

A CRITICAL REVIEW ON VRANA SANDHANA WITH SPECIAL REFERENCE TO SKIN GRAFTING

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ABSTRACT

In *Shalyatantra* much importance is given for the management of *Vrana* and many chapters of *Sushruta Samhita* are dedicated for understanding and management of *Vrana*. Acharya Sushruta has explained treatment like *Saptakopakrama* and *Shastiupakrama* in the context of *vrana chikitsa*. *Sandhana karma* which is explained under *Shastiupakrama* looks unique and we get direct reference of *Nasa sandhana*, *Karna sandhana* and *Osta sandhana*, the principles of which can be correlated to modern skin grafting procedure for large and chronic wound. This method is known as reconstructive therapy (skin grafting) which follows same principles. In cases of non-healing chronic ulcers due to underlined pathology, skin grafting fits good and helps in wound healing and gives better results by reducing the time of healing. The principles laid down by Acharya Sushruta centuries ago forms fundamentals for plastic surgery in present era.

KEYWORDS: *Vrana*, *Vrana sandhana*, *Skin grafting*, *Sandhana karma*, *Nasa sandhana*.

INTRODUCTION

Vrana sandhana is comprised of two words one is *vrana* which is described as गात्र विचूर्णने व्रणः^[1] which means cut or discontinuity in the skin or body is called as *Vrana*. *Sandhana*

means यदेव विच्छिन्नं भवति क्रतु सन्धानमिदवत सन्धान^[2] which means reconstruction of a cut or injured part of the body.

In olden days nose cutting was commonest punishment by the kings, and injury to the ear, nose, lips and limbs were common during wars or by animal bites or due to trauma so, in that time reconstruction of nose, lips and ear were very common surgical procedures carried out. Acharya Sushruta the father of surgery focused more on surgical diseases, specially *Vrana* concept. Acharya Sushruta described etiological factors, classification, treatment, prognosis of *Vrana* in detail. He explained *Shasti Upakrama*^[3] and *Saptapopakrama*^[4] in that *Sandhana karma* is one among *Shasti upakrama* mentioned for *Vrana chikitsa*.

Vedic reference for Sandhan Karma

Oldest references of *Sandhan karma* found today even before Acharya Sushruta, are of Vedic times. In Vedic era, science of *Sandhan karma* was also well developed. The best example of this is replantation of head of 'Yadhnya', whose head was excised by Lord Rudra^[5] and prosthesis of artificial limb made of iron in 'Bishpala' – the wife of King Khela.^[6] In Padmapurana also have written examples of reconstructive plastic surgery.^[7]

Ayurvedic reference for Sandhana karma

Sushruta has described *Karna sandhana* the fifteen methods of joining the separated ear lobules. *Nasa sandhana* that is reconstruction of nose and *Osta sandhana* reconstruction of cleft lips and cleft palate under the chapter *Karnavyadhabandhavidhiadhaya*.^[8] *Antra sandhana* is explained by Sushruta in *chikitsa sthana* in *Udara chikitsa Adhyaya*.^[9]

MATERIALS AND METHODS

For this review article Vedic literatures, Ayurvedic Samhitas and modern textbooks are referred.

Vrana Sandhana Procedure

Poorva karma

अतोऽन्यतमं कर्म चिकीर्षता वैद्येन पूर्वमेवोपकल्पयितव्यानि भवन्ति, तद्यथा- यन्त्रशस्त्रक्षाराग्निशलाकाश्च
ङ्गजलौकालाबूजाम्बवौष्ठपितुप्रोतसूत्रपत्रपट्टमधुघृतवसापयस्तैल- तर्पणकषायातेपनकल्क व्यजनशीतोष्णो दककटाहादीनि,
परिकर्मिणश्च सिन्धाः स्थिरा बलवन्तः ||^[10]

The surgeon who is intended to perform operative procedure should be ready with priorly arranged equipment such as *Yantras*, *Shasthras*, *Kshara*, *Agni*, *Shalaka*, *Shringa*, *Jalouka*,

Alabu, Jambavoshta, Pichu, Prota, Sutra, Patta, Madhu, Grita, Vasa, Payah, Taila, Tarpana, Kashaya, Lepana, Kalka, Vyajana, Sheetodaka, Ushnodaka, Kataha etc., and a skilled nurse should be there.

Pradhana karma: *Nasa Sandhana* procedure

विश्लेषितायास्त्वथ नासिकाया वक्ष्यामि सन्धानविधिं यथावत् ।

नासाप्रमाणं पृथिवीरुहाणां पत्रं गृहीत्वा त्ववलम्बि तस्य । ॥

तेन प्रमाणेन हि गण्डपार्श्वदुत्कृत्य बद्धं त्वथ नासिकाग्रम् ।

विलिख्य चाणु प्रतिसन्दधीत तत् साधुबन्धैर्मिषगप्रमतः ॥^[11]

To repair the injured nose, a leaf of a tree is taken to measure the wound, then same sized graft is taken from the *Gandapradesha*. Then the wound site is scraped (*Lekhana*) to get healthy granulation tissue and to ensure the blood supply then the harvested graft is placed over the wound site and suturing is done at the edges and then it is closed with *sadhu bandha*.

प्रोन्नम्य चैनामवचूर्णयेत् पतङ्गयष्टीमधुकाञ्जनैश्च ।

सञ्छाद्य सम्यक् पिचुना सितेन तैलेन सिञ्चेदसकृतिलानाम् ॥^[12]

Then *churna* of *Patanga*, *Yastimadhu* and *Rasanjana* should be sprinkled over the wound, then the part is covered with cotton and *sechana* is done with *Tila taila*.

Paschat karma

विघट्टनं दिवास्वप्नं व्यायाममतिभोजनम्

व्यवायमग्निसन्तापं वाक्श्रमं च विवर्जयेत् ॥^[13]

The patient is advised to avoid excessive movements, day sleep, physical exercise, excessive meal, sexual intercourse, exposure to sun and excessive speech.

Skin grafting

Graft: It is a piece of tissue that is moved without its blood supply and relies on its recipient bed to re-establishment of blood supply.

Skin grafting: It is transfer of skin from one area (donor area) to the required area (recipient area).

Methods of skin grafting^[14]

1. By local adjustment (by flaps) from the surrounding skin.

2. By free skin grafts taken from other parts of the body.
3. By pedicle grafts.

Classification of Skin graft

- 1) Autograft: Tissue transferred one location to another, on the same patient.
- 2) Isograft: Tissue transferred between two genetically identical individual (twins).
- 3) Allograft: Tissue transferred between two genetically different individual of the same species.
- 4) Xenograft: Tissue transferred from a donor of one species to a recipient of other species.

Free skin grafts are 2 types.

- 1) Split thickness skin grafting (Partial thickness graft) It includes epidermis and part of the dermis.
- 2) Full thickness skin grafting (full thickness graft) It includes both epidermis and full dermis.

Donor site: commonly taken from the anterior surface of the thigh region occasionally from arm, leg and forearm.

Knife used: Humby's knife.

Blade: Eschmann blade, Downs blade.

The recipient site must be vascular, but should not have excess bleeding, serum or exudate and must be free from infection.

Indications

- Extensive raw wounds which result from trauma, burn etc.
- Contracted scars in the vicinity of the joints require excision and skin grafting.
- Skin loss from surgically removed malignant growths should be made good with immediate skin cover.

Procedure of skin Grafting

Pre operative

Pre-medications like antibiotics, analgesics are administered. Test dose of Lignocaine 2% 0.5cc intradermal. Injection TT 0.5cc Intramuscular.

Patient kept Nil by mouth 6 hours prior to operation. General or spinal anaesthesia is

administered.

Operative Procedure^[15]

Preparation of the donor skin

Painting and draping of donor site done then it is washed with normal saline and applied lignocaine jelly, after fixing the length or size in dermatome, graft is harvested by applying uniform pressure and required length of graft is harvested and kept in Normal saline. Then pressure bandage applied to donor site to reduce the bleeding.

Preparation of the recipient wound

The area is first washed with soap and water. A soft brush may be used to clean the dirt from surrounding skin. Then diluted cetavlon solution is used to clean the area with sponge -holding forceps. The recipient site is scraped with scoop and edges and margins are scraped well.

The graft is spread over small wooden slab and made small multiple stab incisions for drainage of discharge and aeration purpose; this graft is now spread nicely on the recipient wound and kept in position with fine suture or by stapling. Vaseline gauze is spread over the graft. Sterile gauze pieces are placed to cover the Vaseline gauze then these are covered with sterile bandage keeping in pressure all throughout. For immobilization purpose the wound is covered with plaster of Paris bandage and kept for at least a week.

Post Operative

Patient shifted to ward Antibiotics, analgesics are advised Patient is advised to take best rest. After opening of the bandage, one should check for the skin colour, pain response, donor skin size, hair growth.

DISCUSSION

Dalhana commented as विश्लेषिताया इति छिन्नायाः^[16] *Nasa vislesha* as *chinna nasa*, *chinna* is one type of *Sadyovrana* we can take *Nasa sandhana* as the direct reference for the *Vrana sandhana*.

Acharya explained उत्कृत्येति ऊर्ध्वं छेदयित्वा^[17] while taking the graft only superficial part is harvested.

It is explained to take graft from the *Gandapradesha* that is *mamsala pradesha* so, in modern science also graft is taken from the thigh, arm, forearm or leg which are fleshy areas from which one can obtain desired thickness and size of graft.

Sushruta explained procedure to measure the size of the graft required with the help of leaves, in modern science also they take required sized graft by assessing wound.

Acharya Sushruta explained *Lekhana Karma* before applying the harvested graft to the recipient site as *Lekhana Karma* helps to remove the unhealthy granulation tissue, and scraping should be done till it bleeds so that one can assure about donor graft is accepted at the site for the establishment of circulation between graft and site.

As *Lekhana* is performed in the grafting it leads to instant aggravation of the *Pitta Dosha* and leads to *Rakta Dusti* so, it is instructed to do the sprinkling of the *churnas* of *Patanga*, *Yastimadhu* and *Madhuka* as they are *Sheeta veerya*, *Madhura*, *Kashaya rasa* and *Rooksha* in nature they do *Pitta* and *Rakta shamana* and balances the *Tridosha* and also prevents from moistening of the graft.

It is advised to do the *Tilataila sechana* repeatedly over the graft as it has Terpenoid and Tannins it acts as antibacterial and antivirals.

CONCLUSION

Skin grafting is a type of reconstructive surgery, it plays major role in extensive raw wounds which are caused by trauma and burn injury and in cases of skin loss in post operative conditions of malignant growths. The technique of skin grafting is similar to that of *Nasa sandhana vidhi*, explained by acharya Sushruta, with some modifications. So, modern science is following the basic principles laid down by the Acharya Sushruta who is father of both Surgery and Plastic surgery.

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