CONCEPT OF STERILIZATION IN AYURVEDA

DR. CHAKRABORTY SAYANTAN\textsuperscript{1}, DR. NAIKAR ASHOK\textsuperscript{2}

\textsuperscript{1}2nd year PG scholar, \textsuperscript{2}Associate professor

Dept. of shalya tantra, N.K.J Ayurvedic Medical College & PG center, Bidar

Abstract:
Sterilization is a procedure by which freeing a surface or medium from all microorganism by removing or killing them. In Ayurveda it comes under the heading of Raksha karma, as stated by various Acharyas. For surgeons secondary infection is a big headache which comes from instruments, operation theaters, body surface etc. Now a days in modern era there is various chemical and physical methods of sterilization. But the concept of ancient sterilization could be cost effective, having less side effect and may have medicinal values also. The ancient Acharyas used agni (fire), kwath (decoction), sunlight and various medicated fumigating yogas to protect Atura from different organisms. So an effort is made to establish an Ayurvedic sterilization technique in this era.

Keywords: Sterilization, Raksha karma, Ayurveda, Organisms

Introduction
The air around us is filled with millions of microorganisms (bacteria, fungi, protozoa, virus). The number of microorganisms in air range from 10-10000 / cubic meter. And they can live < -20 C to >100 C. But not all the microorganisms are pathogenic. About 20 – 25 % of all microbes are nonpathogenic.

In Ayurveda the term krimi is used in broader sense, it includes pathogenic and nonpathogenic organisms covering wide range of infection and infestation. They are explained under the title of Oupashargik roga which spread through different routes.
To get prevention from Krimi Rakshoghna vidhi is indicated in our
classics.

Sterilization is a process by which
freeing an article, a surface or a
medium of all microorganism both in
vegetative and in spores state by
removing or killing them.

There are two treatment principle
Aushadha and Shastrakarma. It is true
that Sushruta is the Father of Surgery,
but with the help of advances in
technology and bio-physics modern
surgery is developed well and
practiced widely.

But the basic is for any surgical
treatment sterilization is a very
important factor for success. Lack of
sterilization leads to complication like
infection and delayed wound healing.

In Ayurveda Sterilization
(Rakshaghana vidhi) is not only used
in case of shastra karma but also
mentioned in case of vranitagara,
sutikagara, kumaragara, for care of
vrana etc.

In modern era sterilization procedure
is done by heat, chemicals or
radiation. The sterilization is done to
sterilize instruments, operation
theaters, patients ward, ICUs, the

In Ayurveda various measures are
practiced for rakshoghana vidhi like
kwath, dhupana, parisheka, agni
tapana, sunlight etc. They are
mentioned sporadically in various texts
under the heading of various diseases,
surgical procedures and health routine.

Some terminology:
Sterilization: A processes of freeing
an article, a surface or a medium of all
microorganisms both vegetative and in
spore states by removing or killing them.¹

Disinfection: Destruction of all
pathogenic organisms capable of
causing infection.¹

Asepsis: It is a process to reduce or
eliminate infection causing organisms
from entering the environment of the
patient.²

Antisepsis: A process of destruction
of disease causing microorganisms to
prevent infection in patient’s body
surface. It may be bactericidal or
bacteriostatic.²

Method of Sterilization:
Firstly sterilization is done for
preservation of food to reduce food
borne diseases. Josheph Lister was pioneer of antiseptic surgery. Aim of sterilization is to reduce initially present microorganism or other potential pathogens. Degree of sterilization is expressed by multiple of the decimal reduction time or D-value (the time needed to reduce the initial number \( N_0 \) to 1/10th of its original value. \( N/N_0 = (10)^{-t/D} \)

Various methods are used for sterilization like:

**Heat:**

**Dry**

1. Hot air oven – in this procedure longer exposer to dry heat about 160 – 190\(^0\) C for 6 – 12 min
2. Flaming – by Bunsen Burner or Alcohol lamp until it glows red.

**Moist**

1. Autoclave – 120\(^0\) C at 20 psi for 60 min or 134\(^0\) C for 18 min.
2. Tyndallization – simple boiling water method for 20 min.

**Chemical:**

In case of heat sensitive substance like fiber optics, electronic, plastic by Ethylene oxide, nitrogen dioxide, ozone, glutaraldehyde, formaldehyde, \( H_2O_2 \), peracetic acid (0.2%)

**Radiation :**

*Non ionizing* – UV light for plastic substance.

*Ionizing* – Gamma radiation by radio isotopes(cobalt-60, caesium-137), x-rays, electron beam.

**Filtration:**

**Earthenware filter**- It is made up of diatomaceous earth or porcelain.

**Asbestos filter**- It is made from chrysolite type of asbestos chemically composed of magnesium silicate.

**Membrane filter**- It is made up of polymeric materials like cellulose nitrate, cellulose diacetate, polyester.

**Air filter**: HEPA (high efficiency particle air) filter, it can remove particles <0.3 \( \mu \)m in diameter.\(^4\)

In Ayurveda Rakshoghana vidhi is a very big entity that includes various ancients sterilization procedures by various acharyas and which are practiced till now in a day to day life like during making of house good vitalization system as well as good sunlight and practicing HOMA
during Puja are few examples which are inherited from our ancestors.

As the water and air borne diseases are more in ancient time they have given more importance to it. Regarding air and water purification Charaka gave detail measures in Viman Sthana Janapadodhvamsa chapter.

Air purification is done by various dhupana karmas with laksha (Ficus laccor), haridra, ativisha (Aconitum heterophyllum), haritaki (Terminalia chibula), kustha (Sassuria lappa), valaka (Cinnamom tamala), ela, mustak (Cyprus rotundus), priyangu. Some other drugs are used to purify air like guggula. Somraji (Psoralia corlifolia), agaru, nimba etc.

Regarding water purification Hamsodaka is stated by charaka. Hamsa stands for sun and moon. The water which is purified by rays of sun and moon is called Hamsodaka. According to sushruta water is purified by two ways Marjana and prasadana. If highly polluted then the water should be boiled, if pollution is less then it should exposed to sun light, if pollution is medium then red hot iron ball or sand is put into water.

Some drugs are used to purify water like kataka (Strichnus potatorum), bisa granthi, saibal moola, mukta, chandrakanta mani, gomedaka etc.\(^5\)

Regarding purification of sutika gara, kumaragara, vranita gara criterias are as follows

- They should devoid of direct light air or light. But proper ventilation should be maintained. It should also devoid of dust, smoke.

Various types of dhupan yogas are used to purify the room:
- Sarshap, mimba, ghrita, lavana are used to fumigate the room twice daily for 10 days\(^5\)
- Hingu, nimba, guggula, akshata (oryza sativa)
- Honey, body hair of goat, horn of sheep.

These dhupan yogas are used for vrana dhupan, fumigation of clothes, room, vrana bandhan dravyas etc to purify vrana from visa(harmful substance).

**For vrana:**

Dhupan is indicated to purify vrana by rakshoghna dhupa like
CONCEPT OF STERILIZATION IN AYURVEDA

- Guggula, aguru, raal, vacha, swet sarsap.
- Lavan(saindhav), Nimba patra, ghrita

For vrana prakshalana:

Various kashaya are used to purify vrana like Panchavalkal kashaya, tripala kashaya, surasadi gana kashaya, araghvadi kashaya, old ghrita etc

For shastra karma:

Importance of sterilization of shastra prior to shastra karma is mentioned by Sushruta. Incision is taken after proper heating of shastra, otherwise paka(pus formation) takes place.

Discussion:

Acharya Sushruta includes raksha karma in the heading of sasti upakramas to protect atura from ‘nishachara’(invisible creatures).

In Ayurveda there are various way like dhupan(fumigation), prakshalana, agni tapan etc. to sterililize vranitagara, kumaragara, sutikagara, kumaragara, shastra(instruments), vrana etc which could be cost effective, having less side effect and may have medicinal value.

But they are not practiced vigorously due to lack of clarity to the parameters regarding their application.

Conclusion:

It is necessary to have more detailed and systematic evaluation of drugs mentioned under the process of rakshoghnna vidhi(sterilization).

References:


6) Kabiraj Dattashastri Ambika, Sushruta samhita, sutra sthana, part-I,

Chaukhambha Sanskrit sansthan, Varanasi, Reprint 2009, chapter-5, p.p-2

7) Kabiraj Dattashastri Ambika, Sushruta samhita, sutra sthana, part-I,

CORRESPONDING AUTHOR:
DR. CHAKRABORTY SAYANTAN
2nd year PG scholar,Dept. of shalya tantra,
N.K.J Ayurvedic Medical College & PG center Bidar
Email: s.chakraborty8287@gmail.com

Source of Support: NIL
Conflict of Interest : None declared