

# The Concept of Post Operative Care in Ayurveda and Its Relevance in The Present Era

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**Abstract: Background:** The *Sushruta Samhita*, the most important literature on surgery, contains references to both the basic and applied ideas of *Shalyatantra* by *Acharya Sushruta*. The majority of the world is still ignorant of *Acharya Sushruta's* fundamental contribution to the science of surgery. There aren't many publications that have made an attempt to highlight his contribution to the growth of surgical practise in many fields. Post-operative care was given prominence by *Acharya Sushruta* along with the fundamentals of surgery. It is important to understand the contribution of *Sushruta* in the development and documentation of basic knowledge of post-operative care in ancient surgical practice. If one goes through the details in Morden surgery, he will defiantly find very much similarity between basic concepts of post-operative care of a surgical patient given in Ayurveda explained in *Shushrut Samhita* and Morden surgical textbooks. **Methods:** A real attempt is made to comprehend the applicable elements of ancient concepts of postoperative care and their validity in the present surgical period with the aid of classical literature and their commentaries, as well as modern medicine materials found online and offline. **Results:** In *Vranitopasniya Adhyaya*, *Acharya Sushruta* has quoted Essential principles of post-operative care in details within 39 verses. Starting from the infrastructure of the ward for the wounded (*Vranitagar*) to self-care and its importance in general, the concept of fumigation of the ward to avoid nosocomial infections are summarized in *Vranitopasniya Adhyaya* as primary knowledge. Classical along with modern concepts of post-operative care are described briefly in this article. **Conclusion:** Since the ado, it has been required to have a basic understanding of post-operative care. This essay aims to inform readers worldwide about *Acharya Sushruta's* seminal record on the fundamental principles of post-operative care for surgical patients and its fundamental role in the development of contemporary surgery.

**Keywords:-** Post operative care, Recovery room, nosocomial infections, Vranitagar, Surgical ward, Acharya Sushruta

## 1. Introduction:

The purpose of this article is to highlight Ayurveda's contribution to the field of surgery. In the most important text book on surgery, the *Sushruta Samhita*, *Acharya Sushruta*—the founder of surgery—described the fundamental and practical principles of necessary surgical knowledge in the form of *Shalya Tantra*. According to *Acharya Sushruta Trividha karmas* are three main pillars of Surgery namely *Purva karma* that is pre-operative care, *pradhan karma* which is the main operative procedure and *Paschat karma* is post-operative care. (1) To underline importance to the post-operative care hance *Acharya Sushruta* has dedicated the whole chapter in *Sushruta Samhita* for post-operative care named '*Vranitopasniya*'. Term *vra*na means wounded and *Upasaniya* means 'to follow'. (2)

Facilities and care of post-operative patients are enumerated in the classics. The care provided to the patient following surgery is known as post-operative care. It could involve patient and wound care supervision. After surgery, postoperative care begins and continues during the hospital stay. There are significant immediate concerns about wound healing, pain management, psychological condition, and airway safety. Wound infection, urine retention, constipation, and blood pressure swings are further concerns. (3) *Acharya Sushruta* has described essential requirements in a well manner which include recovery room structure, type of bed, pleasant environment, dietary factors, fumigation in the ward, nosocomial infections, regimen, restrictions and pain management. Recent science follows similar concepts which are already given in Ayurveda thousand years back.

## 2. Material & Methods:

Ayurvedic texts like Sushruta Samhita, Charaka Samhita along with classical commentaries were reviewed critically and scientifically to understand *Vranitopasniya Adhyaya* and its clinical application. Modern scientific literature describing the principles of post operative care is reviewed and currently available website data for the same topic were reviewed.

**Methods:** Hand search and electronic media support.

## 3. Result And Discussion

In the context of Post-operative care in Ayurveda *Aacharya Sushruta* has described essential points in a good manner that include recovery room structure, type of bed, pleasant environment, regimen and restrictions, dietary factors, and nosocomial infections.

### RECOVERY ROOM

#### According to *Ayurveda*

A suitable room should be selected for a patient suffering from a wound. It should be constructed on an appropriate Bhumi (an ideal area for construction). The ideal characteristics of location are explained as follows- the land should be inclined either towards the east or north, having black or yellowish soil. It should have sufficient length, width and height and devoid of direct sunlight and breeze. It also has sufficient windows and ventilation chamber for light source and ventilation creating a good atmosphere (4)

#### According to Recent science

##### Room layout (5)

- Toilets with running water facility and flush shall be provided for ward.
- No direct sunlight should enter in the room
- Maintain temperature and Humidity
- Post signage on the door.
- Appropriate hand-washing facilities.
- Appropriate room ventilation (>12 ACH).
- Directional control of airflow, with air flow entering the room only when the door is open, and exhausted outside safely.

**Discussion:** It is clear that both sciences are having same goals regarding architecture. The importance of the construction of a chamber for the patient has been explained by the word '*Vastu*' means an ideal location for the construction of the site. Soil plays a major role in determining the depth of the foundation required to keep a building safe. Yellow soil with gravel, and sand which is dry is good for the foundation of a building and also devotion of accumulation of water. Noise is known to exert negative effects on human beings. Also in the hospital context, studies showed that sleep quality of patients might be impaired due to ambient sounds. exceeding noise levels do not only seem to affect patients but also healthcare professionals: Studies showed that noise on ICUs contributes to annoyance, irritation, fatigue, stress, and occupational burnout symptoms of healthcare professionals.(6) ventilation has a profound effect on the well-being of patients and employees in healthcare facilities. Indoor conditions encompass several criteria, including temperature, humidity, air movements and indoor air quality (IAQ). Infection risk studies in a healthcare facility, particularly in a multiple-bed hospital ward, are of vital importance when considering a patient's well-being and the greatest risk of infection because communicable and susceptible individuals congregate together, resulting in frequent airborne nosocomial transmission. Nosocomial infections result in prolonged hospitalisation and increased expenditure for the patients. Ventilation should also assist in preventing diseases and treating patients. Many studies have elaborated on the health benefits of ventilating wards and their intricacies.(7)

## TYPE OF BED

### According to ayurveda (8) :-

- The bed should be spread clean, wide and comfortable, with the head of the bed frame turned towards the east and provided with some kind of weapon.
- Wounded should be sited comfortably in bed
- Bed should be ample enough for easy access and should allow easy movement of a wounded person
- The cot should not be congested and decorated with big pillows.
- Bed should be pleasant to look and greatest ease(*Manogya*).
- Keep the patient's bedclothes and wearables in the sun every day and the washable ones should be washed daily and after washing go through fumigation (*dhupana*) with Fumigative medicine (*Guggulu sarshapadi dhupanadi drvya*) .

### According to Recent science:

#### Hospital Bed Types and Accessories (9)

- There shall be at least 2.5 metre distance between centres of two beds to prevent cross infection and allow bedside nursing care.
- Every bed shall be provided with IV stand, bed-side locker and stool for attendant. Screen shall be available for privacy.
- “Standard Variable-Height Bed” is a bed with manual head and leg elevation adjustments and a manually adjustable height.
- “Full-Electric Bed” is a bed on which height, head and leg elevation are all electrically operated.
- Bed baths
- Bed boards (i.e., board inserted between bed spring and mattress to give extra support)
- Bed elevation blocks (i.e., blocks to elevate the head or foot of bed),
- Bed lifters (i.e., bed elevators)
- Bed railing pads (i.e., protection over bed railing)
- Call switches (i.e., device to summon help)
- Foot boards (i.e., board at the end of the bed)
- Overbed tables
- Standard beds and mattresses made of allergy-free materials
- Side rails when used with an ordinary bed

**Discussion :-** According to Ayurveda head of the patient or any healthy individual should not facing towards north. The reason for the head being turned towards the east is that Magnetic fields on the Earth are concentrated in the North and the South Pole. When a person sleeps with the head pointing north, his body's magnetic field interferes with that of Earth. This can fluctuate the blood pressure and can even cause heart problems. The heart needs to work harder to overcome this. If a person is elderly or already a heart patient, then he might be at a higher risk of getting a haemorrhage or paralytic stroke. Another reason is that our blood contains a lot of iron. When we sleep facing North, the magnetic pull of the direction attracts iron, which gets accumulated in the brain. This is the reason why many people complain of getting a headache when they wake up. Sleeping with your head pointing North can also disrupt your blood circulation and lead to disturbed sleep.(10) In order to prevent such a scenario, Acharya sushruta said to avoid sleeping with your head towards North.

An effective laundry service in a hospital Provides psychological satisfaction to the patients and improves aesthetics. Efficient laundry service reflects a positive image of the hospital and is an important public relations variable. It reduces the incidence of Hospital Acquired Infection(HAI) by preventing infected laundry from becoming a source of infection. It facilitates the provision of quality healthcare services. (11) Research has proven that outdoor air is a natural disinfectant, equally, sunlight is germicidal, thus both can kill the flu virus and other harmful germs. (12) Hence, Acharya's advice to expose patients' bedclothes and wearables to sunlight every day has relevance till today. Acharya Sushruta also advised providing freshly laundered cloths to the patients. Dhupana i.e. fumigation with Fumigative medicine (*Guggulu sarshapadi dhupanadi drvya*) liberates fragrant fumes having

potent anti-microbial properties. Other facilities like remote control adjustable bed heights and fully electrically operated beds are the comforts provided nowadays due to the availability of technological advances.

## PLEASANT ENVIRONMENT

### According to Ayurveda

- The friends and relatives of a patient shall alleviate the pain of the patient by undergoing a talk that is pleasant and interesting so as to deviate the mind of the patient. (13)

### According to Modern science (14) :-

- In one study there is evidence that involves family members, caregivers and especially nurses who play a central role as they deliver the largest amount of time in-hospital care has a direct relation with the recovery rate of patients.
- Patients identified having a need for personal space added with a homely welcoming atmosphere, a supportive environment, good physical design, and access to external areas and observed that there was a change in patient's attitude and recovery.
- Provision of Laundered clothes regularly to avoid contamination with pathogens, daily bathing, dental care, hair and nail care really of mood elevators and use of loose cotton clothes and avoiding tightly fitted clothes

**Discussion:-** According to Ayurveda emotional factor is important to deal with wounded patients. Emotional support also helps reinstate the mental strength by solacing him and helping in speedy recovery. And best way to deliver emotional support is by their close ones who are attached emotionally to them. It can divert the feeling of intensity pain and build mental strength.(15) Cleanliness is essential to create a pleasant environment. Cleanliness itself assures a pyrogen free healthy environment.

## REGIMEN AND RESTRICTIONS

### According to Ayurveda :

- An wounded patient should avoid all things that retard the progress of a rapid cure, such as wind, dust, smoke, exposure to heat and cold, over-eating, unpleasant sounds and sights, envy, humiliation, fear, anger, grief, scheming, keeping of late hours, sitting or lying in an uneven posture, fasting, garrulousness, physical exercise, leaping or a standing posture, locomotion, exposure to cold winds, ingestion of unwholesome, incompatible or indigestible substances, and flea-bites on the affected locality. (16)
- The operated patient should not sleep in the daytime. (17)
- The patient must carefully protect the wound while moving any of his limbs during standing or sitting or turning around also during speaking in a loud voice. Even if the patient feels strong and capable he should avoid a standing or sitting posture or any kind of movement and sleeping in day time.

### According to modern science (18) :

- Patient should not lift anything that weighs more than 10 to 15 pounds (no more than a gallon of milk) until six weeks after the surgery. This includes babies, children and groceries.
- Do not do any strenuous exercise such as contact sports, jogging, tennis, sexual activity, or body conditioning (weightlifting, push-ups, sit-ups, etc.) for at least two months after Discharge.

**Discussion :-** According to ayurveda Restrictions for persons suffering from wound fatigue or physical exercise causes swelling and redness. The operated patient should not sleep in the daytime as it tends to aggravate the pain, swelling and redness of the wound along with increasing its exudations, and gives rise to itching and heaviness of the limbs (19) The symptoms like itching and heaviness are due to *Kapha*. The symptoms like pain and edema is due to *Vata*. The symptom like redness is due to *Pitta*. The symptoms like increased discharge is due to *Rakta*. higher self-reported anger and anger suppression have been associated with a longer postoperative recovery and more post-surgical complications. Individuals displaying less ability to regulate the expression of

their anger secreted more cortisol in response to the stress associated with the blistering procedure. Greater cortisol production was in turn associated with delayed healing. (20)

The impact of anger control on wound healing has clinical relevance. Individuals with low control over the expression of their anger were 4.2 times more likely to take more than 4 days to heal, compared to those with higher levels of anger control.

Day sleep gives rise to pain in the affected part while intercourse leads to the death of the patient. A patient who follows the diet and rules as explained here will attain comfort. Those acts done in excess would aggravate Vayu, thus leading to pain. He should also strictly avoid the company and touch of women or even conversation with them. Effect of the psychological effect of post-surgery alleviates homeostasis of the body and lead to pleasant environment.

## DIET

### Non-Consumable food According to ayurveda (21)

A diet consisting of newly harvested Dhanyam, Masha pulse(Black gram) , Sesamum, Pulses like Kalaya(Garden peap), Kulattha(Horsegram) , and Nishpava(Flat bean) should be avoided by an wounded patient. The Fresh pot herbs known as Haritaka Shaka(Green leafy Vegetables), acid, saline or pungent substances, cake prepared from jaggery and flour and its modifications, dried meat, dried pot-herbs, goat's flesh, mutton, meat of animals which are amphibious in their habits or which live close to water, lard, cold water, Krishara (a composition prepared with sesamum, Masha pulse and rice), Payasa (a sweetened preparation of rice, milk and sugar boiled together), curd, milk and whey should be regarded as unwholesome.

### Non-Consumable food According to Modern science (22) -

white rice, potato chips, Refined/processed foods, white bread, boxed meal mixes, packaged high-calorie snacks, Sweets including pastries, candies, cakes, cookies and other sugary foods, Dried or dehydrated foods, such as dried fruits, Red meat, beef, pork and likes, Milk and dairy products such as cheese, butter, paneer, curd, buttermilk, and alcohol

**Discussion :-** According to Ayurveda food mentioned from newly harvested Dhanyam has enormous moisture content which causes it heavy to digest. Form newly harvested Dhanyam to milk preparations causes the property of increasing the pus in an ulcer and of aggravating the deranged bodily humours. Alcohol being *aamla rasatmak, ruksha prakruti yukta, tikshna, dosha Vardhana ushna veerya* and *sheegranusari* causes vitiation of *pitta* and *rakta* hence hampers the wound cleansing and delayed wound healing. According to Modern science, Sugar and foods with high sugar has an impact on collagen located on the surface of the epidermis. Especially in the fibroblast and regenerative phase of open wounds, using sugar will slow this process down and the wound will take longer to heal. Skimmed milk can affect the body's production of insulin and the body's natural inflammatory response. Therefore, using skimmed milk will affect the inflammatory phase, affect the formation of blood clots and slow down the healing process. meat contains a lot of protein and energy. Therefore, in the regeneration phase of the wound, when the skin is in the healing process, using foods high in protein will lead to keloid, lumpy and hard scars. Beef is nutritious, but it darkens the wound and forms deep scars. Smoked meat can deplete essential vitamins and minerals in the body needed for cell regeneration. Constipation is incredibly common after surgery. Bowel surgery, of course, will affect the functioning of bowels, but even non-abdominal surgeries can cause constipation because anaesthesia, pain medication, and the general lack of movement following surgery temporarily alters the functioning of your gastrointestinal system. Dried or dehydrated foods, Milk and dairy products, Refined/processed foods, such as white bread, white rice etc are promoting the constipating condition and also high-fat foods like cheese can also trigger nausea.(23)

### Consumable food According to Ayurveda

Consumable food According to Ayurveda (24)	Consumable food According to Modern science
By taking diet of old sali rice, unctuous, little warm and without liquid along with...	Protein
A) With soup prepared from the meat of wild animals, the patient recovers from wound.	nuts, tofu, beans and vegetarian foods
B) with vegetables of tandullyaka, jlvanji, sunisannaka, vastuka, tender radish, vartaka, patola and karavellaka or other similar substances along with dadima and amalaka, fried in ghee and mixed with rocksalt or with soup of green gram .	Vitamin A - include carrots, leafy greens, red bell pepper, sweet potato Vitamin C - kiwi, oranges, tomatoes, strawberries, broccoli, bell peppers, and potatoes. Vitamin D - egg yolk, salmon, tuna, and direct exposure of skin to sunlight Calcium - dark green leafy vegetables are good sources.
C) with parched grain flour, vilepi or boiled grains and should drink boiled water.	whole grain breads, cereals, fresh fruits and vegetables

**Discussion** :- According to Ayurveda old shali rice is light in nature and taken after boil and warm which is easy to digest. For the source of protein drink jangala mansa rasa( soup of dry forest animal's meat) along with shali rice could be taken. For vegetarians old shali rice can take with tandulikyadi vegetables with Juice of Dhadima(Pomegranate) and Amalakam(Indian barrys). Pomegranate juice The anti-inflammatory effects of pomegranate improve the rapid closure of wounds. (25) Amla is highly nutritious and is an important dietary source of vitamin C, minerals, and amino acids. It is also contains phenolic compounds, tannins, phyllembelic acid, phyllembelin, rutin, curcuminoides, and emblicol. (26) Another important part of wound healing is the proliferation phase. Fibroblastic cells have a key role in this stage. These cells produce collagen fibers, which are the main extracellular matrix proteins. Eat warm Protein is especially important after surgery. It helps repair damaged body tissues, form antibodies to fight infections, and synthesize collagen which is necessary for scar formation. Dairy and bak products are also a source of protein, but they can cause constipation, so they should be used in moderation. vitamins and minerals can also help reduce inflammation, as well as accelerate wound healing after surgery.

Vitamin A – stimulates the immune response and helps form normal outer and inner skin.

Vitamin C – is needed for the speed and strength associated with wound healing. It forms collagen in bones, cartilage, muscle, and blood vessels

Vitamin D – is an essential nutrient in the formation, maintenance, and repair of bones.

Calcium – is an essential mineral for bone repair/soft tissue healing, proper blood clotting, muscle contraction(especially normal heartbeat rhythm) (27)

### NOSOCOMIAL INFECTIONS

#### According to ayurveda:-

**Drugs for fumigation** : The room of the patient should be fumigated twice a day for ten consecutive days, with the fumes of mustard, *Arishta* leaves, ghee and salt made into a kind of incense stick. Along with the wound, the bed of the patient and its Clothes should be fumigated. (28)

**Drugs for placing on the head:** Drugs such as *Chatra*, *Atichhatra* , *Languli*, *Jatila*, *Bramh acharini*, *Laksmi*, *Guha*, *Atiguha*, *Shatavirya*, *Sahasra virya* and *Shveta Sarshapa* seeds should be placed on the head of the patient. The patient should be fanned by chowrie soth at the wound may not be in any way thrashed during the fanning. The wound should not be scratched or pressed. The patient should be carefully watched even while asleep. He should be protected from evil creatures that can attack even in daylight just like in a forest the deer is attacked by the lions. (29)



**Prayer to God :-** An ulcer patient should always be clad in clean and white garments, have his hair and nails closely clipped and pared off, and live in humble devotion to the Brahmins, to the gods and the preceptors.

- evil spirits are worshipped and propitiated and spare the life of a self-controlled patient out of compassion '. Hence patient shall be kept in a chamber furnished with flowers, garlands, weapons, fried paddy, and lamps kept continuously burning. His friends and relations should regale him with fond and loving topics to drive away the feeling of sleepiness with the prospect of a speedy cure. Morning and evening, the physicians and the Brahmins should perform the rites of benediction.

#### **According to Modern science (30) :**

Implementation of infection control protocols to reduce exogenous and endogenous transmission of infection.

- **Exogenous transmission**

It occurs due to person-to-person interactions and through environmental cross-contamination.

Frequent hand hygiene is the most important preventative measure to limit the spread of pathogens.

- Compliance with isolation precautions
- Proper use of personal protective equipment
- Avoidance of unnecessary use of indwelling devices, and remove them soon as advisable.
- Practicing proper aseptic and/or sterile techniques during insertion and maintenance of devices.
- Routine disinfection of surfaces, patient equipment, and medical devices
- Appropriate waste management
- A neutral detergent and warm water solution should be used for all routine and general ward cleaning.

#### **Endogenous transmission**

- Appropriate antimicrobial use with the correct agent, dose, and duration is needed to minimize the growth of antibiotic-resistant pathogens

**Discussion:** Though concept of microorganisms is not clearly mentioned. In ayurveda classics, knowledge of subtle, minute, invisible entities were indetailed explained and discussed in classics. Different methods like dhoopan, mantra etc explained for management of such entities. It is proven that dhoopan dravya explained in ayurveda having anti-inflammatory, antimicrobial, analgesics, antioxidant, wound healing properties. Many studies are still undergoing to understand the mechanism of vapor and action of dhoopan dravyas. The vibrations produced by mantra also showing positive effect on patients psychological aspects like anxiolytic, stress reliving properties and also showing effect at somatic level. Many studies are still ongoing on efficacy of mantra and different sound waves and frequencies.

## **SEXUAL INTERCOURSE**

#### **According to Ayurveda :**

In wounded condition as mention earlier patients should also strictly avoid the company and touch of women or even conversation with them, because sexual intercourse will cause swelling by exertion, redness by awaking at night and pain become increase. (31)

#### **According to Modern science:**

During sexual intercourse, this 'feel good' neurotransmitter is triggered in increased amounts, which activates the brain's reward centre. Intercourse is usually allowed after six weeks, but this is somewhat arbitrary. Gentle penetration is quite possible after four weeks but for most simple surgeries, patients are able to have sex around the same time they start integrating work and full physical activity back into their life. If the patient had day surgery, this might be one or two days, whereas in intrusive surgery this will often range from 1-2 months. The Factors which are affect after surgery in sexual life are -

- Post-operative Pain
- Injury or trauma irritation

- Inflammation
- infection
- Emotional factors
- Psychological issues
- Stress
- Painful intercourse (dyspareunia)
- Drains and bloody drainage is a turn-off to most partners. Visible healing incisions and sutures are unpleasant to most people.

**Discussion:** Sex may need to be avoided after surgery as it can disrupt incisions and place excessive pressure on the surgical site. It will also increase cardiac and respiratory activity which leads to extortion. It also shifts increased circulation of blood from the wounded site to genital organs which eventually affects wound healing. Sex should be avoided for six weeks following surgery on the abdomen, pelvis, anal, rectal, or colon surgery. Even when it is OK to have sex following anal or rectal surgery, use plenty of lubrication to avoid damaging vulnerable tissues. Condoms should also be used to avoid infection. According to ayurveda patient should studiously avoid the company and touch of, and even conversation with, women with whom he can legitimately have intercourse. The sight of a woman etc might lead to the secretion and emission of semen and give rise to all the distressing symptoms, which are consequent upon an act of actual coitus under the circumstance.

#### 4. Conclusion

This article clearly proves that Modern science is chiefly based on *Acharya Sushruta* principles which were told thousand years ago. Right from the post-operative care including personal care of the patient, construction of his room, type and position of the bed, regimens to follow, indications and contraindications about food and physical activities, the role of patient's caretakers, prevention of nosocomial infection and likes are still followed by the Modern science. One should feel proud and carry this knowledge further to generations about the contribution and detailed Knowledge of Acharya Sushruta in the field of Surgery. Health professionals can follow these same principles to their personal clinics and in hospitals and community health care centres as well. This also denotes that post-operative care is one of the most important pillars in the field of Surgery. While percolating through this points are can find many similarities in the concept of post operative care as per ayurveda and morden sciences hence, we conclude that Observing conduct and activities in this way the patient of wound becomes healthy and apply attaining long life

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