

## CONCEPT OF SHORT HAND SURGICAL TRAINING W.S.R. TO YOGYASUTRIYA ADHYAYA - A REVIEW

Foram Joshi<sup>1</sup>Vyasadeva Mahanta<sup>2</sup>

<sup>1</sup> 3<sup>rd</sup> year resident, <sup>2</sup> Asst. professor, dept. of Shalya Tantra IPGT&RA, Gujarat Ayurved University, Jamnagar, India

### ABSTRACT

In Ayurved, Dhanwantari School has been recognized as a surgical branch. Sushruta was the first person, who learnt and practiced various surgical procedures in approximately 300 BC. He compiled a surgical compendia including other branches of medicine is known as 'Sushruta Samhita' based upon what he had learnt from lord Dhanwantari and Divodash. Hence, he has been known as 'Father of Indian Surgery' after the development of modern surgical era. The teaching principles are laid down in such manner which is unparalleled even today also. He has contributed a special chapter for new learners to extend short hand surgical training is named as 'Yogyasutriya Adhyaya'. This review study focuses on how to learn 'Astavidha Shastra Karma' (eight surgical procedures), Bandhana (bandaging techniques) etc. on suitable objects. **Keywords:** *Yogyasutriya Adhyaya, Astavidha Shastra Karma, Bandhana.*

### INTRODUCTION

Sushruta has very rightly designed and contributed a chapter to learn surgical techniques on objects before practicing of similar techniques on human beings. He has been emphasized so seriously for new learners to practice similar operations on similar objects for obtaining highest rate of success, otherwise he cannot be a life giver even after thoroughly learnt all the scriptures.

अधिगतसर्वशास्त्रार्थमपि शिष्यं योग्यां कारयेत्

I, स्नेहादिषु छेद्यादिषु च कर्मपथमुपदिशेत् II

सुबहुश्रुतोऽप्यकृतयोग्यः कर्मस्वयोग्यो भवति I

Eight types of surgical procedures (*Chedana* (surgical excision), *Bhedana* (incision & exploration), *Lekhana* (scraping), *Vyadhana* (puncturing), *Esana* (probing), *Aharana* (ex-

traction), *Visravan* (drainage / removal of vitiated *Dosa*), *Sivan* (suturing)) and application of *Kshara* (alkaline substance), *Agni* (cautery), *Badhana* (bandaging) etc. are explained in this chapter.

**NEED OF THIS STUDY:** The aim of this study is to review the principles mentioned for experimental surgery and execute these ideas in current teaching / training methodology.

**REVIEW OF LITERATURE:** In *Sushruta Samhita*, *Sutrasthan*, 'Yogyasutriya Adhyaya' has mentioned in 9<sup>th</sup> chapter. It contains total six *Slokas* (references) regarding how to make a student fit for surgical work.<sup>1,2</sup>

- *Chedana Shastrakarma* (surgical excision)

It is a procedure to excise a diseased / damaged part by using scalpel / surgical knife (different *Shashtra* eg. *Mandalagra* (circular knife), *Karapatra* (bone saw), *Vridhipatra* (Scalpel)). For this purpose, various objects like pumpkin-gourd, bottle-gourd, water melon, cucumber etc. are mentioned. Different excision techniques should be practiced on these objects. The idea behind the selection of such types of fruits that outer surface of these fruits are not so hard and inner compartment is bulky / soft. So that a new scholar can easily cut and feel that what much pressure is required to cut / excise. Also scholar can know how to hold a surgical blade for performing excision in upward, downward, circular directions. Once any scholar is experienced on *Chedana Shashtra-karma*, he can execute in the clinical conditions like 1) अपाकेषु तु रोगेषु कठिनेषु स्थिरेषु च (Non supportive hard, fixed swelling 2) स्नायुकोथादिषु (Necrotizing soft tissue lesion) in human.

• *Bhedan Karma (Incision & exploration)*  
It is procedure to be made to expose underlying structures and to let-out the content by using *Shatra* i.e. *Vridhipatra* (Scalpel), *Ardhadhara* (single edged knife). For example, to manage a case of *Pakwa Bidradhi* (absces), an adequate incision and proper exploration is an essential step. So to learn this technique, incision should be practiced on a leather bag, urinary bladder or leathern pot containing full of water and slime. Whenever, a scholar has tend to practice incision over this model, he will judge the exact pressure is required to incise and how to explore a cavity. By this practice, scholar will be capable to tackle the conditions like अन्तःपूयेष्वक्त्रेषु (deep / superficially seated abscesses), गतिमत्सु च रोगेषु (pocket of pus in fistula / sinus tract).

• *Lekhana Karma (Scraping / scooping)*

Scraping / scooping is being carried out to remove undesired tissues like hyper granulations, epithelized tissue, sequestrum etc.. To gain clinical experience, *Lekhana Karma* should be practiced on piece of hairy skin. It is very small surgical procedure, but highest attention is needed to avoid injury to nearby structures. For examples, during surgical scrapping of an ulcer, there is chance of damage to its base, arteries, veins etc.. After practice of *Lekhana Karma*, scholar can deal the surgical conditions like 'कठिनान् स्थूलवृत्तौष्ठान् दीर्यमाणान् पुनः पुनः' (Hard ulcerative lesion with thick rolled margins and having tendency to crack repeatedly), कठिनोत्सन्नमांसांश्च (hard and granulating surface).

• *Vyadhana Karma (puncturing)*

It is procedure to pierce the epithelial surface, superficial veins etc. For this purpose very fine hand is necessary. So this procedure should be practiced using veins of animal or on the lotus stalks which are smooth, spongy in nature. This procedure is applicable to remove the fluids from any cavity. Exa. Abdominal paracentesis.

• *Esana Karma (probing)*

The *Esana Karma* should be practiced using holes in pieces of wood eaten by moths', bamboos, and mouth of dried gourd. These materials are containing multiples holes and passages through which a probe can be passed without any resistance or least of resistance. By this procedure, scholar can be developed clinical skill to assess the pathway of sinuses and cavities in humans.

• *Aharana Karma (extraction / pick-up)*

The act of removal of a foreign body by pulling is called *Aharana Karma*. This tech-

nique can be practiced on fruits containing seeds like jack fruit, pulp of bilwa or on the teeth of dead animals. This procedure is followed to remove the impacted foreign body, stone, faecolith etc. in surgical practice.

- *Visravan* (drainage / removal of vitiated Dosa)

This method is used to remove the abnormal collection of fluids in body cavities and to let-out the vitiated *Rakta Dosa* (vitiation of blood). The procedure of *Visravan Karma* should be practiced on a piece of *Salmali* wood coated with beeswax. It is preferred for *Visravan Karma* because beeswax is a soft material, when incision can be taken, it will be offered the similar feeling like skin incision. The bark of *Salmali* wood contains plenty of liquid material. So whenever a scholar can intend to practice *Visravan Karma* on this model, he will be experienced on how to take a fine incision for free flow of liquid.

- *Sivan* (suturing)

This technique is defined for approximation of cut margins of wound, which are produced by surgical or non-surgical process. Approximation of margins anatomically has paramount of importance in surgical practice. This technique should be practiced on the borders of fine closely knitted cloths and on the borders of soft leather.

- *Bandhana Karma* (Bandaging technique)  
Total fourteen *Bandhanas* are mentioned in *Sushruta Samhita* with considering the nature of disease and season. A suitable *Bandhana* helps for early healing of crushed, lacerated wound and to stabilize the fracture, dislocation etc.. So that a wounded person can sleep well, able to walk and sit comfortably. The scholar who desire to learn

*Bandhana*, he should practice on different parts of the dummies made up of cloth.

- *Kshra & Agnikarma*

*Ksara & AgniKarma*, are of the most important para-surgical tools mentioned in Ayurveda. But lacking of clinical skill and small negligence, it can produce more hazards to body tissue. Thus one who desires to become skilled to use *Kshara Karma* (alkaline therapy) and *Agnikarma* (thermal cautery), should practice on similar objects like a suitable soft muscle piece. Because the signs of *Samyak Dadha* can be observed better in muscle piece.

- Miscellaneous procedures

Similarly to become skilled in other miscellaneous procedures like *Vastikarma* (enema therapy), *Vranaprakshalana* (wound cleaning / irrigation), scholar should be practiced on the side hole of an earthen pot contain full of water or on the mouth of gourd.

## DISCUSSION

In view of *Sushruta*, though a student has fully understood all surgical principles, but he cannot be competent without *Yogya*. He will be failed to conduct surgical procedures in human. To solve this problem and to build up sound knowledge in a surgical scholar, he has explained and demonstrated different kinds of *Yogya Vidhi*.

(एवमादिषु मेधावी योग्यार्हेषु यथाविधि, द्रव्येषु योग्यां कुर्वाणो न प्रमुह्यति कर्मसु).

*Sushruta* has also clearly defined that an intelligent scholar can be selected other suitable objects to obtain accurate, precise knowledge in particular procedure i.e. *Shashtra Karma*, *Ksharakarma* *Agnikarma* etc.

(तस्मात् कौशलमन्विच्छन्  
शस्त्रक्षाराग्निकर्मसु, यस्य यत्रेह साधर्म्यं तत्र  
योग्यां समाचरेत्)

Above verse reflects that *Sushruta* has thought very keenly and designed this subject. There is no doubt; Sushruta's vision was very right in that time to make every student comfort and genius in *Dhanwantari Sampradya*.

This beautiful concept of experimental training has been incorporated in current medical education and recommended to acquire basic surgical skills outside the operating environment (simulation-based training) prior to procedures on live patients. Because large numbers of students are not acquired the basic surgical fundamentals after graduation.<sup>3</sup> Various dummies / manikins, Virtual reality (VR) simulators low and high-fidelity bench models etc. have been used as teaching and learning tools. Synthetic ethylene - vinyl acetate model, Chicken legs' skin, Pig foot etc are used to learn for incision and excision of skin lesion, closure of skin incision.<sup>4</sup> To start minimal invasive surgery like laparoscopic surgery, endoscopic surgery, scholar can practice on Virtual reality simulators to develop better hand eye coordination.

Similarly to achieve high level of technical skill and confidence in surgical operations of plastic surgery, vascular anastomosis, full thickness skin with its vascular network excised in abdominoplasty could be used as a training model.<sup>5</sup>

## CONCLUSION

'Yogyasutriya Adhyaya' is a preliminary brainstorming context; a scholar can develop his surgical skill in a safe and regulated environment.

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## CORRESPONDING AUTHOR

**Dr. Vyasadeva Mahanta**

Asst. professor, dept. of Shalya Tantra  
IPGT&RA, Gujarat Ayurved University,  
Jamnagar, India

**Email:** drvyasayu@yahoo.in

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