A CRITICAL UNDERSTANDING OF KSHAR SUTRA AS PER AYURVEDIC CLASSICS

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ABSTRACT

Ksharasutra is a successful novel drug delivery system in managing cases of fistula-in-ano. Currently, the ksharasutra is prepared with Apamarga (Achyranthes aspera) kshara. Although this ksharasutra has been a landmark success, but naturally it has certain clinical problems like pain, burning sensation and itching associated with it. These problems can be attributed to different doshas. Ayurveda also postulates for different herbs for different individuals on basis of their constitution and doshic involvement of the clinical condition. Sushruta has enlisted 23 plants for source of kshara which have to be used together for kshara preparation. Sushruta has also laid a principle to take the practically available plants, whether all or some or even one, for preparing a formulation from the enlisted plants of a category. Therefore, there is a classical support to use one or few of the source plants for preparing kshara and a pharmacological possibility that these ksharas prepared out of different plant will behave differently. The incidence of itching in Apamarga ksharasutra is the least and this can be related to the predominant kapha shamaka action of Apamarga. Therefore, it is logical to hypothesize that kshara made out of a Vata shamaka plant may cause less incidence of pain and a kshara made out of a Pitta sha maka plant may cause less incidence of burning sensation. The article critically reviews the classical, contemporary views on kshara and its source plants, the already available information supporting the role of these plants in healing of fistula-in-a. Ksharasutra is a successful novel drug delivery system in managing cases of fistula-in-ano. Currently, the ksharasutra is prepared with Apamarga (Achyranthes aspera) kshara. Although this ksharasutra has been a landmark success, but naturally it has certain clinical problems like pain, burning sensation and itching associated with it. These problems can be attributed to different doshas. Ayurveda also postulates for different herbs for different individuals on basis of their constitution and doshic involvement of the clinical condition. Sushruta has enlisted 23 plants for source of kshara which have to be used together for kshara preparation. Sushruta has also laid a principle to take the practically available plants, whether all or some or even one, for preparing a formulation from the enlisted plants of a category. Therefore, there is a classical support to use one or few of the source plants for preparing kshara and a pharmacological possibility that these ksharas prepared out of different plant will behave differently. The incidence of itching in Apamarga ksharasutra is the least and this can be related to the predominant kapha shamaka action of Apamarga. Therefore, it is logical to hypothesize that kshara made out of a Vata shamaka plant may cause less incidence of pain and a kshara made out of a Pitta sha maka plant may cause less incidence of burning sensation. The article critically reviews the classical, contemporary views on kshara and its source plants, the already available information supporting the role of these plants in healing of fistula-in-a. The prepared kshara, snuhi ksheera (latex collected from Euphorbia neriifolia) and haridra (Curcuma longa) powder is smeared on no. 20 surgical thread. These materials are smeared on the thread as 21 coatings in following manner. Out of these twenty-one coatings eleven times smearing is done with snuhi ksheera followed by seven times with paste prepared out of snuhi ksheera and kshara and the remaining three coatings are done with paste made out of snuhi ksheera and haridra powder. Snuhi ksheera acts as a binder and since the kshara powder is an excessively hygroscopic material which can absorb moisture when left exposed to the atmosphere to become ineffective, the final three coatings of the latex and turmeric powder prevents direct contact of kshara coatings with the atmospheric air and therefore can be preserved and used for a long time. The thread is allowed to dry after each smearing and the next smearing is done after the thread is dry.

This type of ksharasutra has been found to command the maximum efficacy. Many herbal remedies individually or in combination have been recommended in various medical treatises for the cure of different diseases.
sutra is prepared by using snuhi ksheera (latex of Euphorbia nerrifolia), apamarg kshar (water extract of ashes of Achyranthus aspera plant) and haridra powder (powder of Curcuma longa). This review mainly focuses on the Ksharsutra.

KEYWORDS: Medicated Seton, shalya.

INTRODUCTION
Kshar sutra is well known medical surgical ligature used to manage the various surgical disorders. kshar sutra karma is a minimal invasive parasurgical measure used to chedan, lekhan, shodhan and ropana karma. In fistula in ano chedan karma of kshar sutra is because of its mechanical pressure and phytochemical cauterization.

HISTORICAL BACKGROUND
Brihatrayee well documented the application of ksharsutra in different surgical disorders. Ancient Indian surgeon Susruta described the word Kshar Sutra and its application into nadivran(Sinuses), bhagandara(Fistulae), arbuda(Tumours). Acarya Charak also described ksharsutra in bhagandara. Acharya Vagabhatta also followed Sushruta’s concept of kshar sutra application.But there is no description regarding the process of preparation of ksharsutra. In laghutsravrayee, only Bhavprakash has mentioned the use and method of application of ksharsutra similar to that of sushrutsra.

Later Raskamdhenu described the use of ksharasutra in different surgical disorders. But other Ras-aushdah chikitisa text has been described various type of sootra, medicated with different drugs eg. Snuhi, haridra etc. Those texts never used kshar as an ingredient of ksharsutra preparation. According to Dalhan – he mentioned the Kshar Peetain Sutrain, which means the thread concentrated with liquid kshar after dipping in it for some times. According to Chakrapani Datta - he described the technique of manufacturing the thread by smearing it with the latex of Snuhi (Euphorbia nerrifolia) and powder of Haldi (Curcuma longa) repeatedly.

Historical perspective of kshar sutra is as follow as :-
1. Charaka has described in the chapter of Sotha Cikitsa that Kshar sutra should be used with other measures in the management of Bhagandara (Ca.Ci. 12th /97).
2. Susruta mentioned its reference in Nadivrana Cikitsa.
3. Astanga Hridaya had clearly mentioned along with Sastrakarma, Agnikarma and Ksarakarma.
4. Cakradatta in his Arsdikara clearly mentioned the idea of preparation of Kshar sutra, but the usage of Kshar in the preparation of Kshar sutra has not been mentioned.
5. Sadananda Sharma in his book Rasatarangini has thrown more light on the preparation of Kshar sutra, but not clearly mentioned the usage of Kshar. He emphasized that 7 coatings of Haridra powder should be done on thread, layered by Snuhi Ksheera. He was very specific for its usage in the Gudankura (Anal condylomas) and Bhagandara (Fistula -in -ano).

In modern era on the basis of above references after various experimentation and modification the kshar sutra was prepared and standardized in the various institute of Ayurveda science.

It was the idea of Dr Sankaran to explore the possibility to prepare kshar sutra and to use it in fistula in ano. After his noble initiation late Prof. P.J. deshpandey started work at different angles with scientific approach.

Further, the work was carried out in various institute of Ayurveda science all over India and even in foreign countries like japan.

PREPARATION OF KSHARSUTRA
Material
1. Kshar sutra hanger 2. Kshar sutra cabinet
3. Thread 4. Snuhi ksheer
5. Haridra Powder 6. Apamarg kshar

1. Kshar Sutra Hangers
Rectangular frame made by Wood or thick Aluminium strips measuring 15*20 inch is used. The frame has hook on mid upper surface of horizontal arm. 8 to 10 such frames are required. Their number can be increase according to the requirement of the kshar sutra. Each hanger has small cut s on the both sides which are placed at a distance of 2-3 cm from each other. One hanger can accommodate approx 30 linen thread at a time.

2. Kshar Sutra Cabinet
Wooden or steel made cabinet of required size is used for preserving the kshar sutra hangers during process of manufacturing. A standard ksharsutra cabinet can accommodate as many as 30 – 50 hangers. The kshar sutra frames are hooked into the rings in the aluminium rod after smearing it with drugs. Thermostatic ksharsutra cabinet with u.v. light is popular today’s era.

3. Thread
The surgical thread linen Barbour’s No. 20 is standard and very useful for kshar sutra preparation. But a strong cotton thread can be use on account of linen thread. It is easily available in the market and its tensile strength is quite enough.

The ideal thread should have these properties :-
1. It should be good in tensile strength
2. It should be acceptable, should not cause contact reaction
3. It should have the capacity of retaining the coating of the application of medcations
4. It should have sufficient thickness

4. Snuhi ksheer
It is latex of Euphorbia nerrifolia. It is a plant found abundantly all over the country. Its synonym are Snuhi in Sanskrit and Sehund in Hindi. The milky latex oozes from stem and leaves of the plant even with slight erosion on it. The latex coagulates rapidly within 1-2
hours after exudation from stem and collection. Latex is sticky and milky in colour.

Collection of latex
The Kshar sutra is prepared in every season except rainy season, extreme summer season and cloudy weather. Ideal months are September to November and February to May. The pointed knife is used to make a small incision in the stem of Euphorbia. The latex is rapidly collected into the small pot. Multiple incisions are made on the stem and the desired quantity of fresh latex is thus collected. Then it is smeared immediately on the thread otherwise it will coagulate after 1-2 hours. Storage of latex for long use is problem because of coagulation. Mixing with kshar the latex may be preserved for 2-3 days.

5. Haridra Powder
The scientific name is Curcuma longa. It is available in the market, after washing in the water and drying, it should grinding into very fine powder and is filtered with fine clothes. The kshar sutra prepared from market powder of curcuma longa causes severe irritation to the patient when used in practice. Because there are many impurities of spices and other irritating materials in the powder available in the market.

6. Apamarg kshar
It is a product prepared by burning the plant, achyranthes aspera and mixing the ash in water and keeping it overnight. After filtration the water is heated to get a fine white coloured powder. Acharya Sushruta had told many plants from which kshar can be prepared.

TECHNIQUE OF PREPARATION OF KSHAR SUTRA
20 no. surgical linen threads are spread horizontally throughout the length of the hanger. Then it is mounted over a hanger stand. Each thread is smeared with latex of snuhi with help of a sterile gauze piece. The threads are smeared uniformly on every side. The hangers are now placed in cabinet one by one. The cabinet is closed properly and hot air is blown inside for uniform drying of threads. In this way 11 coating of snuhi kshira are done. Further 7 coatings of snuhi kshira with apamarg kshara are applied. The thread is smeared in snuhi kshira then it is dipped in fine powder of apamarg kshar. The hanger is topped slowly and gently to remove the excess kshar from the thread. After that further three coating are aoolied with latex of snuhi and fine powder of haridra. Thus total 21 coatings are applied over the threads.

The order of coatings is as follows
1) Snuhi Ksheer - 11 Coatings
2) Snuhi Ksheer + Apamarga Kshar - 7 coatings
3) Snuhi Ksheer + Haldi powder - 3 coatings
Total - 21 coatings

PACKING OF KSHAR SUTRA
Thus prepared kshar sutras are dried well and cut into the pieces from side arms of hangers. Then Kshar sutras are spreaded into the cabinet and exposed to ultraviolet radition for 2-3 hours. After that threads are folded from the centre and packed into the glass tube. Date of manufacture, batch no, and ph should be labelled on each unit of prepared kshar sutra.

Precautions
1. Kshar coating is done during minimal humidity atmosphere.
2. Kshar is highly hygroscopic so coating is avoided during cloudy weather with heavy humidity.
3. During packing threads should be absolutely dry.
4. Sealing of test tube should be complete. Any unsealed minute aperture will allow the entrance of humidity, which will destroy the kshar sutra. The sutra will break down easily even with application of slight tension and becomes useless.

APPLICATION OF KSHAR SUTRA IN SURGICAL DISORDERS
Kshar sutra can be successfully used in following disorders:-
1. Fistula in ano
2. Piles
3. Fissure In Ano with sentinel tag
4. Pilonidal Sinus
5. Abscess and infected wound
6. Benign growths

The technique of application and complications of Ksharsutra therapy in fistula in ano will be discussed in the forthcoming chapter.

MECHANISM OF ACTION OF KSHAR SUTRA
Mechanism of action of Kshar sutra as follow as:-
1. Mechanical pressure over the tissue causes destruction of the tissue followed by excision
2. Latex of snuhi is proteolytic, so it dissolve the tissue
3. Kshar has shodhan, ropana and lekhana properties
4. Haridra powder is anti-septic and potent wound healer agent

ADVANTAGE OF KSHAR SUTRA THERAPY
1. Simple, safe and sure treatment
2. It is minimal invasive therapy
3. No hospitalization required in most of the cases
4. It is cost effective therapy
5. Less scar formation after wound healing
6. Recurrence rate are almost 1%

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