Critical Review on *Ksharaplota* and its Therapeutic Aspects

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**ABSTRACT**

*Kshara* is a very important therapeutic approach of Ayurveda *ShalyaTantra* with minimal invasion. The utilization of *Kshara* contributes significantly towards the management of ulcer and wound. *Kshara* application may be two types: Pratisarneeya and Paaneeya. *Ksharaplota* is one of the Pratisarneeya type parasurgical methods of Ayurveda involving use of *Kshara* to treat various anorectal disorders. *Ksharaplota* not only clean wound but also covers it and removes debris. *Ksharaplota* is safe, economic and easy to use for the management of fistula-in-ano & hemorrhoids, etc. The aim of this review article is to summarize all aspects of *Ksharaplota* therapy to explore therapy for upcoming researchers.

**Keywords:** Infected wound, Vrana-Shodhana, Ksharaplota, Dushta Vrana, Alkaline Medicated Gauze.

**INTRODUCTION**

Wound (*Vrana*) and ulcer are health related problems characterized by foul smell, unusual color of skin, continuous discharge, and severe pain, burning sensation and embracing to the patient. The management of such condition may be done by various surgical/para-surgical modalities of Ayurveda including Pichu, Plota & Kwawalika. Plota of *Kshara* termed as *Ksharaplota* is superior to others since it cover and remove wound effectively.1,5 this approach reduces psychological fear of patient associated with surgical debridement and pain.3,5

The materials used for the *Ksharaplota* preparation obtained naturally from plants such as; *Snuhikshira* (milk of *Euphorbia nerifolia* Linn.), *Apamargakshara* (ash of *Achyranthes aspera* L.) and *Haridra* (*Curcuma longa* L.). Single coatings of these drugs were used to prepare medicated gauze (*Plota*). The ingredient of *Ksharaplota* imparts required characteristic properties such as; *Vrana Shodhana* & *Vrana Ropana* to the formulation which helps in the management of *Vrana*.6–12

**Historical Review of Kshara:**

Vedas are the oldest literature to serve quality life for mankind on this earth. *Vedic* texts described various medicinal plants, organic compounds, equipment and methodology for health related issue but in *Vedic* literature description of *Kshara* is not available. *Upnishad* mentioned uses of *Kshara* but description about its preparation, characteristic and other related information is not available. *Puranas* classified *Kshara* into Paniya and Pratisaraniya, indicated for numbers of pathological conditions. *Bruhatri* and *Laghutri Samhitay* only *Sushruta* explained special and detail description regarding *Kshara* and its different treatment modalities. *Acharya Sushruta* explained *Kshara* as *Anushstra*, *Upanyantra*, *Agropahara* & *Upakrama*. According to *Acharya Harita*, *Kshara* is categorized under eight important types of treatment modalities. *Acharya Charaka* explained different principles regarding *Kshara* in *Sutra Sthana*, *Vimanasthana* and *Chikitsa Sthana* and also

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**Figure 1:** Formulation of *Kshara* (Para-surgical) management for *Vrana* and cuts.
explained Kshara as "Shastra Pranidhahaana". Commentator of Sushruta Samhitta, Acharya Dalhana explained meaning of Ksharan as "mobilization and removal of deformed flesh, unhealthy skin, secretions, toxins and loculi along with vitiated Doshas of that place".

The Ancient Acharya Quote on Kshara Therapy:

Etymology:
The term Kshara is derived from two roots Chhana and Chhar which means Satan or Destroyer because of its ability to wipe out unhealthy tissues from the body. Amarakosha denoted term Kshara as 'Kachi' which means Sanschaalana (movement). The word Kshara may be considered as Spandana, Himsa and Ksharana.

Definition:
Acharya Sushrutha defines Kshara as substance having Ksharan and Kshanan properties which means to melt away and to destroying the lesion respectively. Ksharana term elaborated as mobilizing and removing deformed skin, flesh and pacifying vitiated Doshas. Dalhana mentioned Ksharan as Shodhan and Kshapana as Paniya Kshara; means destruction of deformed skin and flesh etc. Acharya Charaka defines Kshara as scraping abnormal tissue and drags it down by dissolving due to its corrosive nature. The modern literatures of Ayurveda also considered Ksharas alkali having hot, piercing and scraping properties. Ksharalepa (application of alkalies) and ligature with Ksharasutra (threading with alkali) described by different text of Ayurveda science in the management of Bhagandara and sinsuses.

Kshara Varga:
1. Kshara Dvaya:
   - Svarjikshara and Yavakshara.
2. Kshara Traya:
   - Svarjikshara, Yavakshara and Suhaga.
3. Kshara Panchaka:
   - Mushakshara, Yavakshara, Palashkshara, Svarjikshara and Tilakshara.
4. Kshara Shashtaka:
   - Tila, Palaasha, Vachaa, Apamarga, Kutaja and Mushkaka.
5. Kshara Saptaka:
   - Svarji, Yava, Tankana, Svarchika, Palaasha, Gaurya and Shikhari.
6. Kshara Ashtaka:
   - Sudhha, Palaasha, Apamargag, Chinchaa, Arka, Tila, Swarji and Yava.
7. Kshara Doshaka:

Classification
Ksharaplota is an external therapy, may be classified based on its potency i.e.; Mridu (mild), Madhya (moderate) and Tikshna (intense). The classification based on origin having three category i.e. Vanaspatsijaya (obtained from the plant sources such as; Apamarga Kshara Yava Kshara), Pranijaya (obtained from animal sources; Shankha, Kapardika, Pravala) and Khanijajanya (obtained from the mineral source; Tankan, Sarj Kshara and Surya Kshara) etc. The Kshara prepared in different season also categorized as: Uttam (prepared in Greeshma), Madhya (prepared in Sharad) and Varsha (prepared in rainy season).

Logical Consideration on Preparation of Ksharaplota

Kshara is considered as one of the most important Anushashtra (minimum surgical access) because it can possess excision, incision and scraping simultaneously. Since two decades formulation of Kshara i.e. Ksharasutra have been popularly and judiciously practicing in Bhagandara and Nadivrana throughout world in Ayurvedic as well as modern surgical era with good successive rate. Ksharasutra is also effective in Dushptavrana (infected wound) but Sutra form is difficult for local application as it takes number of thread size and potency of ingredients are weak while on other hand direct application of Kshara (Avacharanan/dusting) is again difficult due to highly irritation of the Kshara property. So keeping above disparity in mind, enlighten the new path of infected wound management with Kshara formulation i.e. Kshara Plota.

Ksharaplota is prepared by the coatings of Snuhkhirha, Apamargakshara and Haridra; these drugs offer Vrana Shodhana and Vrana Ropana properties. The release of drugs in Ksharaplota formulation is sustained release (delayed) which slowly remove unhealthy tissue. The potency of ingredients are strong due to large surface area of Plota which enhances tissue granulation so epithelialization take places to acquire normal healing effect.

Preparation of Ksharaplota

Following plant material used for the preparation of Ksharaplota:
- Snuhkhirha (Euphorbia nerifolia)
- Apamarga Kshara (Achyranthusaspera)
- Haridra powder (Curcuma longa)

The other materials are as follows:
- Gauze piece
- Wooden ring
- Cabinet
- Polythene bag

The aseptic condition should be maintained during preparation of Ksharaplota and use of hand gloves also recommended for same purpose. Round gauze piece, 23 cm in diameter is fixed in the double layered circular wooden ring. This gauze piece is made so tight that the coating can be done uniformly. Sunhkhirha 50 ml was applied on 1st day initially using cotton swab over the gauze covering whole circumference. The wet coated gauze with rings placed inside cabinet that after it dried for a day. Dried gauze again smeared with Snuhkhirha 50 ml on the 2nd day and followed by Apamargakshara (20 g) with cotton swab and allowed to dry in a cabinet for a day. Dried gauze was smeared with Snuhkhirha (50 ml) followed by Haridra powder (20 g) on the 3rd day and allowed to dry in cabinet for a day. In this way a single coating of each Snuhkhirha, Apamargakshara & Haridra powder were applied to the gauze and cut into 6 cm x 6 cm. Ksharaplota pieces and sealed in polythene packs. Ksharaplota should be placed in a cabinet under ultra-violet light for safety storage and sterilization purpose.
Precautions
1. Kshara coating require lowest humidity level.
2. Kshara coating needs to avoid during cloudy weather due to its hygroscopic nature.
3. Ksharaaplasa should be dry during packing.
4. Sealing of polythene bags should be proper to prevent entry of moisture which may destroy properties of Kshara.

**DRUG REVIEW**

**SNUHI**

**Synonyms**
Sudha, Vajradruma, Snuk, Manasasij, Kantalo, Thuhar, Sehunda, Kaikalli, Thohar, Etaikalli, Perumbu Kalli.

**Habitat**
It is distributed throughout tropical world; Apamarg grows in America, Australia, Asia and Africa.

**Classification**

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
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</thead>
<tbody>
<tr>
<td>Order</td>
<td>Caryophyllales</td>
</tr>
<tr>
<td>Family</td>
<td>Amaranthaceae</td>
</tr>
</tbody>
</table>

**Chemical Constituents:**
Resin, gum, triterpenes, betaine, hentriacontane and achyranthes. The seeds contain rhamnopyranosyl, D-glucopyranosyluronic acid, Oleanolic acid, oleanolic acid and D-glucopyranoside.

**Properties and Action**

<table>
<thead>
<tr>
<th>Rasa</th>
<th>Katu, Tikta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guna</td>
<td>Guru, Tiksna</td>
</tr>
<tr>
<td>Virya</td>
<td>Usna</td>
</tr>
<tr>
<td>Vipaka</td>
<td>Katu</td>
</tr>
<tr>
<td>Karma</td>
<td>Bhedana, Tiksnavirecana and Amakaphavatahara</td>
</tr>
</tbody>
</table>

**Formulations:** Abhaya Lavana, Citrakadi Taila, Avittoladi Bhasma, Vajrakasara

**Therapeutic Uses:**
- Used in abdominal pain.
- Used in Sotha, Gulma, Kushta, Metha and Udaraaroga.
- Used in treatment of hemorrhoids.
- It is also used for Kshara Sutra.
- Used for the treatment of obesity.
- Used for the treatment of Vrana & Kushta.

**Part Used:**
- Latex
- Stem
- Roots
- Leaves

**Pharmaceutical Action:**
- Kaphavatahara
- Dipan

**APAMARGA**

**Family Name:** Amaaranthaceae

**Latin Name:** Achyranthus aspera Linn.

**Kula:** Apamarga Kula

**Gana:** Shirovirechana, Krimighna, Vamanopag (Cha.); Arkadi (Su.)

**Synonyms:** Shikhari, Adhashalya, Kharmanjiri, Mayurak, Agata and Pratyapushpa.

**Chemical Constituent:**
The Apamarga contains sterone, oleanolic acid and glycoside from roots, Saponin A and B from seeds, two new saponins C and D and oleanolic acid based saponins from fruits also obtained. Whole plant consisted of alkaloid achyranthine and betaine, the ashes of the plant offers potash. The presence of tannin and glycosides also reported in plant.

**Properties**
- **Rasa** – Tikta, Katu
- **Virya** – Usna
- **Vipak** – Katu
- **Gana** – Laghu, Ruksha, Tikshna
- **Dosaghnata** – Kaphavatshamak, Kaphapittasanshodhak
- **Karma** – Shothahar, Vedanasthapana, Lekhana, Vishagha, Twakdosahar, Vranashodhan

**External Uses**
- Analgesic, anti-inflammatory, antidote and antiseptic, leaves are applied on inflammatory lesions, seeds applied locally in bleeding piles and juice use as haemostatic, stop bleeding from wounds.

**Internal Uses**
- The plant possesses expectorant, carminative, digestive, laxative, antihelminthic, diuretic, lithotriptic, hematinic, and demulcent and anti-inflammatory properties. It is used in bronchitis, helminthisis, leprosy, boils, pruritis, colic pain, anemia, pneumonia and gonorrhea. The Ayurvedic Pharmacopoeia of India indicates whole plant in obesity and root for blood-purifying property. Alkaline powder of the plant used in preparing Ksharsutra of Ayurvedic medicine which recommended for treating fistula in ano.

**HARIDRA**

**Synonyms**
Haridra, Kanchani, Peeta, Nisha, Varvarnini, Krimighni, Haldi, Yoshitpriya and Hattvivasini.
Classification
Order: Zingibrales
Family: Zingibraceae

Properties of Haridra
Haridra has katu, tikta as well as ushna quality. It also possesses rooksha property, it pacify kapha and pitta dosha. It also helpful in skin diseases, diabetes, oedema, anaemia and wound healing. Charak describe that Haridra offers lekhaneeya, kushthaghna and vishaghna properties.

Properties and Action
Rasa Taste: Astringent, bitter, pungent
Virya: Heating
Vipaka: Pungent
Guna: Light, dry
Dhatu: All the tissues
Srotas: Digestive, circulatory, respirator

Chemical Constituents:
Major constituent of herbs are curcumene, curidine, curcumene, cineole, eugenol, epiprocurcumenol, camphene, camphor, curcumin, beta-sitosterol and procurcumenol. The active constituents of turmeric are the flavonoid Curcuminoids composed of monodexmethoxycurcumin and bisdesmethoxycurcumin Curcumin.

Pharmacological Action
Lekhaniya: used for scraping purpose in wound.
Kushtaghna: used to treat leprosy.
Kandughna: used to treat itching.
Krimighna: used in worm infestation.

Therapeutic indication
- It is used to improve skin tone
- Used in skin disorders
- Help in diabetes & bleeding
- Treat anemia and also used for wound healing.
- Anti-inflammatory and antimicrobial properties.
- Curcuma is used as blood purifier.
- Curcuma is used in atherosclerosis.
- Used to remove toxins.
- Stomach tonic; used in various ailments of digestive system.

General Properties of Ksharaplotra:
- Tikshna
- Ushna
- Laghu

Therapeutic Properties of Ksharaplotra:

Bhedana: Opening of carbundes & sinuses.

Lekhana: Scratching of UtsannaMamsa&SthulVruttaOshtha.

Dahana: Cauterization by its chemical property.

Vilayana: Help to melt Kapha,Mansa,Meda.

Darana: This property helps to burst wounds having many openings.

VranashodhanaandRopana: These properties clean the wound and also improve healing process.

Vranaskleshana: Decrease itching of Vrana

Physico-Chemical Characteristic of Ksharaplotra

Colour: Yellowish-brownish
Odour: Aromatic
Taste: Intense alkaline
pH: Alkaline
Shape: Circular

Mode of Action of Ksharaplotra in infected wound:
Ksharaplotra offers multidimensional mechanism in healing Dustha Vrana and Plotra itself act as discharge absorbent from infected wound which help to prevent chances of recurrence. The Sunhi latex smeared onto it produces debridement of tissue through proteolytic enzymes present in it. The Apanargya Shara help to dissolves unhealthy fibrous tissues and draining out the infected contents to provide a conductive healing surface and ultimately to eradicate microorganism. The Haridra possesses anti-inflammatory, anti microbial and antioxidant activity to prevent slough formation and enhances healing process. All the ingredients of Ksharaplotra play important role simultaneously towards debridement, scraping and healing of wound.

Indications
- Sinus
- Infected wound
- Warts
- Open wound
- Ulcer
- Deep wound
- Diabetic wound to remove slough
Therapeutic action of *Ksharaplota* dressing

- It cures, drain and heal wound.
- It helps to removes unhealthy tissue.
- *Ksharaplota* dressing promotes natural healing process.
- Clean wound by separating debris.
- Reduces chances of infection due to its anti-microbial property.
- Anti-inflammatory effect of *Ksharaplota* dressing relieves pain.
- Enhance epithelialization and tissue granulation.

**Advantages of *Ksharaplota*:**

- It is non-invasive technique.
- *Ksharaplota* dressing is not sticky to the skin.
- Less adverse effects.
- Economic and easy to use.
- No psychological fear to the patient regarding therapy.
- Low recurrence rates.
- Minor cases may be managed by *Ksharaplota* dressing without hospitalization.
- Acceptance and tolerance by the patient for the *Ksharaplota* dressing is high.

**Disadvantages**

- Some allergic reactions may occur associated with caustic action.
- Cannot be used near eye, face and genital parts
- Cannot be used in sutured wound.
- Loss of hairs may observe.
- Graying of hairs may take places.
- Mild burning sensation due to prolong action.

**Contra indication of *Ksharaplota***

*Ksharaplota* contra indicated to the patient of Raktpitta, Timira, Ruksha, Moorchha, diseases occurs at the sites of Marma, Sira, Sanyu, Sandhi, Tarunasthi and Dhamani. *Ksharaplota* not indicated to the condition of edema, joint pain and internal cuts/wounds.

**Precautions**

- *Ksharaplota* is hygroscopic so coating should be avoided during rainy season.
- *Ksharaplota* coating should be done at low atmospheric humidity level.
- Polythene bags should be sealed completely.
- *Ksharaplota* should be dry during packing.
- The surface should be clean before *Ksharaplota* application.
- Hand gloves recommended during preparation and application of *Ksharaplota*.
- *Ksharaplota* dressing changed regularly when used for many days.
- Patient allergic to alkali need to care during *Ksharaplota* application.

**REFERENCES**


**DISCUSSION**

The conditions in which surgeries can’t be performed due to various reason such as; fear of surgeries or inaccessibility of that part or patient is surgically unfit then in such cases *Kshara Chikitsa* may be recommended. *Dushta Vrana* (infected wound) and other types of conditions difficult to manage owing to their high failure rate and recurrences with non surgical modalities. *Ksharaplota* able to imagination of surgeons belonging to both categories Ayurveda as well as modern surgery since it offers excellent management of such critical conditions. *Ksharaplota* has benefited many patients and it offer effective management of *Dushta Vrana* but it is logical exploration towards innovations and improvements so to maximize effectiveness and minimize undesirable effects yet to be considered. *Ksharaplota* not only capable of preventing wound infection but it also reduces the total requirement of antibiotic and enhances the process of wound healing as compared to the cases treated only by standard dressing method without *Ksharaplota*.

**CONCLUSION**

Ayurveda mentioned various approaches for the management of Vrana such as; use of Pichu, Plots, Vikeshika and Kawalika, etc. Plota (*Ksharaplota*) is one of them possesses excellent toileting and healing effect in the treatment of wound and ulcer. *Ksharaplota* is alkaline medicated gauze prepared by using *Snuhkshira* (milk of *Euphorbia neriifolia* Linn.), *Apamargakshara* (ash of *Achyranthes aspera* L.) and *Haridra* (*Curcuma longa* L.). These drugs offer Vrana Shodhana and Ropana properties in the management of *Dushta Vrana*. *Ksharaplota* cover and clean wound effectively thus can be used for deeply located wound/ulcer. Ayurveda Pharmacopeia mentioned *Kshara karma* as a tool of Shalya Tantra and *Ksharaplota* is considered superior technique of *Kshara karma* since it is safe, simple, effective and economic with minimal invasion for the management of wound and ulcer. The innovation and importance of *Ksharaplota* dressing inspired us to establish its clinical efficacy as well as to get its clues for future scope.


