

## SUSHRUTA'S WOUND CARE MANAGEMENT AND ITS ADVANCEMENTS IN CURRENT PRACTICES

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### ABSTRACT

The wound which is referred as *Vrana* in Ayurveda, is the commonest ailment from which the humankind has suffered from it. The healing process of *Vrana* is a natural process, which also starts immediate after injury. Acharya *Sushruta* described *Vrana* at different places in different context of *Sushrut Samhita*. The *Vrana* is important topic in academic point of view, patient care and research of newer technique and drugs for easier and effective management. Acharya *Sushruta* advised sixty *upakrama* (treatment) for treating wounds of different conditions known as *Shashti upakramas*. In this conceptual review, different types of *Vranas*, and their management according to *Sushruta Samhita* in Ayurveda is described. There are recent trends in wound care management with different types of wound dressings and most effective one is collagen dressing for quick wound healing. Efforts have also been carried out to collect, discuss and describe the concept of *Vrana*, i.e., Wound. There is an emerging trend in the wound care

research by using Ayurvedic drug incorporated with conventional dressing materials like *Triphala* incorporated collagen sponge.

**KEYWORDS:** *Vrana*, *shashtiupakrama*, wound, collagen dressing, *Triphala* collagen sponge.

### INTRODUCTION

Acharya *Sushruta* – the father of Surgery, has very clearly mentioned the fundamental and applied principles of essential surgical knowledge in form of *Shalya Chikitsa* in foremost text

book of Surgery i.e., *Sushruta Samhita* under the title of *Agropaharaniya Adhyaya*. His concept of traumatic wound, management of different types of traumatic wounds according to their characteristic features, methods of removing various types of foreign bodies tactfully and battlefield wound management as well as surgeries were the most appropriate.<sup>[1]</sup>

*Vrana* and its management are of prime importance in surgical practice. A surgeon essentially creates a wound which he has to manage accordingly by different methods. Generally, a *Vrana* created by a surgeon is considered as clean which heals by primary intention, but there are many other types, which follow secondary or tertiary stages of healing. Some wounds are difficult to manage and are considered non-healing ulcers. These entire factors speak for the importance of *Vrana* in surgery. *Acharya Sushruta* has emphasized that *Vrana* was the first disease with which a human being ever suffered. The life of a new born also begins with *Vrana* when he needs surgical care of umbilical cord till is fully detached and healed. Therefore, concept of *Vrana* and its management will be useful to surgical practice or procedure. *Acharya Sushruta* described sixty different types of management of *Vrana* in general, the all 60 *upakrama* can be simplified and included in 7 *upakrama* of *sopha*.<sup>[2]</sup>

While in the modern science A wound has been defined as —a disruption of normal anatomic structure and function. In a normal setting, wounds —proceed through an orderly and timely reparative process that results in sustained restoration of anatomic and functional integrity. The healing wound is an overt expression of an intricate and tightly choreographed sequence of cellular and biochemical responses directed toward restoring tissue integrity and functional capacity following injury.<sup>[3]</sup>

## AIMS AND OBJECTIVES

1. To elaborate and discuss the various techniques of wound care by *Acharya Sushruta* and recent wound care techniques by modern science.
2. To understand the basic principles of *Vrana upakrama* (wound care management)

## MATERIAL AND METHODS

The all reference of *Vrana* and its *upakrama* are collected, collated and compiled from *Sushruta smahita* and other *Ayurvedic* classics, authentic research journals and various modern text books of surgery. The various *Vrana upakrama* (wound management methods) are discussed with their importance in enhancing wound healing. Compilation was done and the

contradictions regarding recent trends of wound care management in the modern science and different views upon the topic were critically evaluated.

## OBESERVATION

### A. Definition Of *Vrana* / Wound

A pathology in which there is destruction of body tissue and formation of scar after healing that remains for a life time is called as a *Vrana*. *Sushruta* classified *Vrana* broadly in two categories as *Nija* (due to intrinsic causes) and *Agantuja* (due to extrinsic causes). *Nija Vrana* caused by vitiation of basic elements (*doshas*) of body *vata*, *pitta*, *kapha*, *rakta* and their combinations. *Aganthuja Vranas* are caused by external factors such as incision, punctures, lacerations, poisoned cuts, bruises etc. It can also be caused by bites of men, animals, birds, reptiles etc.<sup>[4]</sup>

### B. Stages of Healing of *Vrana* / Wound: (Ayurvedic and Modern point of View)

- There are four steps in healing of *Vrana* are as below<sup>[5]</sup>

- 1) *Dushtaawastha* (stage of inflammation)
- 2) *Shuddhaawastha* (stage of granulation tissue)
- 3) *Ruhyamanaawastha* (stage of maturation and remodelling)
- 4) *Rudhaawastha* (stage of contraction)

- As per Modern Science<sup>[6]</sup>

- 1) Hemostasis
- 2) Inflammation
- 3) Proliferation
- 4) Remodelling

### C. Management of *Vrana* by *Sushruta* and Recent Trends of Wound care Management

*Sushruta* described sixty different types of management of *Vrana* in general. He describes almost all the basic principle of *Vrana upakrama* in form of seven different types of *upakrama* (management) of *sopha* Management given by *Sushruta* is mainly in two divisions as management of *Vrana* (wound) and management of *vrani* (wounded).

Out of 60 procedures 40 procedures mentioned in top four categories deals with converting *DushtaVrana* into *ShuddhaVrana*. These include measures to control vitiated doshas, controlling inflammations surgical measures, and measures for non- healing wounds. Wound

bed preparation in today's practice is very much similar to this concept which was elaborated in very much detail *Sushruta Samhita*.<sup>[7]</sup>

**Table 1: 60 Upakrama for Management of Vrana.**<sup>[8]</sup>

PROCEDURE NAME	NO.	USED FOR
1) Nasal medication, 2) Use of errhines, 3) Gargling, 4) Medicated Smoking 5) Enema, 6) Douching, 7) Purgation, 8) Emesis, 9) Bloodletting, 10) Internal oleation	10	Control of vitiated doshas
1) Food abstinence, 2) Application of local paste, 3) Irrigation, 4) Anointing, 5) Fomentation, 6) Gentle massage, 7) Application of poultice, 8) Methods to induce suppuration.	08	Control of inflammation
1) Excision, 2) Incision, 3) Bursting by medication, 4) Scraping, 5) Probing, 6) Extraction, 7) Puncturing, 8) Drainage, 9) Suturing, 10) Wound edge approximation, 11) Squeezing out by application of drug, 12) Haemostasis, 13) Instrumentation	13	Surgical measures
1) Covering with leaves, 2) Depilation, 3) Cauterisation, 4) Application of caustics, 5) Hardening, 6) Softening, 7) Removal of over granulation 8) Encouraging granulation tissue formation, 9) warming application.	09	For non-healing wounds
1) Bandaging, 2) Application of honey and butter milk, 3) Seven healing procedures by use of decoctions, wicks, pastes, medicated butter milk and oil, thickened extract, dusting powder	09	For clean wound
1) Fumigation of Vrana, 2) Cooling application	02	For pain management
1) Pigmenting procedure 2) Depigmenting procedure, 3) Restoration normal skin colour, 4) Encouraging hair growth	04	Restoring normalcy of scar
1) Restorative measures, 2) Light, warm, demulcent, appetizing diet	02	Dietary regimen
1) Protecting from invisible creatures	01	Protective
1) Removal of maggots 2) Neutralizing poison	02	Miscellaneous

#### D. Recent Trends in Wound care Management<sup>[9]</sup>

- Wound types and dressing: The following table describes some of the many different types of wound dressings and their main properties. Different types of wounds and the different stages of a healing wound require different dressings or combinations of dressings.

**Table 2: shows suitable dressings for particular wound types.**

Wound type	Dressing type
Clean, medium-to-high exudates (epithelialising)	<ul style="list-style-type: none"> <li>• Paraffin gauze</li> <li>• Knitted viscose primary dressing</li> </ul>
Clean, dry, low exudates (epithelialising)	<ul style="list-style-type: none"> <li>• Absorbent perforated plastic film-faced dressing</li> <li>• Vapour-permeable adhesive film Dressing</li> </ul>

Clean, exudating (granulating)	<ul style="list-style-type: none"> <li>• Hydrocolloids</li> <li>• Foams</li> <li>• Alginates</li> </ul>
Slough-covered	<ul style="list-style-type: none"> <li>• Hydrocolloids</li> <li>• Hydrogels</li> </ul>
Dry, necrotic	<ul style="list-style-type: none"> <li>• Hydrocolloids</li> <li>• Hydrogels</li> </ul>

### ➤ **Types of Dressing**<sup>[10]</sup>

- Synthetic wound dressings
- Debridement and cleansing
- Plastic Surgery – Skin Grafting
- Conventional dressing
- Collagen dressing
- Biological dressing

Among all the wound care management techniques recent study shows that collagen dressing plays significance role in wound healing.

### **Collagen dressing**<sup>[11]</sup>

Previously, collagens were thought to function only as a structural support; however, it is now evident that collagen and collagen-derived fragments control many cellular functions, including cell shape and differentiation, migration, and synthesis of a number of proteins. Findings suggest that collagen plays a key role in each phase of wound healing.

### **About collagen dressing material used in collagen dressing**

It consists of soft sponge (5x5cms) of heterologous, native type I telopeptides gelatin, free lyophilized collagen. A peculiar proprietary extraction process minimizes all factors of potential allergenicity of collagen. Collagen dressing for its particular degree of purity and characteristics physiological modulator of tissue repair process, is 1st collagen in the world for which sanitary registration as ethical drug has been granted in 1989.

### **Therapeutic indications**

1. Foot ulcers – Diabetic, varicose ulcers.
2. Surgical, traumatic wounds.
3. As hemostat.
4. Decubitus ulcer.

### E. Integrative wound healing techniques – A new trend<sup>[12]</sup>

*Triphala* incorporated collagen sponge--a smart biomaterial for infected dermal wound healing new concept of wound healing was investigated for its healing potential on infected dermal wound in albino rats. Methanol extract of *Triphala* was prepared and by analysing presence of catechin by high-pressure liquid chromatography analysis. Collagen sponge was prepared by incorporating *Triphala* into collagen sponge. The *Triphala* incorporated collagen was characterized by Fourier transform infrared spectroscopy, differential scanning calorimetry, and water uptake analysis. Infected wound was dressed with *Triphala* incorporated collagen sponge.

As A Result: *Triphala* incorporated collagen sponge has shown to increase thermal stability and water uptake capability, faster wound closure, improved tissue regeneration, collagen content at the wound site, and supporting histopathological parameters pertaining to wound healing.

## DISCUSSION

Among these *upakrama* one or more than one *upakrama* may be employed according to condition of wound, disease, condition of patient, availability of drugs and all that. All these 60 *upakrama* can be classified into the seven *upakrama* of *sopha*. *Saptopkrama* of *sopha* are stated in chapter 17 of *sutrasthanam* named *Aampakvaeshniyamadhyaya*. These *upakrama* are *Vimlapana*, *Avasechana*, *Upnaha*, *Patanakriya*, *sodhana*, *Ropnamand* last *vaikritapaham*. This regimen of *saptopakrama* is described for both *aam* and *pakvasopha* means it included *Nija* and *Agantuja* both type of *Vrana*.<sup>[13]</sup>

As in modern science wounds are those wounds which are stuck in inflammatory phase and shows cessation of epidermal growth. The incidence of chronic non healing ulcer is increasing in the present medical era because of sedentary life style, change in dietary habits, increase in stress, and increasing life span of human beings. These wounds have been managed by local dressings with various agents like Povidone Iodine, EUSOL, Acetic acid, hydrogen peroxide, silver sulfadiazine, local antibiotic ointments or powders etc since long time.<sup>[14]</sup> Collagen dressings is a newer concept in the wound management. xenogenous collagen membrane had good comfort ability in lining skin i.e., it was supple and adapted to the wound no matter what the contour was. No reaction or complication has been reported with collagen in research study.

## CONCLUSION

This review study, we can be concluded that Acharya *Sushruta* describe *Vrana* (wound) and *Vranaupakrama* (management of wound) in detail. This description clearly suggests that they have understood this disease clearly and therefore were able to treat this condition properly. That can be employed according to the different stages of wound. It is easy to learn and apply the principle of *saptopakrama* in the management of surgical wounds whereas *Shashtiupakrama* provide us lot of option for the management of wound in different stages. On other side recent wound healing techniques also shows significant role in wound care management and those techniques made patient suffering very low and high rate of wound healing. Pain is drastically reduced after application of new techniques of dressing. Integrative wound healing technique as a *Triphala* collagen sponge shows better healing efficacy and it may provide a scientific rationale for the use of this dressing as an effective wound cover in the management of infected dermal wound.

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