



CONCEPT OF ANCIENT SURGICAL PRACTICAL TRAINING YOGYA VIDHI: A REVIEW

Ayurveda

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ABSTRACT

Sushruta, the father of surgery has learnt and practiced different surgical procedures in 5th BC. He compiled his pool of knowledge regarding surgery and other different branches of science in his treatise called as 'Sushruta Samhita'. In that era despite of lack of facilities Sushruta has performed dissection, define anatomy and evolved procedures such as Ashtavidha Shastrakarma along with different types of surgeries. He also introduced miraculous work of plastic surgery to the world at that time. He has demonstrated Ashtavidha Shastrakarma on various different objects which were easily available in those days and are similar to our body composition. These practices make the surgical method efficient to perform. These surgical training can also be performed even now with effort of modernization. Those surgical training methods are called as Yogya Vidhi described in Sushruta Samhita in 9th chapter Yogyasutriya Adhyaya. This review depicts the importance and relevance of Yogya described by Sushruta and present era for good surgical practices.

KEYWORDS

Yogya Vidhi, Ashtavidha Shastrakarma, Sushruta, Ayurveda, Surgical training

INTRODUCTION

Surgery is an art with its own practical principles. Sushruta the father of Indian surgery, has elaborated anatomy, pathology, surgical procedures and their complications. For being good surgeon, it is important to have the knowledge and should be practiced by self in reality (Pratyaksha Karmabhyas). Earlier all the surgical procedure were practiced with proper surgical training techniques. Sir Astley Cooper, President of royal college of surgeon said that 'without dissection there can be no anatomy, and that anatomy is our polar star, without anatomy a surgeon can do nothing, certainly nothing well'^[1]. Thus in ancient time, these surgical training were performed over animal, vegetables or day-to-day things those were easily available.

There are eight types of surgical procedure i.e. Ashtavidha Shastrakarma described in Ayurveda and many other para-surgical procedure like Agni, Kshara, Basti described by Sushruta. Along with surgery Sushruta has also given importance to para-surgical procedures and conservative therapy equally. Thus in 'Yogya Sutriya Adhyay' he has illustrated the surgical training of Ashtavidha Shastrakarma along with para-surgical procedure for hand-on-training on various objects that are similar to human body composition. Sushruta has stated hand (hasta) as main principle instrument in surgery because for operating instrument only hand is used without hand one cannot operate the instruments^[2]. In ancient era, Sushruta has explained surgical training techniques to train the scholars perfectly to perform surgical practices. Ashtavidha Shastrakarma includes 8 different types of surgical procedure i.e. Chedana, Bhedana, Lekhana, Vedhana, Aharana, Vistravana, Sivana, Bandhana which are practiced now-a-days also^[3].

SURGICAL TRAINING: YOGYA VIDHI

1. CHEDANA (Excision)

Yogya	Bottle guard fruit, pumpkin, watermelon, cucumber[4]
Shastra	Mandalagra, Karapatra, Vridhipatra, Nakhashastra, Mudrika [5]
Indications	Excision of tumor, cysts, fistula, pilonidal sinus, foreign body, haemorrhoids[6]

Utkartana and Parikartana were also practiced over these objects^[4]. This training procedure helps to estimate how to hold instruments and what amount of strength should be applied.



Pumpkin – Yogya



Excision Of Tumour

2. BHEDANA (Incision)

Yogya	Urinary bladder mud or water filled leather bag and bottles[4]
Shastra	Vridhipatra, Nakhashastra, Mudrika, Utpalpatra[7]
Indications	Abscess filled with pus, during surgery[8]

Here on basis of consistency, content and extent of disease which has been stated by Sushruta has similarity with training object.



Leather Filled With Water- Yogya



Incision On Abscess

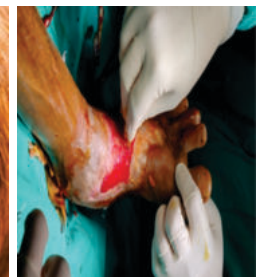
3. LEKHANA (Scrapping or Exfoliation)

Yogya	Haired skin of dead animals [4]
Shastra	Mandalagra anad Karapatra [9]
Indications	Diphtheria, Medoagranthi, epiglottitis, Mansakandi[10]

In Kushta (leprosy) having characteristics of skin like immobile, hard and circular should be treated with fomentation followed by Lekhana karma^[11]. So by practicing Lekhana karma on hairy skin what amount of pressure should be implied while performing scrapping can be assessed.



Haired Skin Of Dead Animal – Yogya



Scrapping Of Wound

4. VEDHANA (Puncturing)

Yogya	Veins of dead animals and stalk of lotus[4]
Shastra	Suchi
Indications	Hydrocele, ascites and vessel containing foreign body[12]

Siravedha is nothing but the Vedhana Karma of Sira is done in many of disease like Vatarakta, skin disease and localized pain. In Shalyatantra,

Siravyadha is mentioned as 'Ardhachikitsa' hence it is very important for surgeon to have knowledge of regarding Vedhana Karma^[13].



Stalk Of Lotus – Yogya



Vedhana By Suchi

5. YESHANA (Probing)

Yogya	Moth eaten wood, hollow bamboo, dried bottle gourd and stalk of lotus[4].
Shastra	Yeshani by the action of Anulomana[14]
Indications	Sinus, fistula and diseases having track [15]

This procedure helps use to find out length of track along with its direction. By means of probing we can assess that whether the sinus is having another end open or it is blind end. So according to ayurvedic literature it is useful in Nadi vrana.



Dried Bottle Guard – Yogya



Fistula-in-ano In Probing

6. AHARANA (Extraction)

Yogya	Extracting tooth of dead animals, seed of jackfruits, pulp of bilwa[4]
Shastra	Badisha and Dantamukhi [16]
Diseases	Dantasharkara, urinary calculus, extraction of excreta from nose, ear, tooth and foreign body[17].

In ayurvedic literature, Mudhagarbha has been described briefly along with its complication. In such condition Aharaana is a only primary measure suggested by Sushruta.



Seed Of Jackfruit – Yogya



Extraction Of Tooth

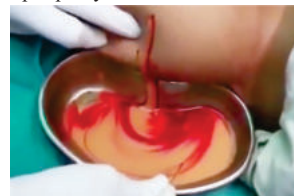
7. VISATRAVANA (Drainage)

Yogya	Wax covered plank of Shalmali[4].
Shastra	Suchi, Kushayantra, Shararimukha, Antarmukha, Trikurchika[18]
Indications	Cavities like abscess, air filled cavities, fluid or pus-filled space[19]

Drainage is most important step if drainage is not done there is chances of recurrence at the same site or in the periphery.



Plank Of Shalmali Tree – Yogya



Drainage Of Abscess

8. SIVANA (Suturing)

Yogya	End of two piece of cloth and skin of dead animals[4]
Shastra	Suchi
Indications	Close operated site, incised or lacerated wound

It is done in case of incised wound, elective surgery. There are four types of Sivana karma described in Ayurveda like Gofanika, Rujugranthi, Vellitaka, Tunnasevani which are practiced now a days also.



End Of Two Piece Of Cloth – Yogya

Suturing Of Wound

BANDHANA (Bandaging)

It was demonstrated on different body parts of dummy body structure made up of cloths and mud[4]. There are 14 types of Bandha described in Ayurveda. It is correlated with bandage that is important for preventing further contamination of wound after elective surgery, infected wound etc.



AGNIKARMA AND KSHARAKARMA

These are carried over end of skin of dead animals^[4]. Agni karma and Kshara karma are useful in various disease and it has been given special importance as Sushruta has described it in separate chapter. The disease which does not get cured with Kshara Karma and Jalawka Avacharana those disease can be treated with Agnikarma.

In Agnikarma chapter different points and site are given for specific disease on which Agnikarma should be done to have remarkable results. Kshara karma is predominant para surgical procedure among Shastra and Anushastra. It is useful in diseases like fistula, sinus, etc.

In kayachikitsa, Basti is mentioned as Ardhachikitsa it was demonstrated by water filled bottle guard having hole on one end^[4]. Basti is principle line of treatment in Vata Dosha Vyadhi.



Agnikarma



Ksharakarma



Basti

All these surgical training techniques are advised to perform in diseases related to Shalakyatantra also. All these Yogya are practiced

now a days and useful in many aspects to train the future surgeons.

In modern science, these trainings are carried out by ensuring the patients safety measures. All these surgical skills are learned by simulation-based learning where environment is similar to real life surgical situation created for trainees. These simulation models include cadaveric, animal, virtual robotic simulators, which are used in increasing demand now a days.

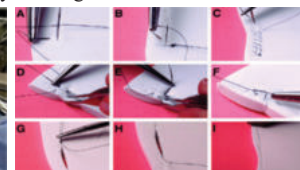


Cadaveric Examination

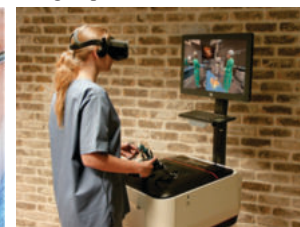
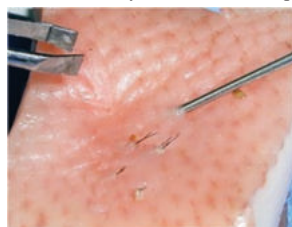


Virtual Robotic Simulator

All these technical simulators are helpful to practicing on human by repeating these techniques on non-living things so as surgeons get good exposure to reach perfection to operate on live patients. Some of the techniques are also carried out on dummies, foam sheets, silicon material similar to that of body tissue for suturing, incision by carrying out incision on dummy followed by suturing.



For learning hair transplant where artificial hairs are transplanted on pig skin can also be done^[21]. Animal hairs are used as suture material to practice the suturing technique. Minimal invasive surgeries like laparoscopic surgery, endoscopic surgery and orthopaedic surgery are practices by virtual reality simulators to have better eye hand coordination by scholars before operating on patients^[22].



DISCUSSION

According to Sushruta, it is important for surgical scholar to have the knowledge regarding eight types of surgical techniques along with knowledge of how to practice it on objects that are similar to body composition structurally. Even by having knowledge of these surgical techniques if scholars does not demonstrate, they will not attend perfection and may be life threatening to life of patients. Otherwise, it will increase risk factor. As per Sushruta's keen observation and comprehension he has stated the Yogya Vidhi which is still used in this era also. In modern science various models are used like dummies, bench models, stimulation-based training for realistic approach. Minimum invasive surgeries are carried out by virtual reality simulator to acquire better hand eye coordination while live surgery. In this way in ancient time and in modern era surgical training techniques has been given more importance to attend the perfection and minimize the risk during live surgery.

CONCLUSION

Yogya Vidhi is preliminary apprehension chapter which help scholars to achieve excellence mark in surgical world without this it was not possible to perform surgical practice on live patients in safe and regulated environment. As mentioned in ancient science along with modern science for being a good surgeon it is important for scholar to perform these surgical practice techniques for minimizing risk and overcome the operative procedure and postoperative complications. Sushruta the father of surgery has keen knowledge of practical training mentioned as 'Yogya' (practical training) which is still important to accomplish good clinical practices.

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