35 studies. In addition to the total articles, 17 were included in the PubMed and Scopus databases for indexing purposes. The remaining 18 papers were sourced from grey research databases, specifically AYUSH research portal, as they were predominantly referenced in the primary publications. presents a comprehensive compilation of the related information pertaining to the articles encompassed within this evaluation. All studies were thoroughly examined, regardless of their methodological variations, as this present narrative review aims to explore the significance of *Kshara* in addressing various therapeutic preparation. All the papers that were searched underwent a thorough evaluation process, which involved assessing their titles and abstracts to determine their suitability for inclusion in the final synthesis for the present study. The publications underwent a comprehensive evaluation, comparison, and synthesis to ascertain the significance of *Kshara* and its formulation in therapeutic modalities

Kshara's properties and importance

Kshara is medicament obtained from ash of one or more plants. The process of preparation of *Kshara* involves the extraction of alkalies from ash of dried plants, hence it can term as "Biosalt". It should be *Na Atitikshna* (Not excessively sharp), *Na Atimrudu* (Not excessively soft), *Na Atishukla* (Not excessively white), *Shlakshna* (Better to touch), *Pichhila* (Slimy), *Avishyandi* (Immovable), *Shiva* (Not so tough or soft), *Shighra* (Having rapid action), *Shikhari* (Do not move when placed in pile) and *Sukhanirvapy*.

Kshara works as *Chhedana*, *Bhedana*, *Lekhana*, *Tridoshghnatva*, *Dahana* (cauterization of bleeders) *Pachana* (digestion), *Vilayana*, *Darana* (bursting), *Vrana Shodhana* and *Ropana* (healing of wounds), *Vrana kled Shoshana* in *Kanduyuktavrana* (decrease itching in *dushtavrana*).

The general properties of *Kshara* or Biosalt can be stated as Alkaline nature, Antacid action, Diuretic nature, Depurative (purifying/ purgative) and Attenuating behavior.

Kshara is employed in such complicated cases where surgery is inapplicable. It is claimed that in many cases the purpose of surgical treatment may be served by oral administration of *Kshara*. All the reasons mentioned above, *Kshara* is best among the *Shastra* and *Anushastra*.^[1]

Types of *Kshara*^[2]

According to the mode of application-

1. *Paneeya Kshara* / *Antah Parimarjan*

2. *Pratisaraneeya Kshara* / *Bahi Parimarjan*

1) *Paneeya Kshara*: Administration of *Kshara* by oral root in the form of *Ksharaodaka*, *Churna* (powder) or *Gutika* (tablet) is known as *PaneeyaKshara*. Here *Kshara* of a particular drug or the combination of drugs are administered internally with suitable *Anupanas* for a particular disease. According to Acharya Vagbhata,

Kshara given internally can cure *Atikrichra Rogas* (diseases which are difficulty to cure).

In classical texts it is mentioned that with the help of *PaneeeyaKshara* the common surgical diseases like *Gulma* (abdominal tumour), *Udara*(ascites), *Sharkara*, *Ashmari*(calculi), *Abhyantaravidradhi* (internal abscess), *Krimi* (intestinal worms) and *Arsha* (haemorrhoids) etc. can be treated without a knife and it is also mentioned *Kshara* can cure the diseases which are difficult to cure, hence an effort is made to describe the utility of *PaneeeyaKshara* in surgical diseases.

Indications: *Acharya Sushruta* Indicated *PaneeeyaKshara* in the management of diseases like *Garavisha* (poison), *Gulma*, *Udara*, *Agni Sanga*, *Ajirna* (indigestion), *Aruchi* (Anorexia), *Sharkara*, *Ashmari*, *AbhyantaraVidradhi*, *Arsha*. *Acharya Charaka* and *Acharya Vagbhata* mentioned different *PaneeeyaKshara Yogas* while explaining the treatment of different diseases like *Raktapitta* (bleeding disorders), *Ashmari*, *Arshas*, *Svasa*, *Kshaya*, *Kasa*, *Gulma*, *Grahani*, *Udara*, *KaphajaHidroga* and *Mutraghata*.

Contraindications: *Raktapitta*, fever, individuals of *Pitta Prakriti*, childrens, aged, debilitated, those suffering from giddiness, intoxication, fainting and *TimiraRoga*. *Acharya Charaka* advised not to use *Kshara* excessively (*Nati sevaniyadravya*) As it cause baldness, grey hairs, debility, sterility etc on excessive use.

Preparation of *PaneeeyaKshara*:^[3]

The *Panchangas* (five plant parts) of plants from which *Kshara* is to be prepared are collected, dried up and made into small pieces, then burnt with limestone and *Tilanaala*. When the ash cools down it should be separated from the residue of limestone and *Bhasma Sharkara*. The collected ash should be well mixed with six times of water. Then filtered 21 times through a piece of cloth. The residual portion is thrown away and the *Ksharaodaka* should be kept on *Mandagni* (law flame) and continuously stirred well until it remains 1/3rd.

Limitation- Excessive dosage may cause serious complications like bleeding, electrolyte imbalance and alkalosis. *Kshara* administered in a proper way can cure diseases which are difficult to cure, if not it will be as dangerous as fire, poison and sharp instruments.

2) ***PratisaraneeyaKshara*:**^[4]

Used for application locally in treating diseases like haemorrhoids, fistula in ano, pilonidal sinus, Non healing ulcer, wart, keloid, tonsillitis, gingival hyperplasia, oral mucocele, nasal polyp, hypertrophied turbinates etc.

PratisaraneeyaKshara involves diverse applications like *Kshara* application, *Ksharasutra*, *KsharaVarti*, *KsharaPlota*, *KsharaTaila* infiltration and intralesional injection of *Ksharaodaka*.

Method of preparation: The *Panchanga* of plants from which *Kshara* is to be prepared should be collected, dried up and burnt. Then this ash should be collected and mixed with six times of water (distill water) and

filtered 21 times with cloth. When the filtrate shall be clean and clear like *Gomutra Varna* and it should be kept on mild fire and reduced to 2/3rd. Then red-hot *Shukti* (weight 1/10th part of ash) should be added into the filtrate solution and should be continuously stirred well until it reduces to 1/3rd. This should be further heated up by adding *Chitraka Kalka* (weight 1/10th part of *Shukti*). Thick solution should be obtained and this is known as *PratisaraneeyaTeekshna Kshara*. It should be collected and stored in air tight container.

Uses: Its primary applications encompass treating conditions such as *Arsha* (hemorrhoids), *Bhagandara* (fistula-in-ano), *Nadivrana* (sinus), *Vidradhi* (abscess), *Dustavrana* (non healing ulcer) and *Charmakeela* (warts).

Mechanism of Action: *PratisaraneeyaKsharakarma*, the application of *Ksharato Arshas* (hemorrhoids) induces coagulation of protein in haemorrhoidal plexus. The coagulation of protein leads to disintegration of haemoglobin into haem and globin. Synergy of these actions results in decreasing the size of the pile mass. Further, necrosis of the tissue in the haemorrhoidal vein will occur. This necrosed tissue slough out as blackish brown discharge for 3 to 7 days, the haem present in the slough gives the discharge its colour. The tissue becomes fibrosed and scar formation seen. The haemorrhoidal vein obliterates permanently and there is no recurrence of haemorrhoids.

Limitation: While severe adverse effects are rare, minor effects such as burning sensations and sphincter spasms might occur post-operative. These can be managed by administering oils like *Madhuyasti Taila* or *Jatyadi Taila*. This treatment doesn't typically result in anal stricture, but precautions during the procedure are recommended, such as performing Manual anal dilation and ensuring precise application only on the haemorrhoidal mass without affecting the normal anal mucosa. If used in excessive amount over a long period can lead to *atidagdhalakshanas*.

Indications: *Kushta* (leprosy), *Vyanga*, *Dadru* (fungal infection), *Mandala*, *Kitibha* (psoriasis), *Kilas*, *Tilkalaka* (moles), *Nyaccha* (mole), *Charmakeel* (wart), *Dushtavrana* (sinus), *Mashakaare* examples of skin illnesses. Ano rectal diseases like *Bhagandar* (fistula), *Arsha* (piles), and *Arbuda* (tumor) Oral diseases like *Upajivha*, *Adhijivha*, *Upakush* (Gum boil), *Dantavaidarbh* (looseness of the teeth), 3 types of *Rohini.Krimi* (worms), and *visha*.

Different Preparations of *Kshara*

1. *Ksharasutra*

Ksharasutra means thread made up of caustic material which destroys or cleans the devitalized tissue and to disintegrate the skin or other unhealthy tissues.^[5]

The earliest mention of *Ksharasutra* therapy and its application in *Bhagandara* (fistula-in-ano) can be traced back to *Charaka Samhita* under *Shotha Chikitsa*. *Acharya Sushruta* emphasized its use for *Nadivrana* (sinus), *Bhagandara*, and *Arbuda* (tumour).

Chakrapanidutta later provided detailed preparation methods.^[6]

Preparation:^[5]

The standard *Ksharasutra* is prepared by coating a surgical linen thread (No. 20) with *Snuhi Ksheera* (latex of *Euphorbia nerrifolia*), *Apamarga Kshara* (alkali of *Achyranthes aspera*), and *Haridra* (*Curcuma longa*). The thread is stretched on hangers and initially coated with *Snuhi* latex using a gauze piece, then dried and sterilized in a *Ksharasutra* cabinet equipped with hot air and UV light. This process is repeated daily for 11 coatings of *Snuhiksheera* alone. From the 12th coating onward, the wet thread is first smeared with *Snuhiksheera* and then rolled in *Apamarga Kshara* before drying. This is repeated 7 times. The final 3 coatings involve *Snuhiksheera* and *Haridra* powder. In total, 21 coatings are applied to complete the preparation.

Mode of Action- From the outcome of these various analytical studies, it can be postulated that in *Ksharasutra*, linen thread supports the strength of ligation and weight of 21 coatings, while *Snuhi* latex acts as binding material for preserving all the properties of *Kshara*. *Ksharasutra* works by pressure effect made by ligation which creates mechanical strangulation of blood vessels and tissues which causes the pressure necrosis of the body of any swelling. *Kshara* invades into the cells of lesion till engorged tissue destruction occurs by its *Ksharanaguna* (corrosive properties). *Snuhi* latex is being proteolytic in nature, dissolves the tissue at its base. The action of turmeric powder provides the effect of bactericidal action with healing properties. All these three drugs do not contradict each other but rather support their actions by equal and desirable effect.

Limitations: It may cause pain, irritation, breakage during application, and early loss of active components when exposed to moisture.^[7]

2. KsharaPlota^[8]

KsharaPlota (medicated gauze) is a medicated gauze for cleaning and covering ulcers, especially deep, infected wounds. It is an innovative concept used for management of infected and chronic wounds and ulcers. It can be used to clean the *Vrana* (ulcers) as well as to cover the *Vrana*. It can also be used as *Varti* in those wounds or ulcers, which are very deep to clean easily. In such wounds or ulcers, *Plotavarti* (gauze wick) removes all the debris hidden inside the wounds or ulcers.

Preparation: Gauze is coated over three days with *Snuhiksheera*, *Apamarga Kshara*, and *Haridra*, dried each day in a cabinet and stored aseptically. The gauze piece of size used is 23cm in diameter, which is fixed in the double layered circular wooden ring. Gauze piece is made so tight that the coating is made uniformly. Initially on 1st day *Snuhi Ksheera* is applied over the gauze on its whole circumference with the

help of small cotton swab, hands should be gloved before smearing. The wet coated gauze with rings should be placed inside cabinet and it is dried for a day. On the 2nd day, dried gauze is again smeared with *Snuhi Ksheera* followed by *Apamargakshara* with cotton swab; let it dry in a cabinet for a day. On the 3rd day, dried gauze is smeared with *Snuhi Ksheera* followed by *Haridra* powder; let it dry for a day in cabinet. In this way a single coating of each *Snuhi Ksheera*, *Apamargakshara* and *Haridra* powder are completed and sealed in polythene packs.

Mode of Action: Acts as a debriding, antiseptic, and anti-inflammatory agent due to its herbal ingredients. The components of *KsharaPlota* work synergistically, *Snuhi Ksheera* provides antiseptic properties, *Apamargakshara* acts as a debriding agent by chemically cauterizing necrotic tissue, and *Haridra* offers anti-inflammatory and antimicrobial effects. Together, they cleanse the wound, reduce microbial load, and promote tissue regeneration.

Uses: Effective in *Dushta Vrana* (infected wounds) and chronic ulcers.

Limitations: Not suitable for sutured wounds. Requires skilled handling for consistent preparation.

3) Kshara Taila

Kshara Taila is mentioned for *StreeRoga Adhikar* in *BhartaBhaishajya Ratnakara*. As it has *Vata Kapha Shamaka*, *Tridoshagna*, having *Ushna*, *Tikshna* and *Sukshma* properties, so that it can remove the blockage by reaching up to the minute channels.^[9]

Method of preparation: For the preparation of *Apamargaksharataila*, four parts of *Tila taila* is taken in a wide mouthed stainless steel utensil and heated till fumes emerged from the oil. The *Taila* is warmed, and one part of *Kalkadravya* (paste) and sixteen parts of *Dravadravaya* (liquid substance) should be added. It should be continuously stirred on moderate heat. When the entire watery portion is evaporated (*Sneha Siddhi Lakshana*), the oil is strained in a warm condition. It is collected in a glass bottle.

Mechanism of Action : As mentioned above, *Kshara oil* is having *Katu Rasa* (Pungent), *Ushna Virya*, *Katu Vipaka*, *Tridoshaghna* mainly alleviates *Kapha Vata Dosha* and *Sukshama* properties and moreover *Saumya* in nature as mentioned in *Chakradutta*. The components have *Lekhana*, *Shodhana* and *Ropak* properties. Thus, it helps in removing the unhealthy tissues causing the obstruction causes healing with replenishment of the healthy tissue linings of the uterus and thus provides the healthy environment for conception and regulate the normal function of HPO axis as hormone work efficiently as can act on endometrial receptors.

Action of *Kshara Oil Uttara Basti* on the disorder is on both ways, local as well as systemic. In addition to that, its specific role on uterus and reproductive tract is also mentioned as uterine cleanser. These are the properties indicate towards its antiseptic as well as anti-inflammatory effects.^[10]

4) *Kshara Varti*^[11]

Varti is widely used to manage *Vrana*, and *Acharya Sushruta* has mentioned it in *Shastiupkrama* (60 therapeutic measures for wound) in *Dwivvrana Chikitsa Adhyaya* and has listed several varieties of *Varti* in the treatment of *Nadivvrana* and *Bhagandara Chikitsa* for tract *Shodhana* and *Ropana*.

Preparation of *Kshara Varti*

Kshara Varti is prepared using a combination of *Apamarga Kshara*, *Snuhi Ksheera*, and *Haridra Churna*. Sterile gauze pieces are soaked in this mixture and dried in a *Ksharasutra* cabinet under aseptic conditions. After drying, the *Kshara Vartis* are autoclaved for sterilization and stored in a pre-autoclaved glass container to maintain hygiene and prevent contamination.

Mode of Action—The caustic applied by means of *Kshara Varti* along with plain thread are capable of performing chemical fistulectomy, without creating a wide gap, which is subsequently completely filled by granulation tissue, thus preventing the formation of pus pockets or leaving behind a patent tract.

Kshara creates strangulation of blood vessels and tissue which causes the necrosis of the body of any swelling. It invades into the cells of lesion till engorged tissue destruction occurs by its *Ksharanaguna*. It performs chemical cauterization, debriding necrotic tissue and reducing pus.^[7]

Uses—It is used in *Bhagandara* (fistula-in-ano), *Nadivvrana* (sinus tracts), *Dushta Vrana* (chronic non-healing wounds) and for desloughing of wounds.

Limitations— It requires skilled preparation and application for uniformity else may cause local irritation or burning sensation due to alkaline content. It is not suitable for sutured or fresh wounds.^[12]

5) *Kshara Pichu*

Pichu is used to clean the *Vrana* as well as to absorb the *Vranasrava*. It involves the application of a gauze or cotton swab soaked in *Kshara*. This method is utilized for treating various anorectal disorders and chronic wounds.^[13]

Preparation: It is prepared using three main components: an active ingredient (*Kshara*), a binding agent, and a foundation (cloth). The process involves soaking a sterile cloth in a suitable binding agent like *Snuhi Ksheer*, *Guggulu* extract, or *Aloe vera* pulp, which helps in adhering the *Kshara* to the cloth. The *Kshara* coated cloth is dried properly and stored in a clean, moisture-free environment.

Mode of Action: the alkaline nature of *Kshara* helps in chemical debridement by breaking down necrotic tissue, reducing microbial load, and promoting granulation and healing. Ingredients like *Apamarga Kshara* and *Haridra* provide antimicrobial, anti-inflammatory, and healing effects.

Uses: It is used in chronic wounds and sinus tracts.^[14]

6) *Kshara Basti*

Kshara Basti, as described by *Chakradutta* and referenced in modern studies, is a therapeutic enema used in chronic and metabolic disorders like *Amavata*.^[15]

Preparation: Includes *Saindhava Lavana* (rock salt), *Guda* (jaggery), *Chincha*, *Shatahva*, *Gomutra*, and other herbs with *Lekhana* and *Ama-nashaka* properties.

Mode of Action: It balances *Vata-Kapha*, detoxifies *Ama*, enhances digestion, and reduces obstruction in channels.

Uses: Indicated in *Amavata*, *Medoroga*, hypothyroidism, and conditions involving *Srotorodha*.

Limitations: Avoid in debilitated individuals and pregnancy. Requires proper supervision.^[15]

Discussion

Kshara, which is one among the parasurgical procedure are used widely to treat many disorders as internally or by local application. Here the included studies showed various different preparation of *Kshara* like *Ksharasutra*, *Kshara Pichu*, *Kshara Taila*, *Kshara Varti*, *Kshara Plota* and *Kshara Basti*. These preparations are used as *Kshara* has properties like excision, incision, scraping, removes the slough present in the wounds and chemical cauterization. *Ksharasutra* which is used widely nowadays to treat *Bhagandara* because of less recurrence rate, sphincter saving procedure and performs simultaneously cutting and debridement. While *Kshara Taila Basti* is used for blocked fallopian tube, in urethral stricture due to its scrapping nature. Local application of *Kshara Taila* on wounds removes slough from the wound, reduces wound discharge and prepares wound bed. *Kshara Varti* removes unhealthy granulation from sinus or fistulous tract. While the *Paneeya Kshara* is used for *Ashmari*, *Sharkara* etc. showing better results.

All these preparations which are mentioned in various articles need proper preparation method and standardization should be done to ensure its quality and efficacy. Otherwise it won't give good results as expected. It is needed to perform by skillful surgeons specially *Uttarabasti* of *Kshara Taila* else it may cause pain, bleeding from urethra or burning sensation. Same *Kshara Karma* in haemorrhoids also needs skill to prevent the rectal mucosa and mucocutaneous junction else patient may suffer from pain, discomfort or burning sensation at anal region.

Conclusion

In most of the studies, *Kshara* is found to be beneficial either local application or orally. There is heterogeneity in the sample size in all the studies and treatment duration. Thus it is necessary to conduct the studies on large sample size and equal treatment duration to generalize the data. Also standard operative procedures should be developed for each procedure to get maximum treatment effect while standardization enhances the quality and efficacy of the drug.

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Table no. 1: Different Studies on Kshara

Sr.no	Title	Type of article	Author	year	study population	study design	Result
1.	A Comparative Study on <i>Vrikka Samrakshanatmaka</i> and <i>Ashmarighna</i> Effect of <i>TiladiKshara</i> and <i>Varunadi Ghrita</i> (Nephroprotective and Lithotriptic Effect)	Original	Mandal Asim et.al.	2008	NA	Animal	The nephroprotective properties of <i>Varunadi Ghrita</i> are mild. Nevertheless, the study was unable to establish a foundation for its applicability to the test drug's likely effectiveness in kidney stone-induced nephropathy.
2.	The Importance of <i>Ksharasutra</i> in the Management of <i>Arsha</i> (A Study of 3586 Cases)	Original	C.Bhuyan et.al.	2009	3586	Observational clinical study	According to the study's findings, <i>Ksharasutra</i> therapy is a cost-effective, safe, and successful treatment for <i>Arsha</i> . Patients are able to return to their regular activities following the surgery, which can be done under local anesthetic with little hospital stay. The treatment was a good substitute for traditional surgical techniques because of its low recurrence rate and limited complications.
3.	Efficacy of <i>KsharSutra</i> (Medicated Seton) Therapy in the Management of Fistula-in-Ano	Original	Pankaj Shrivastava et.al.	2010	60	Clinical study	According to the study's findings, fistula-in-ano can be safely and easily treated using <i>Ksharasutra</i> therapy. Anal incontinence and recurrence are remarkably minimal. Additionally, considering it is ambulatory, it is affordable and enables patients to return to work earlier.
4.	Effect of <i>MahayavanalaRomaKshar</i>	Original	Yogesh R. Vasava et.al.	2010	15	Comparative clinical study	Objective parameters including prostate size reduction and post-void residual urine volume were

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	<i>a</i> and <i>Dhanyaka Gokshura Ghrita</i> in Benign Prostatic Hyperplasia						significantly improved with MRK. Subjective symptoms such as incomplete voiding, intermittency, hesitation, and nocturia were significantly relieved by DGG. According to the study's findings, both therapies are beneficial, however DGG is better for relieving symptoms and MRK is better for improving objectives.
5.	Comparative Clinical Evaluation of <i>Ksharasutra</i> Ligation and Hemorrhoidectomy in <i>Arsha</i> (Hemorrhoids)	Original	Meva Lal Gupta et.al.	2011	61	Prospective clinical study	According to the study's findings, hemorrhoidectomy was less effective in treating <i>Arsha</i> than <i>Ksharasutra</i> ligation. Benefits for patients in the <i>Ksharasutra</i> group included shorter hospital stays, no bleeding during or after the procedure, no postoperative anal stenosis, cost-effectiveness, and increased acceptability. During the follow-up period, no negative effects were seen.
6.	A Comparative Clinical Trial of <i>Chincha Kshara</i> and <i>Kadali Kshara</i> on <i>Amlapitta</i>	Original	Acharya S. et.al.	2011	30	Randomized, placebo-controlled clinical trial	<i>Amlapitta</i> symptoms were effectively reduced by both <i>Chincha Kshara</i> and <i>KadaliKshara</i> . Compared to <i>Kadali Kshara</i> (30%), <i>Chincha Kshara</i> had a greater cure rate (40%). Throughout the evaluation time, no negative effects were noted.
7.	A Comparative Clinical Study of <i>Snuhi Ksheera Sutra</i> , <i>Tilanala Ksharasutra</i> and <i>Apamarga Ksharasutra</i> in <i>Bhagandara</i> (Fistula in Ano)	Original	Supreeth et.al.	2012	33	Randomized clinical trial	The <i>SnuhiKsheerasutra</i> has the shortest Unit Cutting Time (UCT) of 7.42 days; it is appropriate for instances with recurring fibrosis, but it is linked to burning after surgery and the development of an abscess. <i>ApamargaKsharasutra</i> can be replaced with <i>TilanalaKsharasutra</i> , which has the highest UCT of 9.76 days, no postoperative problems, and good pain relief. <i>Apamarga Ksharasutra</i> : Effective in lowering pain, discharge, edema, and wound size; standard treatment with UCT lasts 8.82 days. Overall efficacy did not differ significantly between the three groups, and no recurrence was noted at the three-month follow-up.
8.	Effect of <i>Kshara Basti</i> and <i>NirgundiGhana Vati</i> on <i>Amavata</i> (Rheumatoid Arthritis)	Original	Krishna Thanki et.al.	2012	45	Clinical study	ESR, RA factor (quantitative), and <i>Amavata</i> symptoms all showed statistically significant improvements, according to the study. Of the patients, 40% had moderate improvement, 35.56% had notable improvement, and 24.44% had modest

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							improvement.
9.	<i>Ksharasutra</i> Therapy – A Minimal Invasive Parasurgical Method in the Treatment of Sacrococcygeal Pilonidal Sinus (<i>Nadivrana</i>): Result of a Pilot Study	Original	Dr. Rakesh Rana	2012	20	Pilot Study	The study showed that <i>Ksharasutra</i> therapy is a minimally invasive, safe, and successful treatment for pilonidal sinus. The average healing period was 10.8 weeks, and there were only few complications—just one wound infection case (5%) and one recurrence (5%) were noted. Patient compliance and cost-effectiveness were highlighted by the procedure's low time off work (average of one day) and lack of inpatient requirements.
10.	Outcomes of Ayurvedic Parasurgical Intervention in Ten Cases of Pilonidal Sinus – A Retrospective Case Series	Original	Sujithra Ram Manohar et.al.	2012	10	Retrospective case series	Complete healing from <i>Ksharasutra</i> therapy took 42–133 days; elderly patients and those who had already undergone surgery had extended recovery times. In 14 days, the one patient who had <i>Ksharavarti</i> treatment recovered. According to the study's findings, pilonidal sinus can be effectively treated with Ayurvedic parasurgical techniques with little side effects.
11.	Management of hypothyroidism by <i>Kshara Basti</i> (therapeutic enema)	Case report	Thanki K. et.al.	2012	1	Case report	showed a substantial improvement in clinical symptoms and a decrease in serum TSH levels in a hypothyroid patient after receiving <i>Kshara Basti</i> therapy.
12.	Management of <i>Mutrashmari</i> (urolithiasis) with <i>Palasha Kshara</i> and <i>Ashmarihara Kwatha</i> : An open-labelled placebo-controlled clinical trial	Original research	Kumari, M.et.al.	2012	39	Open-labelled, Placebo-controlled Clinical Trial	Patients with urolithiasis responded significantly better to treatment with <i>Palasha Kshara</i> and <i>Ashmarihara Kwatha</i> than to a placebo, indicating that these remedies are useful for treating urinary stones.
13.	Anal fistula with foot extension—Treated by <i>Ksharasutra</i> (medicated seton) therapy: A rare case report	Case report	P. Bhat Ramesh	2013	1	Case report	The study demonstrates that <i>Ksharasutra</i> can effectively treat large, complicated fistulous tracts with minimal surgical intervention and no recurrence.
14.	Role of <i>Nishadi Taila</i> in the Management of Fistula-in-Ano	Original	Dr. ShivaleelaM allappanavar	2013	30	Clinical trial	According to the study's findings, <i>Nishadi Taila Poorana</i> is a quick, easy, and safe treatment for fistula-in-ano that results in complete healing without any adverse effects. Patients tolerated the treatment well, and it showed notable effectiveness in treating the condition.
15.	Role of <i>Ksharasutra</i>	Original	Dudhamal	2013	50	Clinical	The study showed that chronic fissure-in-ano

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	Suturing Along with Adjuvant Therapy in the Management of <i>Parikartika</i> (Chronic Fissure-in-Ano)		T.S. et.al.				<i>(Parikartika)</i> could be effectively treated with <i>Ksharasutra</i> suturing when combined with adjuvant Ayurvedic therapy. Patients experienced significant reduction in symptoms without any adverse reactions, indicating that this approach could serve as a reliable and effective treatment.
16.	Effect of <i>Madhu-Ksharasutra</i> in the Management of Bhagandara (Fistula-in-Ano)	Original	Gopi Krishna B.J.et.al.	2013	40	Comparative clinical study	There was significant healing in both groups. Group A's average unit cutting time (UCT) was 8.67 days/cm, while Group B's was 9.35 days/cm. Group B had superior granulation tissue development and reduced postoperative pain. <i>Madhu-Ksharasutra</i> is a safe, efficient, and patient-friendly counterpart for the conventional approach, according to the study's findings.
17.	Comparative Study of <i>Apamarga Pratisaraneeya Kshara</i> and <i>Palasha Pratisaraneeya Kshara</i> in the Management of <i>Ardra Arsha</i>	Original	Avnish Pathak et.al.	2013	30	Randomized clinical study	Pain, bleeding, burning sensations, and the size of the pile mass were all significantly reduced in both groups. However, after 15 days, Group-AP (<i>Apamarga Kshara</i>) demonstrated improved results, with 100% reduction from pain, bleeding, and sloughing along with a complete reduction in pile mass size. There were no reported adverse effects.
18.	Clinical Study of <i>Yavaksharadi Yoga</i> in the Management of <i>Mutrashmari</i> (Urolithiasis)	Original	Sheshashaye B. et.al.	2013	60	Clinical	According to the study's outcomes, <i>Yavaksharadi Yoga</i> significantly reduced the symptoms of <i>Mutrashmari</i> (urolithiasis) and allowed urinary calculi disintegrate and be excreted. It emerged that the treatment was easily accessible, safe, and economical.
19.	Clinical Evaluation of <i>Apamarga KsharatailaUttarabasti</i> in the Management of Urethral Stricture	Original	K. Rajeshwar Reddy	2013	60	Clinical	According to the study's findings, <i>Apamarga Ksharataila Uttarabasti</i> significantly reduced symptoms of urethral stricture, including restricted urine flow, straining, dribbling, and delayed micturition. With a decreased risk of recurrence in the <i>Uttarabasti</i> group, the outcomes were similar to those of urethral dilatation.
20.	Clinical Effect of Lord's Anal Dilatation and <i>Ksharasutra</i> Suturing in <i>Parikartika</i> w.s.r. to Chronic Fissure-in-Ano	Original	Tukaram Sambhaji Dudhamal et.al.	2013	100	Randomized controlled clinical trial	In comparison to KSS alone (Group A), the study found that combining Lord's anal dilatation with <i>Ksharasutra</i> suturing (Group B) produced better wound healing, earlier bleeding cessation, and decreased pain. Compared to 86% of patients in Group A, 100% of patients in Group B reported

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							feeling less pain on the fourteenth day. Compared to 69% in Group A, 85% in Group B had fully recovered by the 21st day. 68% of patients were cured overall, with Group B showing better results.
21.	A Comparative Study of <i>Ksharsutra</i> Ligation and Electro-Thermal Cautery in the Management of <i>Arsha</i> w.s.r. to Sentinel Piles	Original	Anant Kumar V. et.al.	2013	60	Randomized clinical study	Pain, bleeding, and edema were all considerably reduced by both therapies. It was found that <i>Ksharasutra</i> ligation was just as successful as electro-thermal cautery, with the added advantages of less tissue loss and lower recurrence rates.
22.	A Comparative Clinical Study on the Efficacy of <i>Apamarga</i> and <i>PalashaPratisaraneeyaKshara</i> in <i>Arshas</i>	Original	Avnish Pathak, P. Hemantha Kumar	2013	30	Comparative clinical study	The management of <i>Ardra Arsha</i> (internal hemorrhoids) was effective with both therapies. Compared to <i>Palasha Kshara</i> , <i>Apamarga Kshara</i> offered superior pain, bleeding, slough, and pile mass size decrease reduction. In both groups, all 15 cases had significant results.
23.	Comparative Study of <i>Ksharasutra</i> Suturing and Lord's Anal Dilatation in the Management of <i>Parikartika</i> (Chronic Fissure-in-Ano)	Original	Tukaram S. Dudhamal et.al.	2014	100	RCT	Compared to Group A, Group B (Lord's Anal Dilatation + KSS) showed greater rates of wound healing (85% by day 21), earlier cessation of bleeding (82% by day 7), and faster reduction in pain (100% by day 14). The study found that an effective way to treat chronic fissure-in-ano is to combine Lord's Anal Dilatation with <i>Ksharasutra</i> Suturing.
24.	Role of <i>Palasha</i> (<i>Butea monosperma</i>) <i>Kshara</i> in the Management of <i>Dusta Vrana</i> (Chronic Ulcers) with Special Reference to Infected Wound	Original	Gupta S., Gupta S. J., Singh S. K.	2014	30	Clinical	According to the study's results, <i>Palash Kshara</i> is a debriding agent that effectively reduces slough tissue, discharge, and pain in infected wounds. Additionally, it enhanced granulation tissue production and wound bed preparation without causing any adverse effects, suggesting that it might be a reliable and effective therapy for chronic ulcers.
25.	Subcutaneous Intralesional <i>Ksharodaka</i> Injection: A Novel Treatment for the Management of Warts: A Case Series	Original	Manohar S. Gundeti et.al.	2014	04	Case series	The treatment of several kinds of warts with intralesional infiltration of <i>ApamargaKsharodaka</i> (<i>Apamarga Kshara</i> aqueous solution) is described in this case series. Within two to six days after injection, the warts disappeared, leaving just little scars. There were no adverse effects, indicating that this technique is a quick, minimally invasive, and successful alternate for classic wart treatments.
26.	Controlled Clinical Study of Herbal Sclerosant	Original	K. Rajeshwar	2014	100	RCT	According to the study, <i>ApamargaKshara</i> injections significantly reduced symptoms including

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	Injection of <i>Apamarga Kshara</i> on Internal Haemorrhoids (I° & II°)		Reddy et.al.				discomfort, discharge, and rectal bleeding. Compared to Group B (20%), Group A had a better recovery rate (42%). <i>ApamargaKshara</i> injection appears to be a safe and efficient substitute treatment for internal hemorrhoids, since no side effects or systemic toxicity were noted.
27.	Effect of <i>ApamargaKsharaTailaUttarabasti</i> in the Management of Infertility w.s.r Tubal-blockage	Original	Rajput Shivshankar A.et.al.	2015	18	Single-Arm Clinical Trial	75% of patients who received treatment with <i>Apamarga Kshara Taila Uttarabasti</i> had their tubal blockage removed, and 25% of them got conceived within two months, indicating that the medication is successful in treating tubal infertility.
28.	Efficacy of <i>Yavakshara Taila Uttarabasti</i> in the Management of Fallopian Tube Blockage	Original	Baira H.et.al.	2015	19	Clinical	In 68.75% of patients, tubal patency was attained, and 6.25% of cases resulted in pregnancy. <i>Yavakshara Taila Uttarabasti</i> is a safe and potentially successful Ayurvedic treatment for fallopian tube obstruction, since no adverse reactions have been observed.
29.	Comparative Study of the Application of <i>ApamargaKsharasutra</i> with Anal Dilatation in the Management of <i>Guda-Parikartika</i>	Original	Dr. Rajesh Gupta et.al.	2015	100	RCT	Tubal patency was achieved in 68.75% of patients, and pregnancy occurred in 6.25% of instances. Since no adverse reactions have been noted, <i>Yavakshara Taila Uttarabasti</i> is a safe and potentially effective Ayurvedic therapy for fallopian tube occlusion.
30.	Clinical Efficacy of <i>Apamarga Kshara Yoga</i> in the Management of <i>Shvitra</i> (Vitiligo)	Original	Hasmukh R. Jadav et.al.	2015	50	RCT	In 68.75% of patients, tubal patency was attained, and 6.25% of cases resulted in conception. <i>Yavakshara Taila Uttarabasti</i> is a safe and potentially beneficial Ayurvedic treatment for fallopian tube obstruction because no adverse effects have been reported.
31.	Role of <i>KsharVarti</i> in Fistula in Ano Patient	Original	Jaiswal Sunil Kumar, & Prof.M.Sahu	2017	40	Clinical	The Mean Unit The two groups' cutting times were nearly identical, but the significant benefit came from the perspective of burning and discomfort. Compared to patients treated with <i>GugguluKsharasutra</i> , those treated with <i>Kshar Varti</i> along with plain thread experienced less pain and burning.
32.	<i>Kshara Pichu</i> – A Non-Invasive Approach in <i>Shalyaja Nadvirana</i> (Chronic Post-	Case study	Shailaja S.V., Arpitha H.R.	2017	1	Case report	For patients with stitch sinus, the <i>Kshara Pichu</i> therapy, a novel medication delivery technique that is ideal for sinus track repair, provides an efficient, safe, and ambulatory substitute.

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	Laparoscopic Paraumbilical Hernioplasty Sinus)						
33.	Comparative Clinical Study of <i>Apamarga Kshara</i> Application, Infrared Coagulation and <i>Arshohara Vati</i> in the Management of <i>Arsha</i> (1st and 2nd Degree Hemorrhoids)	Original	Komang Sudarmi et.al.	2017	30	Open-label, prospective, interventional clinical study	The study found that using <i>Apamarga Kshara</i> was the most effective way to treat first- and second-degree internal hemorrhoids, with an 80% full remission rate. The complete remission rates for the IRC and <i>Arshohara Vati</i> groups were 20% and 30%, respectively. With no negative side effects, <i>ApamargaKshara</i> showed effectiveness in lowering bleeding, discomfort, prolapse, and discharge.
34.	Effect of <i>Erandapatrakshara</i> (<i>Ricinus communis</i> Linn.) along with Hingu (<i>Ferula narthex</i> Linn.) in Dyslipidemia	Original	Sreekutty Jayan et.al.	2017	33	Clinical	Triglycerides, LDL, non-HDL cholesterol, and total cholesterol were all considerably lowered by the therapy. There was no obvious effect on HDL or VLDL levels. The lack of side effects suggests that the treatment is safe and may be effective in controlling dyslipidemia.
35.	Comparative Clinical Study of <i>Guggulu</i> -based <i>Ksharasutra</i> in <i>Bhagandara</i> (Fistula-in-Ano) with or without Partial Fistulectomy	Original	Rakesh Kumar Meena et.al.	2018	42	Prospective, randomized clinical study	Symptoms including pain, discharge, and itching significantly improved in both groups. Group A's mean Unit Cutting Time (UCT) was 8.85 days/cm, whereas Group B's was 8.19 days/cm. During the follow-up period, no side effects or recurrences were noted. The study found that <i>Guggulu</i> -based <i>Ksharasutra</i> treatment after partial fistulectomy is more successful than <i>Ksharasutra</i> application alone in treating <i>Bhagandara</i> .
36.	Efficacy of <i>Apamarga Kshara</i> Application and Sclerotherapy in the Management of <i>Arsha</i> (1st and 2nd Degree Piles) – An Open-Labeled, Randomized, Controlled Clinical Trial	Original	Bijendra Shah et.al.	2018	50	Open-labeled, randomized, controlled clinical trial	When compared to sclerotherapy, <i>Apamarga Kshara</i> treatment showed an earlier reduction in prolapse and bleeding. The <i>Kshara</i> group demonstrated 100% improvement in prolapse by the 28th day, whereas the sclerotherapy group showed 92% improvement. While both therapies were successful, <i>Apamarga Kshara</i> was more successful in treating internal hemorrhoids of the first and second degrees.
37.	Evaluation of Three Different Types <i>Ksharasutra</i> Ligation in <i>ArshaRoga</i> (Hemorrhoids)	Original	Saxena Varsha et.al.	2018	33	Comparative clinical study	According to the study, the <i>UdumbarKsharasutra</i> group had the fastest average healing time (6.55 ± 1.12 days), the lowest discharge rate (72.7%), and the least amount of pain (81.8%). The <i>Snuhi</i> group required a longer time to recover (7.27 ± 1.10 days),

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							whereas the <i>Guggulu</i> group took 7.18 ± 1.16 days. While all forms of <i>Ksharasutra</i> were beneficial, patients found the <i>Udumbar</i> version to be the most pleasant and effective.
38.	Study on Bacteriology and Histopathology of the <i>Guggulu</i> -based <i>Ksharasutra</i> in the Management of Fistula-in-Ano	Original	Rakesh Kumar Meena et.al.	2018	42	RCT	In contrast to <i>Guggulu</i> -based <i>Ksharasutra</i> alone (Group A), the study found that partial fistulectomy followed by <i>Guggulu</i> -based <i>Ksharasutra</i> application (Group B) offered superior relief in symptoms like pain, discharge, itching, and swelling. Group B's mean Unit Cutting Time (UCT) was lower than Group A's (8.85 days/cm), suggesting a more effective healing process. In the treatment of fistula-in-ano, this study demonstrates the increased effectiveness of combining partial fistulectomy with <i>Guggulu</i> -based <i>Ksharasutra</i> therapy, providing better patient results.
39.	Ayurvedic Management of <i>Arsha</i> with <i>ApamargaKshara Taila</i> : A Randomized Controlled Clinical Study	Original	Laxmikant SD et.al.	2018	60	RCT	The management of <i>Arsha</i> (piles) was successful with both therapies. The study found that <i>Apamarga Kshara Taila</i> (AKT) is a safe and effective substitute for the traditional <i>ApamargaKsharasutra</i> (AKS) treatment.
40.	Use of <i>Kshara Varti</i> in Desloughing of Wound	Original	Vilas Kedar et.al.	2018	20	Observational Study	<i>Kshar Varti</i> , which is made with <i>Apamarga Kshara</i> , <i>Snuhi Ksheer</i> , and <i>Haridra Churna</i> , affects patients' wound healing. Desloughing takes one to three days on average, and <i>KsharaVarti</i> is a powerful desloughing agent.
41.	<i>Apamarga Ksharasutra</i> Application and Open Lateral Internal Sphincterotomy in the Management of <i>Parikartika</i> (Chronic Fissure-in-Ano): A Randomized Controlled Clinical Trial	Original	Hetal L. Nakrani et.al.	2019	30	RCT	The management of <i>Parikartika</i> significantly improved with both medications. In contrast to <i>Apamarga Ksharasutra</i> , OLIS showed greater relief from postoperative pain, hemorrhage, edema, and wound healing. Although there was no statistically significant difference between the groups, OLIS had superior overall outcomes.
42.	Study of the Efficacy of <i>Ksharaplota</i> in <i>Dushtavrana</i> w.s.r to Infected Wound	Original	Anantkumar V. et.al.	2020	438	RCT	The management of <i>Parikartika</i> significantly improved with both medications. In contrast to <i>Apamarga Ksharasutra</i> , OLIS showed greater relief from postoperative pain, hemorrhage, edema, and wound healing. Although there was no statistically

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							significant difference between the groups, OLIS had superior overall outcomes.
43.	Management of juvenile spondyloarthropathy through Ayurveda	Original	Verma J. et.al.	2020	1	Case report	Following therapy with <i>KsharaBasti</i> and other Ayurvedic therapies, a patient with juvenile spondyloarthropathy experienced a full remission of symptoms and did not experience a recur during a three-year follow-up.
44.	<i>Kshara</i> (Alkali) in the Prevention and Treatment of Coronavirus Disease 2019: An Ayurvedic Specialized Pharmacotherapy w.s.r. to the Traditional Diet of Northeast India	Narrative review	Binay Sen et.al.	2020	NA	Narrative review	According to the study, traditional dietary alkalis like Kolakhar from Northeast India and <i>Kshara</i> , an alkaline substance made from herbs like <i>Ashwagandha</i> , <i>Tulasi</i> , and <i>Pippali</i> , may be used as pharmacotherapeutic agents and dietary adjuvants in the prevention and treatment of COVID-19. It is hypothesized that the alkaline environment has beneficial effects on immunological, antiviral, and inflammatory processes.
45.	Efficacy of <i>Guggulu</i> and <i>Shallaki</i> Based <i>Ksharasutra</i> with <i>Triphala Guggulu</i> Orally in the Management of <i>Bhagandara</i> w.s.r. to Fistula-in-Ano: An Open Labelled Randomized Comparative Clinical Study	Original	Bijendra Shah et.al.	2020	46	Open-labelled, randomized comparative clinical study	With a mean Unit Cutting Time (UCT) of 8.43 days/cm, <i>Shallaki</i> -based <i>Ksharasutra</i> (Group C) showed the most effective fistulous tract cutting. The UCT for <i>Guggulu</i> -based <i>Ksharasutra</i> with <i>Triphala Guggulu</i> (Group B) was 8.59 days/cm, whereas the UCT for <i>Guggulu</i> -based <i>Ksharasutra</i> alone (Group A) was 8.94 days/cm. Group A experienced a greater degree of pain alleviation. Pain, drainage, and edema were all statistically significantly improved in all groups.
46.	Wound healing effect of <i>Apamarga Kshara Taila</i> and adjuvant drugs in the management of Diabetic Foot Ulcer - A Case Report	Original	Joshi Foram et.al.	2020	1	Case report	Over the course of 50 days, <i>Apamarga Kshara Taila</i> and adjuvant Ayurvedic treatments were used to successfully cure a persistent diabetic foot ulcer.
47.	Successful management of Cervical Erosion through <i>Kshara Karma</i> - A Case Report	Original	Nanda KO et.al.	2021	1	Case report	In cases of cervical erosion, <i>SnuhiKshara</i> (<i>Euphorbia nerifolia</i>) cauterization showed greater epithelization and symptom alleviation than electric cautery.
48.	IFTAK technique: An advanced <i>Ksharsutra</i> technique for management of fistula in ano	Case report	Rahul Sherkhane et.al.	2021	1	Case report	Trans sphincteric fistula in ano is treated with the IFTAK (Interception of Fistulous tract and application of <i>Ksharsutra</i>) approach, which has demonstrated significant management potential by reducing treatment duration, lowering post-

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							procedural discomfort, and minimizing scarring.
49.	Clinical Study of <i>Snuhi Ksharasutra</i> and Its Role in Management of <i>Bhagandara</i> (Fistula-in-Ano)	Original	Kumari Nidhi Shree Bibhuti et.al.	2021	20	Comparative clinical study	With statistically significant improvements in both subjective (pain, itching) and objective (swelling, discharge, unit cutting time) metrics, <i>Snuhi Ksharasutra</i> outperformed <i>ApamargaKsharasutra</i> in the treatment of <i>Bhagandara</i> .
50.	Role of <i>Patala Kshara</i> and <i>Gokshuradi Choorna</i> in Renal Calculi – A Clinical Study	Original	Rabinarayan Tripathy et.al.	2021	30	clinical trial	According to the study's findings, renal calculi may be effectively disintegrate and expelled with <i>Palasha Kshara</i> and <i>GokshuradiChoorna</i> . Pain, dysuria, calculi size and quantity ($P < 0.000$), haematuria ($P < 0.046$), burning micturition, and increased frequency of micturition ($P < 0.008$) were all significantly reduced. There were no documented side effects, demonstrating the safety and effectiveness of the therapy.
51.	Management of <i>Mutrashmari</i> (urolithiasis) with <i>Palasha Kshara</i> and <i>Ashmarihara Kwatha</i> : An open-labelled placebo-controlled clinical trial	Original	Monika Kumari et.al.	2022	39	Open-labelled, placebo-controlled clinical trial	The study found that in treatment of <i>Mutrashmari</i> (urolithiasis), <i>Palasha Kshara</i> combined with <i>Ashmarihara Kwatha</i> works better than a placebo. In comparison to the placebo group, patients in the treatment group saw greater rates of total symptom remission and notable improvement from symptoms including pain and increased frequency of micturition.
52.	Efficacy of <i>Ksharasutra</i> Prepared Through Automated Machine and Manual Process in Fistula-in-Ano: A Study Protocol for a Double-Blind, Randomized Controlled Trial	Original	Amit Kumar Rai et.al.	2022	100	RCT	The purpose of the study is to evaluate the effectiveness and safety of machine-prepared <i>Ksharasutra</i> in comparison to the manual method. Unit cutting time (UCT), full healing rates, adverse event occurrence, and quality of life (as measured by the SF-36) are the main outcomes.
53.	The efficacy of <i>Ksharasutra</i> , Fistulectomy, and Ligation of Intersphincteric Fistula Tract (LIFT) procedure in management of Fistula in ano: a prospective observational study	Original	HariPrasad C.P.et al.	2023	60	Prospective Observational Study	In 60 patients with fistula-in-ano, the results of <i>Ksharasutra</i> , fistulectomy, and LIFT treatments were compared. Recurrence rates at the 18-month follow-up were 15% for LIFT, 20% for fistulectomy, and 45% with <i>Ksharasutra</i> . In comparison to LIFT, the <i>Ksharasutra</i> and Fistulectomy groups experienced more postoperative discomfort and hemorrhage. Although variations in recurrence rates were not statistically significant, the study found that LIFT

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							had reduced postoperative morbidity.
54.	Managing endometrial calcifications using <i>Kshara Taila</i> and <i>Phalaghrita Uttara Basti</i> : A case report	Original	Pratibha Mehra et.al.	2023	1	Case report	Endometrial calcifications were resolved by Ayurvedic treatment with <i>Kshara Taila</i> and <i>Phalaghrita Uttara Basti</i> , improving menstrual health and fertility.
55.	Interception of Fistulous Tract and Application of <i>Ksharasutra</i> : Boon for Anal Fistulae with Scrotal Extension: A Case Series	Original	Nasreen Hanifa et.al.	2023	3	Case series	Two of the three patients recovered fully in five weeks, and one in six. There were no reports of incontinence or recurrence. In treating complicated anal fistulae with scrotal extension, the IFTAK method showed encouraging results, indicating its potential as a successful therapeutic approach.
56.	Evaluation of Comparative Efficacy of <i>Ksharasutra</i> Prepared by <i>Arka Ksheera</i> and <i>SnuhiKsheera</i> (as an Adhesive Media) with Standard <i>Ksharasutra</i> in the Management of <i>Bhagandara</i> (Fistula-in-Ano)	Original	Dr. Ganapathi Rao I. et.al.	2023	30	Comparative clinical study	According to the study, there was no discernible difference in healing time or patient comfort between <i>Ksharasutra</i> made with <i>Arka Ksheera</i> and the conventional <i>ApamargaKsharasutra</i> . <i>Ksharasutra</i> based on <i>Snuhi Ksheera</i> demonstrated a little quicker cutting time, but it was linked to more pain. In general, <i>Arka Ksheera</i> -based <i>Ksharasutra</i> was seen as an effective replacement for <i>Bhagandara</i> 's management.
57.	A Review Article on Utility of <i>Paneeya Kshara</i> in Surgical Diseases	Review	Shivalingappa J Arakeri et.al.	2023	-	Review study	A study of the literature about the use of <i>Paneeya Kshara</i> to cure surgical conditions such as <i>Ashmari</i> (urinary calculi), <i>Mutraghata</i> (BPH), Cholelithiasis, <i>Amlapitta</i> , Fibroids, PCOS, and UTI
58.	The Efficacy of <i>Ksharasutra</i> , Fistulectomy, and Ligation of Intersphincteric Fistula Tract (LIFT) Procedure in the Management of Fistula-in-Ano: A Prospective Observational Study	Original	Chinniahnapalaya Pandurangiah Hariprasad et.al.	2023	60	Prospective Observational Study	Recurrence rates increased over time in all three procedures, with LIFT showing the lowest recurrence and <i>Ksharasutra</i> the highest, though differences were not statistically significant. LIFT was associated with significantly less postoperative pain, bleeding, and overall morbidity compared to fistulectomy and <i>Ksharasutra</i> , indicating better short-term postoperative outcomes.
59.	Effective Ayurvedic Treatment of Pilonidal Sinus using <i>Udumbar Ksheer Sutra</i>	Original	Harshadkumar Prajapati et.al.	2024	1	Case report	<i>Udumbar Ksheer Sutra</i> was successfully used to cure a patient with pilonidal sinus (<i>Naadi Vrana</i>). Based on Ayurvedic principles, the treatment produced full recovery without recurrence, demonstrating its effectiveness as a less intrusive and more affordable substitute for traditional surgical techniques.
60.	A Comparative Evaluation	Original	Monali	2024	60	Comparative	Gram-positive monomicrobial infections, particularly

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	of Antimicrobial Effect of <i>Snuhi-Apamarg-Ksharasutra</i> and <i>Udumbara-Ksheer Sutra</i> in the Management of <i>Bhagandara</i> (Fistula-In-Ano)		Mohite et.al.			clinical study	those involving staphylococci, were shown to be more prevalent. Because bacteria were extremely sensitive to <i>Snuhi-Apamarga Ksharasutra</i> , it was shown to be more effective than <i>Udumbara-Ksheer Sutra</i> in culture and sensitivity testing. The various constituents of <i>Snuhi-Apamarg Ksharasutra</i> are responsible for this increased effectiveness.
61.	Minimal Invasive <i>Ksharasutra</i> Technique (MIKST) for the Treatment of Trans-Sphincteric Anal Fistula – A Single-Center Retrospective Study in India	Original	P. Hemantha Kumar et.al.	2025	215	Retrospective Cohort Study	A mean operational time of 15.3 ± 2.76 minutes and a hospital stay of 2.16 ± 0.37 days were reported by the research, which assessed 215 patients undergoing MIKST. With an average of 2.55 ± 0.81 <i>Ksharasutra</i> sessions, postoperative pain was minimal (VAS score: 1.16 ± 0.86). The unit cutting time was 5.29 ± 1.29 days/cm, and full healing occurred in 4.23 ± 0.69 weeks. MIKST is an efficient and minimally invasive treatment option for trans-sphincteric anal fistulas; just one recurrence was seen after six months, and no occurrences of anal incontinence were recorded over a 12-month follow-up.