

Skin Grafting Ayurvedic Review

Dr Tamanna Sharma¹, Dr Sandip Mali²

¹PG student, shalyatantra department, Sumtibhai shah Ayurvedic college Hadapsar

²Guide, shalyatantra department, Sumtibhai shah Ayurvedic college Hadapsar

Abstract: In the era of globalization and evidence-based medicines, a systematic documentation of information by compiling the studies carried out in different parts of India could be useful for the clinicians of Ayurveda and to the ailing community. In this review, an attempt has been made to compile all such clinical research works carried out on *Vrana Ropana* (wound healing). A grey literature of post graduate (PG) and Doctorate (PhD) researches on *Vrana Ropana* from various Ayurvedic institutes were collected in the form of soft or/hard copy as per the availability. The studies were found to be a combination of drug/drug formulations and various procedures mentioned under *Shashti Upakramas* in Sushruta Samhitha. The use of the *Lepa* (topical application), *Avachoorana* (sprinkling of medicated powder), *Raktamokshana* (bloodletting) like *Jalauokavacharana* (medicinal leech application) and *Kshalana* (therapeutic procedure in which the wounds are cleansed with medicated liquids) were cross reviewed from various research works. All these works were mainly targeted to find the best *Shodhana* (cleaning) and *Ropana* (healing) drugs for the treatment of wound. On the basis of the clinical evidences on the same drug with positive outcomes, one should further try it in multi-centres and develop that drug for wound management. Hence this review study would help to know the previous research works carried out on wound healing and design further trials on specific parameters or treatment protocol as a whole with local as well systemic management of wounded patients.

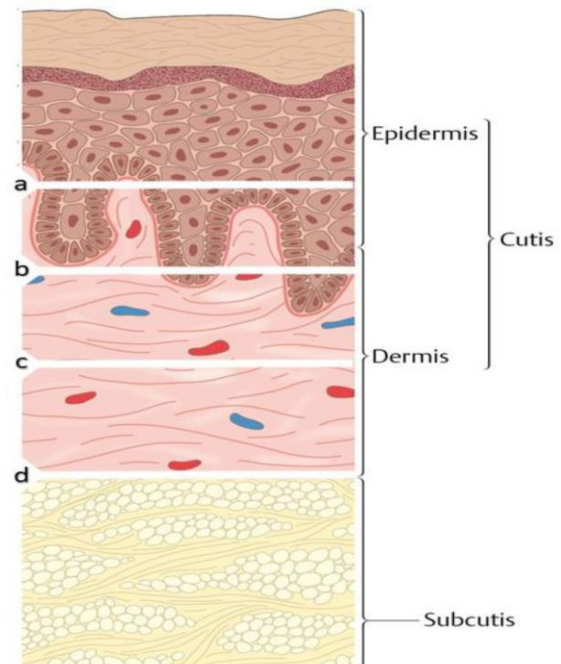
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INTRODUCTION

The skin is not only the largest organ of the human body but also the first line of defense against harmful influences such as mechanical forces, microorganisms, or radiation. It maintains thermoregulation and fluid balance as well as acts as a sensory organ that is able to register pressure, temperature, and pain, due to specific receptors. The integrity of human skin plays an essential role in maintaining physiological homeostasis of the body. A large skin loss caused by e.g., burns, can cause a disturbance of this integrity [1,2]. To date, autologous skin grafting is commonly considered as the gold

standard for the coverage of large skin defects. While the usage of meshed split thickness skin grafting is the best option for the treatment of extensive burns, unmeshed sheet grafting is used for small burns and in aesthetically important regions. Full-thickness skin grafting achieves the best aesthetic and functional results in burn injury reconstruction [3,4,5].

The origin of skin grafting can be traced back for more than 3500 years. Many techniques and adjustments have been established over time. This article gives an overview about the historical evolution of skin grafting, including the development of common techniques, and further explains their usage in burn care nowadays. In addition, the development and the usage of further established techniques are presented



Local application of Ayurveda herbal drugs

The data collected in this review reveals numerous Ayurvedic formulations used for wound healing. In this review, research works reveal total 220 different formulations that have been used for wound healing. For wound healing, *Jatyadi Taila* and *Jatyadi Ghrita* was used for healing in 19 and 13 research

studies respectively. 15 studies have been carried out on different forms of *Nimba* (*Azadirachta indica* A. Juss). *Panchavalkala* (five plant barks combination) was used in various dosages forms like *Kwatha* (Decoction), *Churna* (powder), *Malahar* (cream), *Kshara* (Plant Alkali), *Raskriya* (concentrated extract), *Taila* (medicated oil), *Ghrita* (medicated ghee). *Yashtimadhu* (*Glycyrrhiza glabra* Linn.) which is one of the good healing herbs was also tried in forms like *Churna* (Powder), *Kalka* (paste), *Taila* (medicated oil), *Ghrita* (medicated ghee). Total 9 researches have been conducted on plain *Madhu* (honey) while 11 researches were conducted on *Madhu* along with additional single drug. In this review, it was also observed that povidone iodine ointment and povidone iodine solution were used as control group in 37 and 12 research studies respectively.

Procedures for wound management

In review, 24 different types of para-surgical and *Panchakarma* procedures were conducted for wound healing. Among them, 17 research works were on *Jaloukavacharana* (Medicinal leech application), 4 studies were conducted on *Agnikarma* (Therapeutic heat application) in cervical erosion. *Virechana Karma* (Therapeutic purgation), *Matrabasti* (Medicated enema), *Vrana basti* (Putting medicated oil in wound), *Dhoopan karma* (Fumigation with medicinal herbs) and *Siravedha* (Therapeutic vein puncture) were also mentioned in the studies.

DISCUSSION

Compound/poly-herbal preparations used for wound healing 17 single drug formulations and 10 combination drug formulations were studied in this review. Compounds or poly herbal dosage forms were used in many of the research studies or thesis. In five studies, *Kalka* was used for dressing, among them *Tila Kalka* was used the most along with other formulations like *Nimba Patra Kalka* and *Yava Kalka*. *Kwatha* like *Dasamula Kwatha*, *Bhadramusthati Kwatha*, *Dhanwanthara Kwatha*, *Patoladi Kwatha* were used to clean the wound in addition to the conventional use of *Pachavalkala Kwatha* and *Triphala Kwatha*. The formulations of *Avachoorana* such as *Trivritadi Churna*, *Guggulu Panchapala Churna* were studied in various research works. The base for majority of topical applications were cow *Ghee*,

oil and *Malahara*. *Jatyadi Ghrita*, *Yashtimadhu Ghrita*, *Manjishtadi Ghrita* and *Durva Ghrita* were used in most of the *Ghrita* preparations and among *Taila* preparations *Kampillakadi Taila* was studied the most. *Dhoopana* drugs such as *Nimbadi Dhoopana* and *Guggulu Dhoopana* was evaluated in research works for their wound healing activity. *Panchavalkala Rasakriya*, *Dwiharidra Rasakriya*, *Yasada Bhasma*, *Swarna Makshika Bhasma* etc. were used too by researchers for wound healing

Pharmacological action of the drugs

Wounds are of two types, intrinsic and extrinsic. The intrinsic one is caused by the vitiation of *Vata*, *Pitta*, *Rakta* and *Sannipata* while the extrinsic wound is caused by human beings, animals, birds, ferocious beasts, reptiles, falls, pressing, fire strike, caustic, alkali, poison, irritant drugs, pieces (of wood etc.), earthen ware, circular weapons, arrow, axe, trident, spear etc. In exogenous wound in initial stage there is no involvement of *Doshas* but later on leads to vitiation of *Doshas*. Majority of topical dosage forms used in these research works had ghee, oil and *Malahara* base which symbolizes that they facilitate enhanced drug penetration for early wound healing. In fresh wound formulations applied externally like *Durva Ghrita*, *Durva Taila*, *Madhuyashtyadi Ghrita*, *Talpatri Ghrita*, *Karanjadi Ghrita*, and *Taila* formulations like *Manjishtadi*, *Chandanadi*, *Vranaropan*, *Kampillakadi*, *Noola Taila* etc and *Madhu Ghrita* equally showed effective as healing agents.

Acharya Sushruta has described plastic surgery. In plastic surgery *Nasa-Sandhana* (Rhinoplasty), *Karna Sandhana* (Auroplasty), and *Oshta-Sandhana* (lipoplasty) are mentioned in Ayurveda. The contribution of ancient Indian surgery in the field of plastic surgery is beyond imagination. During wars and punishment of cutting the nose or ear was considered in ancient times. Indian surgeon has applied their injurious technique for correcting such deformity by shifting the skin flap to reform the nose and ear. Most modern principles of Plastic surgery resemble the origin of Acharya Sushruta's context. Principles of Plastic Surgery, a) Skin Incision and Excision b) Role of detritment and Irrigation c) Role of suturing techniques d) Management of large wounds

CONCLUSION

A suitable drugs list or drug formulations for the management of Vrana would stand against the commonly used medicaments. This review has considered many classes of drugs or drug formulations dealt with many research works undergone in different research institutions of India. It is significant to note that each Ayurvedic formulation or single compound has its own mechanism of action that individually stimulates wound healing.

In the era of globalization and evidence-based medicines, this systematic documentation of such information by compiling the studies from different parts of the country will benefit the researcher for further critical analysis and to design new studies. This review suggests that wound healing using Ayurvedic drugs and procedures are safely in different dosage forms. This systematic review also creates a concrete platform for future researchers and Ayurvedic practitioners where unpublished trials are easily availed with regards to Ayurvedic wound healing treatment.

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