

CONCEPT OF STERILIZATION IN AYURVEDA: A REVIEW

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ABSTRACT

Ayurveda the science of healthy living encompasses of various branches therapeutic aspect. *Shalyachikitsa* is one of them which involve surgical and parasurgical interventions. *Shalyachikitsa* deals with different surgical approaches for the management various diseases but for the success of surgical treatment Acharya's has advised *Nirjantukikaran* which is equivalent term for Sterilization there is scattered references in Ayurvedic classical texts. In Ayurveda it comes under the heading of *Rakshakarma*, as stated by various Acharya's. The ancient Acharya's mentioned various *Dhoopan* with *Rakshoghna* dravya's for the sterilization of OT rooms, Surgical ward, Neonatal ward and labour ward to protect atura from organisms and for the instruments methods like Heat (*Agni*), *Kashya* (Decoction) and Sunlight etc. are used. In present era sterilization procedure is done with the similar basic principles of Ayurveda i.e. Heat, Chemicals or Radiation but with advances in technology and biophysics.

KEYWORDS: Ayurveda, Sterilization, *Rakshakarma* etc.

INTRODUCTION

Sterilization is the process of freeing an article, a surface or a medium of all micro-organisms both in vegetative and in spores states by removing or killing them. For the success of any surgical treatment Sterilization is of prime importance. There are millions of micro-organisms around us in air, cloths etc. The dead cells fallen from the surface of the body carries thousands of such organisms and to our surprise, it contributes almost 37% of our house hold dusts. Not only this, even gram positive cocci called staphylococcus Aureus lives in nostrils of 30% population.^[1] They are harmful and pathogenic, especially on open wounds, incision, scars and can results them into major complications. Thus it carries a lot of importance to disinfect the operation theatre before proceeding to any major or minor operative procedures.^[2]

Ayurveda, the science of life since ancient era has importance in global scenario because of its holistic approach towards positive life style. It deals with both preventive and curative aspects of diseases. Ayurveda mentioned two principle treatment modalities which are Medical (*aushadh*) and surgical (*shastrakarma*). *Nirjantukarana* is equivalent term for sterilization there is scattered references in Ayurvedic classical texts in that Acharya *Sushruta* was the one who developed the surgery most in his *Sushruta Samhita* he has described *Rakshavidhan* which can be co-related with Sterilization.

निशाचरेभ्यो रक्ष्यस्तु नित्यमेव क्षतातुरः ।

रक्षाविधानैरुद्दिष्टैर्मैः सनियमैस्तथा ॥ (सु.चि. १/१३३).^[3]

In *Sushrut Samhita* various surgeries like Ophthalmologic, Abdominal, Anorectal, Plastic surgeries, Orthopaedic, Gynac and obstetrics etc are mentioned. *Acharya Sushruta* has described 101 types of *Yantras* (blunt instruments) and 20 types of *Shastras* (sharp instruments).^[4,5] for this surgeries. The unique classification of surgical instruments as *Yantras* and *Shastras* holds good even today. So for the success of surgery they explained various methods of sterilization (for patients lived in *Vranitagar*, *Sutikagar*, *Kumaragar* etc for wound *vra*na, for instruments [*Yantra Shastra*] etc) like (Fumigation) *Dhoopana* with *Rakshoghna dravya's* such as *Guggulu* (Comiphora mukkul), *Aguru* (*Aquilaria agollocha*), *Sarjarasa* (Resina of shoearar obusta gaerten) *Vacha* (*Acorus calamus*) *Sarshap* (*brassica nigera*), *Lavana* (Sodium chloride), *Nimba* (*Azardhira Indica*) mix in cow ghee (clarified butter), (medicinal Decoction) *Kashaya*, *Parishekah*, (Heat) *Agnitapan* etc. are also used.

अग्नितप्तेन शस्त्रेण छिंद्यान्मधुसमायुत (सु.चि. २/४६).^[6]अग्नितप्तेन शस्त्रेण छिंद्यात् अन्यथा अतप्तशस्त्रच्छेदने
पाकभयं स्यात् ॥ (डल्हण)^[7]ततो गुगुल्वगुरुसर्जरसवचागौरसर्षपचूर्णैर्लवणनिम्बपत्र
विमिश्रेराज्ययुक्तेधूपयेत्,

आज्यशेषेण चास्य प्राणान् समालभेत ॥ (सु.सू.५/१८)^[8]

Acharya Sushruta has explained *Rakshavidhan* in *Shasthi upakram*. *Rakshavidhan* is the 60th *upakram* which is classified in *shodhan* and *roopan chikitsa*. He said to give *dhoopana* for *vranit* (patient of wound) and should be protected with the *dhoopana* (i.e fumigation), *Mantras*, *Yamas* and *Niyamas* (rules of self-restraint and behavior) etc. To protect from micro-organism. *Acharaya sushruta* has given *Saptaupakram* for the treatment of *Vranashotha* in that he has given seven different *upakramas* according to sequences we can see there also *Shodhan upakaram* is given before *Roopan* we can easily come to know there will be no *Roopan* (healing of wound) without proper *Shodhan* so for any surgical treatment sterilization is prime important for wound healing.^[9] whether one believe it or not, but all our ancient literature proves on more or less extend that, though the terminology was different i.e., *Bhutavidya* means microbiology . But our *Acharya's* had very detailed knowledge about human anatomy, principles of remaining healthy & medical cure.

In *Kashyap Samhita* entire chapter named *Dhoopa kalpa* is dedicated on this subject. He has mentioned many formulations of *dhoopa* (fumigation) of cloths , Pediatric ward, patients bed etc. but concept of *dhoopana* is broad in *kashyapa* he also used *dhoopana* for prevention and curing pediatric diseases especially when demons, ghosts or devils started harassing young children, facilitating proper development of children. He explained medicinal herbs, minerals and also sometimes animals for *dhoopa* .One of *dhoopa* formulation of *kashyapa* is *Rakshoghna dhoopa* for protection containing various drugs such as *Ghruta* (Ghee), *Siddhartak* (*Brassica alba*), *Hingu* (*Ferula foetida*), *Dev Nirmalya* (flowers of herbs offered to god), *Akshata* (unbroken rice), *Sarpa tvak* (shed skin snake), *Bhikshu sanghati* (saffron color cotton cloth).^[10]

In *Charak Samhita Chikitsasthan* 25th *Acharaya Charak* has explained *dhoopana karma* (fumigation) for prevention of *Vrana* (wound) Various *dhoopa dravyas* has mentioned such as *Agaru*(*Aquilaria agallocha*), *Raala* (Resina of *shoearar obusta gaerten*), *Guggulu* (*Comiphora mukkul*), *Chandana* (*Santalam aalbum*), *Ghruta* (Clarified butter), Bone cartilage fat for keeping the wound in healthy state this *dhoopa* kills the microorganisms likewise it also reduce infected

discharge, foul odor, pain from wound.^[11] *Vranashoodhak Kashaya* (Decoction) has been explained various drugs such as *Amalaki* (*Terminalia belirica*), *haritaki* (*Terminalia chebula*) and *bibhitak* (*Phyllanthus emblica*), *Kher* (*Senegalia catechu*) ,*Daruhadalad* (*Berberis aristata*),*Vada* (*Ficus benghalensis*) ,*Pimpal* (*Ficus religiosa*) ,*Pimpri* (*Ficus lacor*), *Umbar* (*Ficus racemosa*) and *veta saal* (*Salix alba*) ,*Bala* (*sida cordifolia*) ,*Kusha* (*Desmostachya bipinnata*) ,*Nimba patra*(*Azardirecta indica*) and *badar*(*Ziziphus mauritia*) leaves for the decoction (*prakshalan*) for making the *Vrana shudha*.^[12]

In *Astangasangraha Uttarthana* chapter 38th (*Shastrakarmavidhi*) *acharaya vagbhata* has mentioned *Vrana-rakshoghna dhoopa* consisting of *guggulu* (exudates of *comiphora wightii bhandari*),*Agaru* (*Aquilaria malaccensis*), *Sarjarasa* (exudate of *Shorea robusta Gaertn f*), *Vacha* (*Acorus Calamus*),*Gaura-sarsapa* (white seeds of *Brassicacampestris*),*Hingu* (exudates of *Ferula foetida regel*),*Lavana* (Salt), *Nimbapatra* (leaves of *Azardhiracta indica*) and *ghruta* (Clarified butter) for protection of wound from microorganisms.^[13] Further there he mention of fumigants for baby's apartment consisting of dried crow feather's along with *Trivarta* (*Operculina turpethum*) ,*Vacha* (*Acorus calamus*), *Kustha* (*Saussurea lappa Clarke*), *Srivesta* (exudates of *Pinus roxburghii sarg.*), *Sarsapa* (seeds of *brassica campestris*) added with little *ghrita*(Clarified butter).^[14]

In *Ashtanghrudayam Uttartantra* chapter 25th *Vranavidnyaniyam acharya* has mentioned Decoction (*prakshalan*) and other *upkramas* for treating Infected wounds with *Aargawadi gana* and *Sursadi gana* similarly they told to used *Nimba* and *Padwal* in this conditions.^[15,16] He mentioned fumigants of *Jaw* (*Hordeum vulgare*), *Ghruta*, *Bhurja Patra* (*betula utilis*), *Wax*, *Gandha biroja* (*paederia foetida*) and *Devdar* (*Cedrus deodara*) for killing microorganisms away.^[17] In chapter 1st *Balopacharniyam acharya* has mentioned to fumigate pediatric room, bed with *Rakshoghna dravyas*. He said fumigations of killed crow painted with three *sneha's* such as (fat, Oil and bone marrow) makes best effect.^[16] In chapter 4th *Balgraha pratishedha* contains many formulations, which appears natural biocides and fumigants to prevent and cure various infantile *Grahabadha*.^[17]

Table 1: Rakshoghna Dravya's and its antimicrobial properties.

S. No.	Dravya	Latin Name	Karma	Antimicrobial Properties
1.	<i>Ghruta</i>		<i>Rakshoghna</i>	
2.	<i>Sarshapa</i>	<i>Brassica Nigra</i>	<i>Rakshoghna and Krimighna.</i>	Antibacterial, Antiparasitic And Antifungal.
3.	<i>Vacha</i>	<i>Acorus calamus</i>	<i>Bhuta-Jantvahara</i>	Antibacterial, Anthelmintic, Antimalarial.
4.	<i>Guggul</i>	<i>Commiphora Mukul</i>	<i>Krumijayeta</i>	Antibacterial and Antifungal
5.	<i>Nimba</i>	<i>Azadiracta Indica</i>	<i>Krumipraneta</i>	Antibacterial, Insecticidal.
6.	<i>Agaru</i>	<i>Aquilaria Agallocha</i>	<i>Kruminashaka</i>	Antibacterial

7.	<i>Sarjarasa</i>	Resinaof shoerear obusta gaerten	<i>Grahanashaka</i>	Antibacterial
8.	<i>Lavana</i>	Sodium chloride	<i>Sushma</i>	Antibacterial

DISCUSSION

Direct reference for sterilization is not available scattered references gives idea of aseptic approach to *yantra* and *shastra karma*. *Acharya Sushruta* includes *raksha karma* in the heading of *sashti upakrama's* to protect *atura* from *nishachara* (invisible creatures). Various operative procedures are explained in *sushruta samhita*. Ayurveda recommends fumigation (*Dhoopana*) as a method of sterilization in OT rooms and various chambers (such as *Vranitagar, kumaragar, sutikagar* etc.) and for instruments (*yantra, shastra*) etc methods like *Kashaya, dhoopana, parikshekah, agnitapan* etc are used. Numerous drugs (*Rakshoghna dravyas*) are explained which has antimicrobial activities. Concept of sterilization in Ayurveda is broad it not only protect from microorganisms but also various methods are used in curing from various diseases especially when demons, ghosts or devils started harassing young children and for proper development of children child.

CONCLUSION

It is necessary to have more detailed knowledge and to understand the concept of sterilization; still there are many concepts in Ayurveda which are not known. The phytochemical and pharm dynamic properties of ayurvedic drugs mentioned under the process of sterilization in order to facilitate the identification of novel bioactive compounds and more effective administration methods. Ayurvedic herbal dhoop are natural and biocompatible it can potentially aid in internal environment cleansing and sustainable conservation without causing any harm to the environment unlike various chemicals and aerosols. Ayurvedic methods of sterilization can be alternate for modern sterilization which is cost effective, having less adverse effect and have medicinal value.

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