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Concept Of Wound Healing Described In *Sushruta Samhita*- Boon For Modern Scientific Era

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ABSTRACT: -

Sushruta samhita is the pillar of Ayurveda. *Acharya Sushruta* described almost every common and critical clinical problem and its management. From starting of civilization *vrana* is one of the common diseases which have been managed by human being. *Acharya* described surgical, Para surgical and medicinal treatment of wounds. A wound is a major health problem because of high risk of complications which causes not only physical & mental trauma but financial burden also to the patient. So, the diagnosis and treatment both are important for wound management. Phases of wound are very important point to study for the accurate and speedy wound healing. So, in this document, efforts have been made to describe the wounds healing according to *Sushruta samhita* because the concept of wound management described the *Acharya Sushruta* has proved as boon for modern scientific era.

Keyword-*Vrana*, wound, wound healing



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INTRODUCTION

Sushruta samhita is concise on the war surgery because according to Ayurveda *Shalya* is originated in *Yudha*. Acharya indicated about wound in every *Sthan* of *Sushruta samhita*. Wound is a common entity but it is essential to manage it with proper care. Injuries due to accidents, burns etc are a very big public health problem which creates wounds. Surgeries also contribute to the occurrence of wounds. Many unfavorable conditions which worsen the wound conditions and cause the delayed wound healing. Therefore proper information's about wounds are very necessary according to surgical aspects. Knowledge of types and characters of wound, causes and pathology of wounds, healing process and proper line of treatment of wounds are very essential for a surgeon. There are many supportive aids are present for speedy wound healings. Knowledge of these characters is also very important. Nutritional status, psychological well being of a person is also responsible for wound healing. *Sushruta Samhita* is very ancient but authentic book for any clinical or surgical problem. Acharya *Sushruta* described wound in a very huge aspect. *Sushruta Samhita* is divided into six parts. *Sutra Sthan*, *Nidaan Sthan*, *Shaair Sthan*, *Chikitsa Sthan*, *Kalpa Sthan* And *Uttar Tantra*, in every part acharya described wound in different ways^[1].

Vrana-

Vrana is defined by Acharya *Sushruta* *Vrnoti Yasmaad Rudhe Api Vranavastu N Nasyati, Aadeh Dhaarnaat Tasmaad Vrana Iti Uchhye Budhe*^[2]

Acharya told about characters of wound and scar formation.

Wound healing is a complex procedure with various stages. There are various types of wound according to Ayurveda and modern. The treatment and healing procedure vary according to the type. So clinicians should know the type,

mechanism of wound healing for proper treatment and result. Normally according to modern there are various stages of wound healing like hemostasis, inflammation, proliferation and maturation^[3]. In *Sushruta Samhita* acharya classified wound in different manner. In *Samhita* acharya also describe the stages of wound healing i.e. *Shudhvarna*, *Ropitvarna* And *Samyak Rudhvarna* And *Vrna Vashtu* formation^[4]. *Sushruta samhita* shows that the principles of ancient books are very practical the book describes healing procedure on the cellular level.

Mechanism by which body attempts to restore the integrity of injured tissue is called healing process. The procedure of healing is divided into these four overlapping phases: Hemostasis, Inflammatory, Proliferative, and remodeling.

1: Hemostasis Phase

Hemostasis, the first phase of healing it begins just after wounding, and the main purpose is to stop the bleeding^[5]. It last for 2-3 days. In this phase, the body itself activates its blood clotting system for blood clotting there is vasoconstriction and thrombus formation. After that at the site of injury platelets collection has started which makes the platelet plug. Thus the process include vasoconstriction, platelet aggregation, fibrin deposition and in the end clot formation.

Phase 2: Defensive/Inflammatory Phase

It begins immediately after first phase and lasts for 4-6 days. Inflammation is featured as calor, rubor, tumor dolor and loss of function. Angiogenesis is enhanced by fibroblastic growth factor secreted by macrophages. After 48 hours polymorphonuclear leucocytes appear which secretes bacterial oxygen derived free radicals and inflammatory mediators. These

cells remove foreign bodies, clots and bacteria.

Phase 3: Proliferative

Phase/collagen/fibroblastic phase

In inflammatory phase there is recruitment of fibroblasts. Proliferation starts in this fibroblast in this stage so it's called proliferation phase. Fibroblast secretes collagen, glycosaminoglycans and proteoglycans after proliferation. After this there is angiogenesis means formation of new blood vessels. After this there is deposition of collagen type 3 which increase the tensile strength of wound.^[6] Due to this there will be contraction in wound surface. This phase lasts from third day of injury to third week of wound.

Phase 4: Remodeling Phase

During the Maturation phase type 3 collagen is being slowly replaced by collagen type 1 which is called maturation of collagen. Type 1 collagen is replaced in the ratio of 4:1. After maturation there is realignment of collagen fibers which cause wound contraction and decrease vascularity of wound.^[7]

Concept of wound healing phases in Ayurveda

1. *Dusta vrana*/infected/untidy wound^[8]

In *Sushruta Samhita* Acharya described *Dusta Vrana* with these clinical features *Dirghakaalanubandhi* (chronic in nature) which means lasts for long period; *Atisamvrita* or *Ativivrita* (opening is extremely wide or narrow); *Utsanna* or *Avsanna* (elevated or depressed); *Atikathina* or *Atimridu* (too hard or too soft) *Atisheeta* or *Atiushna* (abnormal temperature); *Bhairava* (abnormal looking); *Krishna*, *Peeta*, *Shukla* and *Rakta Varna* (color –black, yellow, white and red.); *Kandu*

(itching); *Raaga* (erythema); *Paaka* (purulation); *Pidika updruta* (pustules crop up); *Puti* (cadaverous/foul smell); *Shvayathu* (odema); *Atiruk* (severe painful); *Daah* (burning sensation); *Putimamsasirasanyu prabhritibhi* (full of sloughing muscles, vein, ligament); *Putipuyaparistrutih* (pus in different direction); *Dushtashonitastravi* (impure blood secretion) and *Upadrava* (complications).

(2) *Shudha Vrana* /formation of healthy granulation tissue

Clinical features of *Shudha Vrana* are written below -

Tribhirdosh aranakrantah (*Tridosha in adequate number*); *Avedano* (painless) ; *nirasravo* (lack of discharge or moisture)^[9]. *Jihavatalabho* (colour like tongue); *Mridu* (soft); *Snigdha* (moist) ; *Shalakhana* (smooth); *Suvyavasthita* (proper) and *Anupdrava* (without complications)^[10]. *Naatirakto* (less redness); *Naatipandu* (less pale in colour); *Naatishyavo* (less black color); *Nachautsano* (not elevated); *Nachautsangi* (not protruded); *Shyavaoshtha* (bluish black color wound margin); *Pidkisamah* (presence of small eruptions)^[11]; *Kinchidunnatmadhyo* (slightly elevated floor).

(3) *Ruhyamana Vrana*^[12] / remodeling wound

Clinical features - *Kledavarjita* (discharge less); *Kapotavarnapratima* (pigeon colored) and *Sthirashchapitikavanto* (adherent scaling).

(4) *Samyak Rudha Vrana*^[13] /Fully Healed wound

Healed wound has these features - *Agranthim* (non oedematous); *Arujam* (painless); *Ashunam* (swelling absent); *Samtalam* (equal surface) and *Twaka savarnam* (no discoloration).

DISCUSSION

In this era when computer is the master of human mind. We may assume *Sushruta samhita* as a zipped file which is unzipped by

modern science. Now a day we assess wounds condition & management by different tools such as BWAT assessment tool. All features which are involved in these tools, Acharya already described them in *Samhita* with keen observation. In today's modern scientific era, we have so many techniques like microscopic examination, tissue culture etc. Acharyas described wounds without the help of any external techniques in the finest way.

These points show that acharyas of ancient time had very good knowledge about diseases, their type and pathology procedures as well as management.

CONCLUSION

Sushruta samhita is a very authentic book. *acharya* described every disease very logically and scientifically. Wound is a very important topic in clinical studies. After the study and comparison of modern healing phases of wound with Ayurvedic concept of healing process it is concluded that *acharya* describe healing procedure on cellular level. It is very useful for wound healing. Clinician can prescribe medicine according to stage which enhances speed of healing. So *sushruta* who is the father of surgery showed the best phase of wound healing.

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