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Sushruta - A True Pioneer in the field of Plastic Surgery

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ABSTRACT

Plastic and reconstructive surgery is a branch of surgery that specializes in restoring form and function to damaged or missing tissues and skin. Plastic surgery consists of reconstructive surgery and cosmetic surgery / aesthetic surgery. It is a specialty which adapts surgical principles and thought processes to the unique needs of each individual patient by remodeling, reshaping and manipulating bone, cartilage and all soft tissues. Plastic surgery is one among the branches of surgery that has seen peak surge of procedures conducted across the globe post-pandemic period wherein aesthetic and reconstructive surgeries being the major ones. According to the global statistics as per ISAPS, the most commonly performed plastic surgeries are breast augmentation, liposuction, eyelid surgery, rhinoplasty and abdominoplasty. Defective healing of the wound either leading to hypertrophied scar or keloid formation and various approaches for closure of large wounds and has always been a surgical challenge from ancient period. *Acharya Sushruta* had laid down the principles of plastic surgery centuries ago which are quite relevant even in the present era of advanced plastic surgery.

Key words: Sandhana Vidhi, Nasa Sandhana, Karna Sandhana, Osthā Sandhana, Vaikrutapaha Chikitsa, Scar Revision, Aesthetic Surgery, Plastic Surgery, Reconstructive Surgery, Indian Rhinoplasty.

INTRODUCTION

The term 'Sandhana' used by *Acharya Susrutha*^[1] directly points towards reconstruction of a cut or injured part of the body, the *Sandhana Vidhi* and *Vaikrutapaha Chikitsa*^[2] are now the most progressed field and tremendously booming separate super speciality branch in the field of surgery.

History^[3]

Paving back to Vedas, we find references about the re-implantation of head in the stories about *Lord Ganesha*

with successful reimplantation of elephant's head by *Ashwini Kumaras*.

- References about prosthesis can also be found in *Rig Veda* wherein Queen *Vishapala* who lost her leg in a war was replaced with a metallic prosthesis by *Ashwini Kumaras*.
- Story of *Daksha Prajapati* re-implanted with the head of goat after his head was cut off by *Veerabadra*.
- In the later era, Physicians in ancient India including *Sushruta* were utilizing skin grafts for reconstructive work as early as the 8th century BC. *Sushruta Samhita* describes rhinoplasty and otoplasty. This knowledge of plastic surgery existed in India up to the late 18th century as can be seen from the reports published in *Gentleman's Magazine* (October 1794).
- Acharya Sushruta* considered as the father of Plastic Surgery since his technique of forehead flap rhinoplasty (repairing the disfigured nose with a flap of skin from the forehead), that he used to reconstruct noses that were amputated as a

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punishment for crimes, is practiced almost unchanged in technique to this day and popularly known as Indian method of rhinoplasty.

- The Romans were able to perform simple techniques such as repairing damaged ears from around the 1st century BC. The New Zealander Sir Harold Gillies developed many of the techniques of modern plastic surgery in caring for those who suffered facial injuries in World War I with his famous method of tube pedicle flap, he is considered to be the father of modern plastic surgery.
- History of modern plastic surgery 1791 - Chopart performed operative procedure of a lip using a flap from the neck.
- 1814 - Joseph Carpue successfully performed operative procedure in a British military officer who had lost his nose to the toxic effects of mercury treatments. 1818 Carl Von Graefe the German surgeon published his major work entitled Rhinoplastik. Carl Von Graefe modified the Italian method using a free skin graft from the arm instead of the original pedicle flap.
- 1827 - The U.S.'s first plastic surgeon was Dr. John Peter Mettauer. He performed the first cleft palate operation, with instruments that he designed himself.
- 1845 - Dieffenbach wrote a comprehensive text on rhinoplasty, entitled "Operative Chirurgie" He introduced the concept of reoperation to improve the cosmetic appearance of the reconstructed nose.
- 1891 - John Roc, an American otorhinolaryngologist presented an example of his work, a young woman on whom he reduced a dorsal nasal hump for cosmetic indications.
- 1892 - Robert Weir experimented unsuccessfully with xenografts (duck sternum) in the reconstruction of sunken noses.
- 1896 - James Israel, a urologic surgeon from Germany, and in 1989-George Monks of the United

States each described the successful use of heterogeneous free-bone grafting to reconstruct saddle nose defects.

- 1898 - Jacques Joseph, the German orthopaedic - trained surgeon, published his first account of reduction rhinoplasty.

Concepts of plastic surgery in Sushruta Samhita

1. In the complication of *Karna Vedhana Samskara*, a religious formality (*Karna Paali Sandhana*).^[4]
2. Injuries of the ear in which ear lobe is totally amputated or partially cut (*Karna Sandhana*).^[5]
3. In injuries to nose where it requires reconstruction and repair (*Nasa Sandhana*).^[6]
4. Injuries in which the lips are cut off (*Oshta Sandhana*).^[7]
5. While explaining *Vrana Chikitsa* under *Shashti Upakrama*, *Acharya* explains about various methods for managing faulty healing which can be understood as *Vaikrutapha Chikitsa*.^[8]
6. Concept of *Chedhana* mentioned by *Acharya Sushruta* on different parts similar to incision on langer lines (Relaxed skin tension lines).^[9]

Concept of Sandhana

Acharya Sushruta explains about various methods of reconstructing a lost part which is either mutilated or destructed during war times with special focus to *Nasa* (nose), *Karna* (ear) and *Oshta* (lip) *Sandhana*.

Nasa Sandhana

The entire procedure can be broadly be divided into 4 stages: 1. Flap assessment, 2. Collection of skin flap, 3. Preparation of recipient site and placement of flap, 4. post-operative care (*Paschat karma*).

1. Flap assessment: *Patra* of any *Vriksha* used for measurements and the cut leaf is placed on the *Gandaparshwa* and marked.
2. Collection of skin flap: Skin excised from *Gandaparshwa* as per the measurements leaving a pedicle to the cheek.

- Preparation of recipient site and placement of flap: *Lekhana Karma* is done over recipient site. Now the skin flap is attached to the raw surface and sutured and inserting *Erandanala* in the position of the nostrils with elevation. (As shown in figure 1).
- Post-operative care (*Paschat Karma*): *Avachoorana* with *Raktachandhana*, *Yastimadhu*, *Rasanjana* is done followed by *Tila Taila Seka*. *Snehapana* and *Virechana* and after the proper healing of the wound, flap is divided from cheek and pedicle is separated.
- This contribution of Acharya Sushruta to use a live pedicle flap with local transposition technique has shown higher flap acceptance rate and good cosmetic outcome practiced till date with minor modifications.

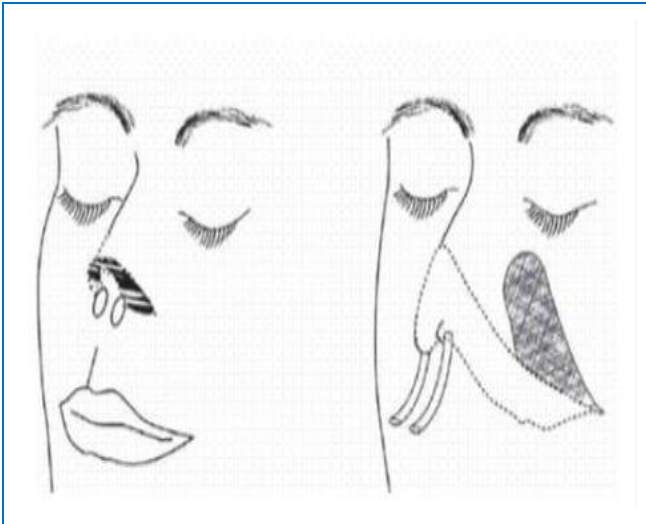


Fig. 1: Nasa Sandhana Vidhi

Karna Sandhana

Acharya Sushruta explains about 15 types of *Karna Banda Akroti's* based on different types of injuries to *Karna* leading to different shapes of deformities.

The entire procedure can be divided into 3 steps: *Poorvakarma*, *Pradhana Karma* and *Paschat Karma*.

Poorva Karma

After analyzing the type of *Karna Banda*, the amount of flap required is measured over *Ganda Pradesha*, *Uthpatana* of *Mamsa* from *Ganda Pradesha* with a pedicle attached (live flap) is taken.

Pradhana Karma

Lekhana is done over the recipient site, after *Lekhana* is done the live pedicle flap is placed and sutured.

Paschat Karma

Ama Taila Parisheka for 3 days. After 3 days *Pichu* of *Amataila* to be placed. Once *Vrana* gets healed *Vardhana Chikitsa* is done with *Jangala Mamsa*, *Anoopa Mamsa Siddha Sarsapa Taila* for *Abhyanga*. *Karna Sweda* and *Mardana* followed by *Udwartana* with *Yava*, *Yasti* & *Tila Choorna*. *Abhyanga* with *Taila* made of *Shatvari*, *Ashwaganda*, *Eranda*, *Ksheera*, *Jeevanyea Dravyas*.

Oshta Sandhana

The joining of the mutilated lip should be managed the same way as explained for *Nasa Sandhana* but without inserting the *Erandanala*. Broadly the procedure can be divided into *Poorvakarma*, *Pradhana Karma* and *Paschat Karma*.

Poorvakarma

Defect of the *Oshta* is examined and *Snehana* and *Swedana* is given and *Lekhana* is done over the defective surface of the *Oshta*.

Pradhana Karma

Seevana Karma of the raw surfaces, then *Shatadouthagrtha* is applied.

Paschat Karma

Vranavath Chikitsa is done.

Concept of Vaikrutapah^[10]

Acharya Sushruta explains about certain treatment modalities while explaining *Shasthiupakramas* for the management of complications caused due to abnormal wound healing leading to hypo or hyperpigmented scars, cicatricial alopecia and localized hypertrichosis.

Those include *Pandu Karma* (hypopigmentation), *Krishna Karma* (hyperpigmentation), *Roma Sanjanana* (repilation) and *Romapaharana* (depilation) can be used accordingly.

Pandu Karma (Hypopigmentation)

It is indicated in wounds which have involves application of paste of fruits of *Rohini (Terminalia chebula)* pre-soaked in goat's milk for a week. Powder of earthen pot (*Kapaalika*), Rhubarb (*Vidula*), root of *Shorea robusta (Sarja)*, sulphate of iron (*Kasisa*), *Glycyrrhiza glabra (Madhuka)* and honey made into paste and applied. Pulp is removed from fruit of *Feronia limonia (Kapitha)* and filled with goats urine, sulphate of iron (*Kasisa*), *Rocana*, sulphate of copper (*Tutha*), orpiment (*Haratala*), realgar (*Manashila*), bamboo bark, seeds of *Casia tora (Cakramarda)*, black antimony (*Rasanjana*) - kept within the ground under *Terminalia arjuna (Arjuna)* tree for a month, then made into a paste and applied. By this treatment the hyperpigmentation of the skin is restored with normal skin complexion.

Krishnakarma (Hyperpigmentation)

It is indicated in *Durudatvatsuklanam* (white scars caused by improper healing). The treatment involves application of paste of ash of hoof of domestic and marshy animals mixed with oil prepared from fruit of *Semecarpus anacardium (Bhallataka)*. Here the hypopigmentation of the skin is removed restoring normal skin complexion. In allopathy laser therapy and skin creams are used for this purpose but has side effects which include burning sensation and allergic reactions.

Romasanjanana (repilation)

The process is adopted for hair growth. As per classical reference, burnt ashes of ivory (*Hastidantamashi*) with the best quality black antimony (*Rasanjana*) is made into a paste and is applied after mixing with goat's milk. It is told that by this process hair grows even on palms. Ash made from skin, hair, hoof, horn, bone of four legged animals made into a paste and applied over the affected area. Sulphate of iron (*Kasisa*) & tender leaves of *Pongamia pinnata (Naktamalapallava)* pounded in juice of pulp of *Feronia limonia (Kapitta rasa)* should be applied as a paste also promotes hair growth. By this treatment hair follicles are stimulated with strong hair roots uniformly all over the applied surfaces.

Lomapaharana (Depilation)

It is indicated in wounds which do not heal properly due to presence of hairs. Here hairs are removed with razor, scissors and blade. Conch shell powder (*Shankachurna*) (2 part) and orpiment (*Haratala*) (1 part) to be pounded in sour gruel (*Shutka*) and later made into paste and applied over affected areas. By this procedure unwanted hair is removed easily without pain and discomfort.

DISCUSSION

The principles laid down by *Acharya Sushruta* centuries ago forms the fundamentals for plastic surgery practiced in the present era.

1. Concept of live pedicle flap with trans-positioning explained by *Acharya Sushruta* practiced even now in rhinoplasty either by cheek flap or forehead flap.
2. Detailed explanation about different types of *Karna Bandas* and *Karna Sandhana* explained shows the expertise *Acharya Sushruta* had in handling various war injuries and applicable till date.
3. *Vardhana Chikitsa* explained in *Paschat Karma* of *Karna Sandhana* emphasizes on proper growth of ear auricle showing the knowledge of aesthetic value post-surgery.
4. Concept of lip reconstruction in *Kanda Oshta* applies even in present era for cleft lip.
5. Concept of *Vaikrutapaha* for managing various conditions post wound healing has got high cosmetic importance and relevance even in present era wherein various chemical peels, botux injections and laser therapies can be replaced.
6. Different types of *Chedhana* mentioned over different parts of body by *Acharya Sushruta* are similar to concept of incision on langer lines pointing towards importance given to proper wound healing and cosmetic value.
7. Measurements of *Nasa, Mukha, Lalata* explained by *Acharya Sushruta* are similar to ideal aesthetic measurements of face.

CONCLUSION

The degree of emphasis given on aesthetic and cosmetic values from the ancient period by *Acharya Sushruta* and the various techniques of skin flap for reconstruction of mutilated body parts by *Acharya* has truly ignited new concepts and laid foundation for plastic and reconstructive surgery hence, *Acharya Sushruta* truly justifies to be called as father of plastic surgery

REFERENCES

1. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Karnavyadabandavidhi Adhyaya: Chapter16, Verse26, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
2. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Amapakveshineya Adhyaya: Chapter17, Verse18, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
3. Rana R E, Arora BS. History of plastic surgery in India. J postgrad Med 2002; 48:76. <https://www.jpgonline.com/text.asp?2002/48/1/76/144>
4. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Karnavyadabandavidhi Adhyaya: Chapter16, Verse12,13, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
5. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Karnavyadabandavidhi Adhyaya: Chapter16, Verse14,15, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
6. Acharya JT, editor. SusrutaSamhitha of Susruta, Sutrasthana; Karnavyadabandavidhi Adhyaya: Chapter16, Verse27,28, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
7. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Karnavyadabandavidhi Adhyaya: Chapter16, Verse32, vol.54. Delhi: Chaukambha Sanskrit Sansthan:2015.
8. Acharya JT, editor. Susruta Samhitha of Susruta, Chikitsasthana; Dwivraniyachikitsitha Adhyaya: Chapter 01, Verse90-98,101-108, Delhi: Chaukambha Sanskrit Sansthan:2015.
9. Acharya JT, editor. Susruta Samhitha of Susruta, Sutrasthana; Agropharaniya Adhyaya: Chapter 05, Verse13-14, Delhi: Chaukambha Sanskrit Sansthan:2015
10. Acharya JT, editor. Susruta Samhitha of Susruta, Chikitsasthana; Dwivraniyachikitsitha Adhyaya: Chapter 01, Verse90-98,101-108, Delhi: Chaukambha Sanskrit Sansthan:2015.

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