



PRACTICAL APPLICABILITY OF *YOGYAASUTRIYAM ADHYAYAM* OF SUSHRUTA SAMHITA

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ABSTRACT

Human beings are superior than other animals because of their abilities like learning new things, adopting them in their life and modifying them time to time as per their needs, in a way to ease their life. Learning an art is pre-requisite to master the skill. This holds good even in Surgery. The very word meaning of Surgery is hand work. This accounts to the importance of hand skill in performing any surgical procedure. Extensive training is must in order to master the skill. Ancient surgeons of *Ayurveda* had recognized the importance of skill building in the field of surgery (*Shalya Tantra*). This is very evident

from the elaborate practical sessions mentioned in *Yogyasutriya* chapter of *Sushruta samhita* in order to develop adequate skill required to handle surgical cases. Modern surgery also believes in the similar concept of training. This is the reason why enormous experimental models, simulators have been developed. Present article emphasizes on the ancient and present concept of surgical skill training with a need to incorporate present training techniques in *Ayurveda* by collaborating both the techniques.

KEYWORDS: Yogyasutra, Sushruta, Surgical Skill, Training, Surgery.

INTRODUCTION

Ayurveda - an authentic and eternal system of medicine which has a divine root of origin, has retained its prophecy for thousands of years in medicinal system because of its never changing principles and its practical applicability even in today's modern era. Lord Brahma remembered Ayurveda and taught Daksha prajapathi, who in turn taught Ashwini kumaras who then taught the eternal science to indra for the benefit of mankind.

From here on there were two schools of medicine which taught *Ayurveda* in two different perspectives. First being *Atreya sampradaya* which was propounded by *Punarvasu Atreya* who learnt the science from *Bharadwaja*, who gained the knowledge of *Ayurveda* from *Indra*. He then taught the same to his 6 disciples. Second was the *Dhanwantari sampradaya* which was lead by *Divodasa Dhanwantari* known as *Kashi Raja Dhanwantari* (believed to be incarnation of *Dhanwantari*) who learnt *Ayurveda* from *Indra*. *Divodasa Dhanwantari* who was believed to be the incarnation of Lord *Dhanvantari* then taught *Ayurveda* to his 7 disciples including *Sushruta*. *Sushruta* then popularized the *Dhanwantari sampradaya* by writing a treatise particularly on *Shalya tantra*, called as *Sushruta Samhita*.

Though *Sushruta* popularized the science of surgery in olden days, it gradually declined due to various reasons viz, Lack of anesthetic agent, Principles of Jainism and Buddhism, lack of royal patronage, discontinuity in practicing principles of *Shalya Tantra*, non-disclosure of surgical skills etc.

In the present times practicing the same principles as it is mentioned by *Sushruta* might not be possible due to numerous reasons. At the same time, same principles can be followed with little modifications as per the present time based on convenience of the Patient and as well as doctor/surgeon.

AIM AND OBJECTIVES

1. To discuss the practical modifications of the surgical training techniques of *Sushruta*.
2. To discuss regarding surgical training techniques as mentioned in contemporary system.
3. Correlating both the techniques in surgical training.

Source of Data

Sushruta in his *Yogyaasutriyam adhyayam* -9th chapter of *Sushruta Samhita Sutrasthana*, clearly explains the importance of surgical training for students. He explains the techniques of surgical training prior to *Vishikhanu pravesham* chapter in which he explains regarding entering of a medical student from academic field to professional practice field where the student deals with the patients directly. The main reason of this ordered presentation of chapters is that before entering in to medical profession the medical student has to master the art of surgical practice and techniques on nonliving objects and on living beings if there is no major intervention, in order to become a successful Surgeon.

Table. 01: Eight surgical procedures and methods to demonstrate/practice them.^[1]

<i>Shastra Karma</i>	Classical training method
Incision	To be practiced on <i>Pushpaphala</i> , <i>Alabu</i> , watermelon, cucumber
Excision	Demonstrated by making openings in the body of a full water-bag or in the bladder of a dead animal, or in the side of a leather pouch full of slime or water.
Scraping	Should be instructed on a piece of skin having hair
Puncturing	Taught on the vein of a dead animal, or with the help of a lotus stem.
Probing	Probing should be taught on worm (<i>Ghuna</i>) eaten wood, or on the reed of a bamboo, or on the mouth of a dried gourd
Extraction	Extracting should be taught by withdrawing seeds from the kernel of a <i>bimbi</i> , <i>bilva</i> or Jack fruit, as well as by extracting teeth from the jaws of a dead animal.
Drainage	Evacuating should be taught on the surface of a <i>Shalmali</i> plank covered over with a coat of bee's wax
Suturing	Should demonstrate suturing on pieces of cloth or skin.
Bandaging	Bandaging or ligaturing should be practically learned by tying bandages round the specific limbs and members of a full-sized doll made of stuffed linen.
Ear lobe repair	Demonstrated on a soft severed muscle or on flesh, or with the stem of a lotus lily.
Cauterization and Alkali application	Demonstrated on a piece of soft flesh.

Importance of Practical knowledge: Prime importance has been given for practical knowledge along with textual knowledge. *Sushruta* says one who lacks practical knowledge and cannot apply the theoretical knowledge into practice is just like a coward in the battle field who can neither fight the opponents nor die with courage.^[2]

Need for advancement in concepts of *Yogyasutriyam* for Ayurvedic students

In the ancient period *Sushruta* who knew the importance of practical training, taught practical surgical training to surgical students i.e to students of *Dhanwantari Sampradaya* before they entered the field of practicing, with limited things that was available around them. At present, due to advancement in technology, 3D to 7D visual programming software, audio-video virtual reality simulators and many more which can be used to train advanced surgical techniques. Surgeons from Philippine College of Surgeons formed “Committee on Surgical Training” in 1999 where they created a series of modules that were prepared keeping Internship and fresh post-graduation students in mind, proved to be very efficient in training the students in surgical aspects.

Present day advancements in surgical training: During past several years, medical education has swayed away from traditional method of apprenticeship. Most of the surgical

skills were previously mastered initially with real patients but is now transferred in “vitro” or simulated venue.^[3] The regulations passed by the acgme in 2003 have restricted the number of hour surgical trainees in the united states can work, requiring that new surgeons become proficient in a shortened period of time.^[4]

Simulation (using physical models, computer program or combination of two) provide the opportunity to achieve and evaluate skills through repeated practice within a safe and controlled environment.^[3] Even though medical education has been slow to embrace simulation for reasons of cost, complacency, and lack of rigorous determination of reliability and construct validity. Focused by the patient safety movement, the face validity of simulation education is overwhelming. Many recent articles in the ethics literature have condemned the use of sedated or dying patients for training in examinations or basic procedures, again highlighting the role for simulation-based training. Professional and public concerns in surgical simulation has been initiated by almost identical situation with the airline industry with its desirable reputation for safety and its commitment to lifelong training. Actual patient-based learning is an important part of advanced surgical training but acquiring technical skills in a venue where patient safety is not at risk is now inevitable.^[5]

Advantages of Simulation

1. The training design can be formulated based on the needs of the learner and not the patient.
2. Since the venue is safe and controlled, learners are allowed to fail and learn from such failures in a way that is unacceptable in a true clinical scenario.
3. Simulators can offer objective evidence of performance using their inherent tracking functions to map learner’s trajectory in detail. Assessment forms are developed for both formative and summative evaluations.
4. The capacity of the advanced simulators to provide ready feedback in digital form offers collaboration in learning.

Applicability of Simulation and Stimulators and other surgical training modules in the field of Ayurveda.

Applying advancements to our science doesn’t mean that we are against the principles of our science. Technology and innovation work side by side for the upliftment of any science. Same as in the case of *Ayurveda*, we can adopt various scientific innovations like Model based simulations or minimally interactive mannequins - a range of relatively inexpensive models for learning or teaching basic procedural skills from simple bandaging to all the eight

surgical procedures. Also, procedure specific models can be prepared with maximum precision to learn or train procedures like *Agnikarma*, *Raktamokshana* using *Ghati*, *Alabu*, *Shringa* and even usage of *Kshara Sutra* in anal fistula and piles. All these are possible only with continuous efforts to uplift *Ayurveda* with the help of modern technology and with interdisciplinary collaboration with people from stream of engineering, information technology, bioscience, biostatistics and contemporary medicine.

DISCUSSION

In the present context, particularly speaking with respect to *Ayurveda* students there is an enforced need to teach the students the actual applicability of *Yogyasutriyam* in the fields like *Shalya tantra*, *Shalakya tantra*, *Prasooti tantra*, *Panchakarma* etc. There is a lot of scope and need for applying the Principles mentioned in *Yogyasutriyam* with modern science advancements for improving hand skills and psychomotor surgical skills of the surgical residents. This should evoke our thought process to modify and include modern technology into these training methods for the better outcome in the field of surgical practice in *Ayurveda*. Though the methods given by *Sushruta* for surgical training are precise, few of them may not be possible in the present era due to non-availability or difficulty in availing the objects mentioned or due to need for modifications in the training techniques for advanced surgical training. Current simulation models, including cadaveric, animal, bench-top, virtual reality (VR) and robotic simulators are increasingly used in surgical training programs. Advances in telesurgery, three-dimensional (3D) printing, and the incorporation of patient-specific anatomy are paving the way for simulators to become integral components of medical training in the future.^[6] A work on historical windows of *Sushruta's* Skill reveals elaborate description of development of skills of ancient plastic surgery.^[7]

CONCLUSION

Change is upon us and the opportunities are numerous to further improve the system of surgical training in the field of *Ayurveda*. Indian system of medicine is the base of all fields of medicine and principles of surgical practice as documented in *Sushruta Samhita*. Even now this fact is accepted worldwide by all the renowned scholars, even from the contemporary science. With backup of this vast knowledge, it is our responsibility to work for the upliftment of surgical practice in *Ayurveda* with respect to teaching as well as practicing as per the needs of present era.



Image. 1.^[7]

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