

OT Discipline an Ancient and Modern View - A Review Article

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ABSTRACT

A safe Associate in Nursing salubrious surgery is an atmosphere during which all sources of pollution and any micro-environmental alterations are strictly in check. The design of the operational unit is complicated and needs totally different areas to be properly integrated. additionally, to keeping clean and dirty areas separate, it's vital to make sure that patient flow, from arrival to discharge, is orderly and logical. In Ayurvedic classical texts also Acharyas mentioned measures for different procedures. Maintaining cleanliness, dhupana, preoperative measures, conditions during procedures, etc are explained by Acharyas. These points should also be kept in mind in ot protocols. Hence, an attempt is made to elaborate OT discipline in both Ancient and modern way.

KEYWORDS: OT discipline, Operation theatre, Vranitagara, Dhupana

INTRODUCTION

A safe Associate in Nursing salubrious surgery is an atmosphere during which all sources of pollution and any micro-environmental alterations are strictly in check. Indeed, Associate in Nursing surgery is an awfully complicated system during which varied risk factors are present, together with the structure and its fixtures, however additionally the management and behavior of tending staff. The design of the operational unit is complicated and needs totally different areas to be properly integrated. additionally, to keeping clean and dirty areas separate, it's vital to make sure that patient flow, from arrival to discharge, is orderly and logical.¹ Body hygiene is the primary measure to reduce infections and other complications in a surgery environment. A simple action, perhaps, but the lack of compliance among healthcare providers is problematic worldwide and causes many problems.² Not maintaining proper operation theatre discipline can lead to different complications and surgical site infections. Every minute details in Operation theatre is relevant for performing healthy

surgery. In Ayurveda there are mentioning about how to take care during different procedures. Acharyas told all the pre operative, operative and post-operative measures. Also mentioned cleanliness, fumigation techniques, etc for maintaining proper environment for procedures. These are important in today's scenario also.

ANCIENT VIEWS VRANITAGARA

First of all, a chamber for the wounded person should be selected; that should be auspicious and in accordance with vāstu śāstra (science of architecture) etc residing in such an auspicious house, free from dirt, sunlight, and heavy breeze, the person will not suffer from physical, mental and traumatic disorders³. This prevents contamination from external factors and provides comfortable surgical environment with appropriate temperature, ventilation, humidity, etc.

Acharya Charaka while explaining shodhana procedures explained about Aturagara where

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procedures are taken place. This building should be strong and only 1 passage for wind. It should not be in mountain space or near bigger building. It should not be exposed to smokes, sun, water, dust or undesirable noise. The building should be well equipped with water reservoir, mortar, pestle, bathroom and kitchen.⁴

In the context of Garbhini vyakarana Acharyas mentioned about Sutikagara (labour room) which is prepared according to specific measures and everything needed for the procedure is collected and stored after proper cleaning.

Dhupana

- The fumigation carried out using fine powder of selected dry drugs with the intention of Nirjantukarana (disinfection) is called as Dhupana. It has been explained for preventive and curative purpose.⁵
- In preventive aspect Dhupana of vranitagara, kumaragara, etc for disinfecting the room and its vicinity is explained.
- For curative purpose, dhupas are explained for the treatment of vrana, shotha, Arshas, Jwara, etc diseases.
- Dhoopana yoga used to purify the room. Sarshapa, Nimba, Ghrita, Lavana are used to fumigate twice daily for 10 days.⁶ Sushruta also told about Guggulu, Agarar, Sarjarasa, Vacha, Gourasarshapa, Lavana, Nimba patra, Ghrita for dhupana purpose and Acharya dalhana added the purpose for vrana dhupana, vrana durgandha nasana, to avoid neelamakshika, etc in commentary.⁷
- These drugs have actions of deodorant, anti-septic, insecticidal, anti-pyretic, anti-inflammatory, etc.

Shuchi (Cleanliness)

- Shuchitwa in this context means both physical and mental cleanliness. Whoever is a part of different procedures including physician, paricharaka or rogi should maintain shuchi in order to have a neat surgery.
- Before attending the patients physician should remove unkempt/ugly nails and hairs, (of the head, beard and mustaches)
- Physician should always keep cleanliness.
- He should wear white dress.⁸
- Acharya Vagbata told to Cover your face while doing sneezing, laughing and yawning always as a part of good habits.⁹

- A physician should have a clear mind, cheerful appearance, wishing well being to all and attitude of friendliness. Here Acharya mentioned about the manasika shuchitwa.

shastrakosha

Acharya Vagbata mentions maintaining of instruments by keeping them in Shastrakosha (tool kit) which is 9 angula length and 12 angula width for proper storage of cutting instruments.¹⁰ This helps in preserving the edges of cutting instruments.

Nirjantukarana (Sterilization methods)

In Ayurveda term krimi is used in wide range, including pathogenic and non-pathogenic organisms and other infections. Acharyas explained different sterilization methods to manage the surgical diseases to avoid post-op complications especially the secondary infections.

In janapadodhwamsa where the land, air, water gets vitiated and leading to various diseases. Acharya Charaka told methods to purify the vitiated air and water which nowadays also we can apply.

Vagbata explained fumigation method or exposure to sunlight of the dravya for Nirjantukarana of bandhana dravyas.¹¹ So that we can prevent secondary infections.

Acharya Sushruta told Incision is taken after proper heating of Shastra (instruments) otherwise paka (pus formation/infection/inflammation) takes place.¹² This process kills the micro organisms and prevents infections.

Shastravaidya lakshana (Features of Surgeon)¹³

- Shourya-A surgeon should be Bold/courageous. Nowadays it is compared to lion's heart.
- Ashukriya-He should be light hand & fast in action, which prevent discomfort to patient. Nowadays it is compared with ladies finger
- Shastrataikshnya- have sharp instruments which avoids pain to patient.
- Asweda- No perspiration during procedure.
- Avepathu - No tremor & fear
- Asammoha -should not get panic during procedure and have knowledge of different stages of Shotha (Pakva & apakva)

Paricharaka (Assistant)¹⁴

Paricharaka is also told in Ayurveda. He should be snigdha (love/affection towards patient), Sthira (withstand to blood & surgical procedures) and Balavanta (strong enough to hold the patients during operation).

MODERN VIEWS

OPERATION THEATRE

- The Location of the theatre is preferably in ground floor.
- Easy access to other Units
- Independent of general traffic flow.
- There should be Maximum protection from sun, sounds, heat and wind .
- The preferred Size is 18ft x 18ft or 40sq.mtr (super speciality-60sq.unit).
- One OT unit for 50 surgical beds should be present.

Principles of sterile functions

All the materials used as a part of sterile field for an operation, must be sterile. Basic items used should be linen, instrument set, basin. Instrument sterilization should be done 1 night before or just before operation. Once the instrument is removed from sterile wrapper then use/discard. The Linen colour generally selected is Dyed green which helps to reduce glare from light & reduces fatigue and eyestrain. If in any situation of doubt any material is sterile or unsterile, it should be considered as unsterile for safety. Only the top surface of draped table is considered Sterile. And also sterile person should touch the sterile materials & unsterile person should touch the unsterile materials. circulator (unsterile person) supplies for the sterile team members.¹⁵

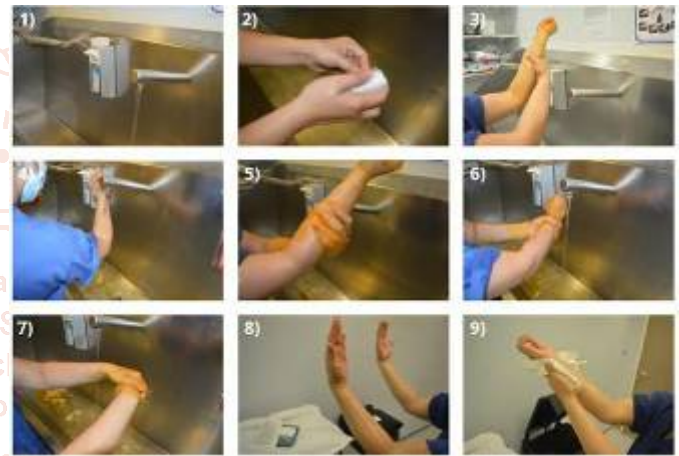
Preparation before entering OT

- Personal cleanliness is of paramount importance for members of the surgical team. This includes daily showers, frequent shampoos and attention to hands and finger nails.
- Staff with rashes, infective lesions or open wounds of the skin on hands, nails or arms should not scrub for a procedure. Staff with a common cold, sore throats or systemic infections should also not scrub.
- Scrubbed personnel should have short and smooth nails.
- Watches, bracelets and rings should be removed and kept in a safe place.
- Every surgical team member should wear a clean, short sleeved cotton scrub suit before entering the semi-restricted/restricted areas of the surgical suite.
- Sleeves of the scrub shirt should be four inches above the elbow.

- Street clothes or hospital uniforms are not allowed in restricted areas.
- Trouser legs should not touch the floor.
- Personnel should wear shoes especially assigned for the surgical suite. Shoes should cover the toes completely.
- Personnel should wear a disposable surgical cap in such a manner that hair is covered completely.
- A surgical mask is worn to protect the patient from bacteria exhaled by operating room personnel and it is mandatory for members of scrub team.¹⁶

HAND SCRUB

Scrubbing procedure must take a minimum of two minutes if scrub solutions are used and five minutes if antiseptic soap is used.



Water temperature should be set at a comfortable level.

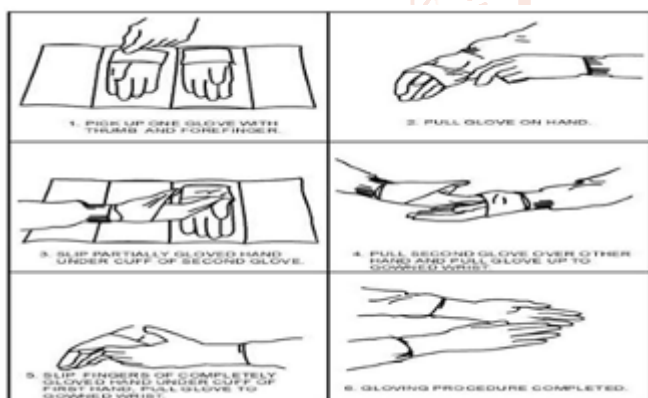
- Wet hands and forearms at the start of scrub up.
- Dispense around 5 mL of anti-bacterial soap solution into the palm.
- A nail brush should be used only on nails or in web spaces.
- Scrubbing should start from fingers to one inch below the elbow, not from the elbow to the fingers.
- Hands should be held higher than the elbow, so that water flows downwards draining off the elbows.
- Scrubbing comprises of three washing cycles: (a) hands and arms extending to one inch above the elbow; (b) hands and half way up the forearms; and (c) hands only.
- The principle of washing from a clean area(the hand) in the direction of the less clean area(the arm) should be followed.

- The hands should be held above the level of elbows at all times in order to prevent dirty water from dripping.

GOWNING



GLOVING



Rules

- There are certain rules that we should follow.
- The Sterile team members should be stand back at a safe distance from operating table while draping and should Pass back to back.
- In the case of Unsterile person/ area should be passed by back of sterile person and always Stay near the sterile table.
- All the Used items / soiled sponges are placed into the basin.
- In the case of covered items, Edge of cover that encloses the sterile content is Serile.

- Circulator should lift the cap of the solution containing bottles & the caps are not replaced.

Cleaning

- Daily cleaning should be carried out after the operating sessions are over.
- All the surfaces should be cleaned with detergent and water and may be wiped over with phenol if any spills with blood / body fluid are present.
- All the walls must be wiped down to hand height everyday.
- The floors should be scrubbed with warm water and detergent and dried. No disinfectant is necessary.
- The O.T. table and other nonclinical equipment We must be wiped to remove all visible dirt and left to dry.
- Weakly cleaning of all the areas inside the operating theatre complex should be done thoroughly with warm water and detergent and dried.
- The storage shelves must be emptied and wiped over, allowed to dry and restacked.

Fumigation

- Ideally, all O.T. rooms should be fumigated once a week for better safety and precaution.
- The windows should be sealed and formaldehyde should be generated either by boiling a solution of formalin 40% or by adding it to potassium permanganate, in a metal vessel on the floor, since heat is also generated.
- The door is than closed and sealed.
- For a 10 x 10 x 10 ft room 150 gm potassium permanganate and 280 ml of formalin are used.



Duration:

1. In case of any construction in O.T-48 hrs
2. In case of infected cases – 24hr.
3. For routine clean cases it is 12 hrs.

Three swabs are taken from walls, all equipments, floor or O.T. table at intervals.

- 1st swab - 48 hrs after fumigation
- 2nd swab- 24 hrs after 1st swab
- 3rd swab - 12 hrs after 2nd swab

Place the ammonia solution in the centre of the room and leave it for 3 hours to neutralize the formalin vapour.

Surgical team

The surgical team consists of Chief surgeon -who directs the surgery with Assistant surgeons for helping the chief surgeon. Anesthesiologist should be present for controlling the supply of anesthetic and monitors the person closely. Scrub nurse who passes instruments to the Surgeon should be in the team and also Circulating nurse - who provides extra equipment to the operating team.



Assistance

The main duties of the assistants are to Make patient wear the OT cap. And Transfer the patient from the wheel chair/trolley to the operation table And to Remove the patient's gown and keep it in the unsterile zone. After completion of operation, counting the instruments, sponges, needles. They should Assist to shift the patient from the operating table to the trolley. Along with Shifting the trolley to the operating theatre door.

Assisting the surgeon

Bringing the instruments trolley and paint the trolley with betadine And to Remove the drape/rubber sheet from the container and spread it on the trolley (instrument/linen),using cheattle forceps Transfer the linens from the bin to the trolley and Arrange to instruments in a designated fashion in the trolley and count them Drape the two trolleys with small drapes Pass the gown, gloves to the surgeon.

Waste disposal

Biomedical waste may have serious public health consequences and it affects environment also. So survey of total waste generated, segregation,

collection and categorization of waste, transportation and disposal of waste is very much important.

Cat.	Type of Bag/ Container used	TYPE OF WASTE	Treatment /Disposal options
Yellow	non-chlorinated plastic bags  Separate collection system leading to effluent treatment system	a) Human Anatomical Waste b) Animal Anatomical Waste c) Soiled Waste d) Expired or Discarded Medicines e) Chemical Waste f) Micro, Bio-t and other clinical lab waste g) Chemical Liquid Waste	Incineration or Plasma Pyrolysis or deep burial*
Red	non-chlorinated plastic bags or containers 	Contaminated Waste (Recyclable) tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles) and gloves.	Auto/ Micro/ Hydro and then sent for recycling, not to be sent to landfill
White	(Translucent) Puncture, leak, tamper proof containers 	Waste sharps including Metals	Auto or Dry Heat Sterilization followed by shredding or incineration or encapsulation
Blue	Cardboard boxes with blue-colored marking 	Glassware	Disinfection or auto/ Micro/ hydro and then sent for recycling.

DISCUSSION

Considering Operation theatre discipline both Ancient and Modern way shows different methods to maintain healthy surgical environment. In Ancient era, Acharyas explained about how the procedure room should be and what all things we have to keep in mind while building it. These points are almost similar to the conditions required for building an Operation theatre in modern era. In Ayurveda, the importance of shuchi, Dhupana techniques, Pre-operative measures, etc are explained elaborately in different contexts. While considering modern pre-operative measures we can see that Ayurvedic views are still valid. Ayurvedic classics even explained about how surgeon should be and about assistant also. We can apply all these nowadays also. Following OT protocols in a systematic manner helps in creating healthy and smooth surgical environment and prevents other complications and infections.

CONCLUSION

- A protective and clean atmosphere in the operation theatre can ensure in maintaining vital functions, prevent dangerous secondary infections and thereby promote healing without any complications. By doing all procedures as per the protocol we can maintain this.
- surgical site infection rates can be improved by acting upon various factors, from the surgical environment itself to procedural aspects and staff behaviour.
- It is necessary to check every small things in a operation theatre.
- In ayurveda also acharyas mentioned different preventive aspects for different procedures. Cleanliness and maintaining everything in an orderly manner is also a part of this.

References

- [1] A. M. Spagnolo, G Ottria, D. Amicizia, F. Perdelli and M. L. Cristina, Operating theatre quality and prevention of surgical site infections, *J Prev Med Hyg.* 2013 Sep; 54(3): 131–137.
- [2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4718372/#!po=67.0000>
- [3] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana, chapter 19, verse 4, p 137.
- [4] Acharya Charaka, charaka samhita, chaukamba orientalia, Varanasi. sutrasthana, chapter 15, verse 6.
- [5] Hussain Gazala, Dhupana kalpas; A review, *J Biol Sci Opin* 2015. 3(3):157-159
- [6] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana, chapter 19, verse 28.
- [7] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana, chapter 5, verse 18, p 32.
- [8] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana 10, verse 3.
- [9] Vagbhata, Ashtanga hrudaya, English translation and commentary by T. Sreekumar, vol. 1, Sutrasthana, Chapter 2, verse 35
- [10] Vagbhata, Ashtanga hrudaya, English translation and commentary by T. Sreekumar, vol. 1, Sutrasthana, Chapter 26
- [11] Vagbhata, Ashtanga hrudaya, English translation and commentary by T. Sreekumar, vol. 1, Sutrasthana, Chapter 29, verse 29.
- [12] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Chikitsasthana, Chapter 2, verse 46.
- [13] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana, chapter 5, verse 10.
- [14] Prof. K R Srikantha murthy, Sushruta samhita english translation, Varanasi, chaukambha orientalia. 2017. Vol 1, Sutrasthana, chapter 5, verse 6.
- [15] Sudhir kumar jain, David L stoker, Raman Tanwar. Basic surgical skills and techniques, 3rd ed. Jaypee publishers, 2018. Chapter 1, p 1-2.
- [16] Sudhir kumar jain, David L stoker, Raman Tanwar. Basic surgical skills and techniques, 3rd ed. Jaypee publishers, 2018. Chapter 1, p 3-4.