**ABSTRACT**

Main aim of Ayurveda is to cure the disease & maintain health state, which is divided into 8 main branches. Shalya tantra is a specialized branch which deals with surgical problems which afflict mankind. ‘Vrana’ and Shalya tantra seems to be inseparable. Vrana & process of healing is the core of Shalya tantra subject. On vrana more than 231 works in PG/PhD level has been reported from various institutions across India. Among these 19 works were carried out at Institute for Post graduate Teaching & Research in Ayurveda (I.P.G.T & R.A.). Out of 19 research works, 4 works are on Shuddhavrana while rests are on Dushtavrana, which includes one PhD thesis. Research works include clinical (13), experimental (03) and both Clinical – experimental (03). Single drug works include (Karanja, C.macleodii Hook & Jhinjireeta). Compound/Polyherbal preparations tried are – Yestiyadi Ghanavati, Chandraprabhaguti etc. 7 single drug formulation and 15 compound drug formulations were studied. The drug used in the research works has lekhana, shoshana, shodhana, kledahara, Krimighna with kashaya, tikta, madhura rasa, ushna virya, teekshna guna. Majority of preparations used in these research works are having ghee, oil and malahar base which symbolize this facilitate enhanced drug penetration for early and uncomplicated wound healing.

**KEYWORDS:** Vrana, Shalya Tantra.

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**INTRODUCTION**

In Ayurvedic standpoint Ulcer is one part the word “Vrana”, which has wider meaning according to context (Fig 1).

The art of healing denotes to surgery is a major challenge to the surgeons, which has been described so extensively in Ayurveda Shalya Chikitsa that yet each measure needs the scientific touch in explanation. In this context different types of Vranas with their management have been slated in Ayurvedic Shalya chikitsa as per clinical observations. In fact, Vrana/Wound/Ulcer and healing are the two sides of the surgical coin, on which an expert surgeon has to play his role very sincerely.

The term ‘Vrana’ is derived from the verbal root ‘Vrana gatrawichoornane’ which means splitting/tearing of the body tissues. Discontinuity of tissue is either due to pathology inside the body or due to extrinsic causes. Wounds are common place from childhood to old age and are necessary to surgical entry. Dustha vrana is one such long standing ulcer with profuse discharge and slough, where removing the debris and enabling drug to reach the healthy tissue is more important.

**DEFINITION**

“Vrunoti Yasmaat Roodhe api Vranavastu na Nashyati | Aadeha Dhaaranaat Tasmaat Vrana ityuccyte budhaihi”

“As the scar of a wound never disappears even after complete healing and its imprint persisting life long, it is called the Vrana by the wise.” The scar of Vrana remains throughout the life, hence it is called Vrana”.

Almost all the Acharyas have classified Vrana into two catagories i.e. Nija and Aagantuja depending upon the causative factors. Fresh wounds of modern science and sadyovrana of Ayurveda are similar in nature. The six types of Sadyo vrana3 mentioned in Ayurveda i.e. chhina, bhinna, viddha, kshata, pichchita and ghrushta, are similar to five major types of wounds i.e. incision, puncture, laceration, contusion, abrasion, and in modern science. Dushta is one in which there is localization of Doshas or Dushta means getting vitiated by Doshas.
Vrana which smells badly (foul odour), has abnormal colour with profuse discharge, intense pain and takes long period to heal is said to be Dushta. The features of Dushta Vrana vary according to the predominant Dosha present in it. Sushruta detail sixty types of different measures in the management of Vrana. This indicates the importance of the problem and challenges to solve it, which has attracted many surgical scientists to contribute their experience after extensively, prolong research.

**AIMS & OBJECTIVE**
To know the trend and pattern of the academic research works carried out at different Ayurvedic institutions across India on the tissue healing.
To provide the guidelines for further research works in the area of tissue healing.

**MATERIALS AND METHODS**
The titles of the theses are procured from ‘Researches in Ayurveda’ - a book on all the thesis of PG & PhD research works carried out at various institution throughout India, compiled by Prof. M.S.Baghel.

**Method:** Hand Search.
All the theses were collected from Departments of Shalya Tantra, Prasuti & Tri yoga and Dravyaguna at Institute for Post Graduate Teaching & Research in Ayurveda.

**Method:** The procured theses were studied in detail and scientific review was done.

**OBSERVATIONS**
On Vrana more than 231 works in PG/PhD level had been carried out in various Ayurvedic institutions across India. In which total 19 works were carried out at Institute for Post Graduate Teaching and Research in Ayurveda (IPGT & RA), Gujarat Ayurveded University. Two research projects on vrana are in progress. Out of 19 research works, 4 research works were on Shuddhavarna and one on Conceptual study of Vrana, while rest of the research works, 4 research works were on Shuddhavrana. Two A Institute India. In which were carried out in various Ayurvedic institutions across India.

To know the trend and pattern of the academic research works carried out at various Ayurvedic institutions including IPGT & RA, GAU on Vrana especially in Tvak & Mamsagata Vrana. Study reports the trial drug is useful in Vrana especially in Tvak & Mamsagata Vrana.

**Trivedi HS (1979):** 40 patients with Dushta vrana were treated with Karanja malahara topically to verify its shodhana properties. There was no specific duration for the study it was kept till the wound gets healed. In this study it revealed that Twachagat vrana needs 10 days for healing and in mamsagata, asthigata vrana, and days for healing on average was 12 days and 18 days respectively.

**Chandra AK (1981):** This study was aimed at compiling detailed descriptions of sixty measures of Vrana and to verify the effectiveness of Madhu- Sarpi in Vrana Ropana. Patients were categorized into two categories; first one is of Acute wounds, while second one included chronic infective wounds where efficacy of Madhu and Sarpi was evaluated in four groups. Madhu, Sarpi separately and in combination was applied for three groups respectively while in fourth group no drug was applied. The result of study has shown good healing in combined group.

**T. Thomas (1986):** 10 patients in two groups were evaluated with certain indigenous drugs in managing vrana. Rasnadi tab – Internally in dose of 2gm twice daily was administered in one group while in other Vrana parisheka was done with Nimbadi Kashaya for 10 days.
In Category - I – 90% cases healed by primary intention & linear scar. In Category – II -70% cases healed with secondary intention without much cicatrisation\(^{11}\).

**N.M.Chovatiya (1988)**: Efficacy of Karanjadi Ghrita was tested in 30 patients of chronic infected wound. Present study comprises of 3 groups of ten patients each where first two groups include Dushta vrana patients whilst third group was to assess efficacy in acute wounds. Along with Karanjadi ghrita topical application, Yestiyadi Ghana vati orally (2gm twice a day) was administered in second and third groups for 6 weeks. In group A 8 patients were cured and one patient markedly improved. In Group B, 9 patients were cured. In Miscellaneous group, in 3 weeks duration vrana healed in 7 cases and in rest 3 cases it was 4 weeks. The Drugs Karanjadi Ghrita & Yestiyadi Ghana vati definitely possess the vrana shodhana and vrana ropana activity along with the effects of Lekhana, Peedana, Raktamokshana without causing any untoward side effects\(^{12}\).

**A.R.Chowdhary (1990)**: Total 45 patients of Vrana divided into 3 groups & were treated with different tailas.. Jati taila was topically applied in Group I (n-17), Pilu taila in second group (n- 16) and Asthishrinkhala taila was applied in third group (n- 12) for duration of 30 days. The Study goes to show that application of Jati Taila is quite superior to Pilu Taila and Asthi Shrinkhala Taila in obtaining the debridement of chronic wounds and faster healing. The use of Triphala guggulu was given internally as a supportive drug in all three groups\(^{13}\).

**Rakhee Gupta (1995)**: Efficacy of Yashtimadhwadi compound was tested both clinically and experimentally in this work. Total 120 patients of vrana divided into 4 groups were administered with the trial drug in four different forms. Yashtimadhwadi Oil applied locally in first group (n-36), Yashtimadhwadi cap orally 250mgs tds in second group (n – 30), combined administration of cap and oil in third group (n-30) and in fourth group (n-24) no drug was administered. The overall results of therapy in individual group go to prove the significance of combined therapy. When compared to other therapies local therapy supersede the oral therapy in some aspects while viceversa was also noticed as a few other aspects in respect of overall efficacy of “Yashtimadhwadi Compound” in the Vranaropana\(^{14}\).

**Rakhee Gupta (1998)**: Efficacy of Nyagrodhadi ghrita and Udumberadi Ghanavati was tested in this study. The study comprises of 4 groups wherein Nyagrodhadi ghrita was administered in group A (n-60), Udumbera ghanavati in Group B (n-54), both the drugs in Group C (n-66) and no drug administered in Group D (54). Both local application and oral drug found to be best for healing the wound\(^{15}\).

**Shah HS (2002)**: Efficacy of Karpooradi Ghrita was compared with that of Jatyadi taila in this study both clinically and experimentally. Both the drugs produced faster healing of excision wound in comparison to control group (Jatyadi Taila group). The rate of wound contraction was faster in test drug. Karpoor ghrita exhibits better enhanced wound healing effect in excision wounds. Both the drugs caused moderate decrease in tensile strength which can be attributed to immature granulation tissue. Clinically, it was noticed that maximum 74.28% of cured cases were observed in treated group i.e. Karpoor Ghrita followed by 55% in standard group i.e. Jatyadi Taila\(^{16}\).

**Lalit J Pankhaniya (2005)**: comparative study done to check wound healing property of Durvadi Taila with that of Povidone iodine. The study conducted over 34 patients of acute and chronic wounds. Results supported Durvadi taila has wound healing property over that of Povidone. Significant healing rate was observed in trial drug group. The study showed Durvadi Taila possesses analgesic, anti-inflammatory, and anti-bacterial properties\(^{17}\).

**Jyoti D Baria (2010)**: Manjishtadi ghrita’s role in wound healing was evaluated both clinically and experimentally. The clinical study (n- 45) had done over shuddhavarna which included mainly post operative wounds of piles, fissure, cysts, pilonidal sinus, and corn. The trial drug was compared with Povidone Iodine group where duration of treatment was 3 weeks. In clinical trial drug showed qualitative efficacy in wound healing but in experimental study it shown only the beneficial effect of epithelialisation process. There was no significant variation in both groups in days taken for complete healing\(^{18}\).

**Bhargav V Bhide (2010)**: A Folklore plant, *Cordia macleodii* Hook was studied experimentally to assess Vranaropana Karma. Literary study quotes total 819 plant drugs belonging to 146 families are compiled having wound healing and similar action actions. Maximum plants were found to be from Asteraceae family (88). Maximum drugs (425) were highlighted for their wound healing activity followed by ulcers (229), cuts (172), antiseptic (123), and healing sores (93). Leaf was used as part used in maximum plants (311) followed by whole plant (146), root (124), bark (91), fruits (43), seeds (42) and flowers (23). Bark and leaf powder was pharmacognostically standardised and then analysed. Leaf powder of *C. macleodii* leaf is not effective on wound contraction in excision wound model and is slightly helpful in...
increasing tensile strength, neovascularization and ground tissue formation. Agnikarma surpass over Avachurnana modality in this study. Prakshalana was done for both the group of patients. Churna was used for Avachurnana. Nimba patra Kwatha Amalaki, Karanja & Nimba was used. Dhatrinishadi Shalaka/ Probe was prepared out of Haridra, Yashti, Garbhashayagreevagata Vrana.

Garbhashayagreevagata modality were tested in this study on patients of Garbhashayagreevagata vrana. The study showed Agnikarma efficacious for Garbhasha at cellular level which is not supported by reduced tensile strength, may be due to lack of factors that are responsible for collagen maturation.

Prasuti Tantra – Thesis:
Hope P.E. (1977): Efficacy of Bruhat Jatikadya Kwatha and Taila were tested on patients (n=20) of garbhashayagreevagata vrana. Prakshalana of vrana was done with Kwatha later Pichu of taila was kept on vrana. The study showed 65% patients cured, 25% patients got symptomatic relief while no relief in 10% patients. Author opines along with local management if oral medication was employed then results would have been more encouraging.

Sangita S Karlekar (1998): A specific line of treatment was tested in the present study in which patients of garbhashayagreevagata vrana (n = 35) were grouped into 3 groups. In Group A (n-15) Panchavalkala kwatha prakshalana followed by Nisadi churna dusting was done. In Group B (n-12) same treatment as that of Group A and in addition administration of G – 9 Vati was done. In Group C (n-8) Agnikarma was done. For 1st degree erosion and sized (26-50%) only local treatment is adequate. For 2nd degree and medium sized erosion (51-74%) both local & oral i.e. combined therapy are required and for 3rd degree and large sized (75-100%) erosion Agnikarma is helpful.

Asha Raut (2002): Agnikarma and Ksharakarma were employed for Garbhashayagreevagata vrana in two groups in this study. Special shalaka prepared out of Haridra, Yashti, Karonja, Nimba & Amalaki was used in first group for Agnikarma to vrana, after which Udumbara taila pichu was kept over the wound. In the second group, Ksharakarma was done by Snuhi kshana followed by Udumbara taila pichu dharana. The present study showed Agnikarma efficacious for Garbhashayagreevagata vrana.

Bhayala Meena R (2003): Agnikarma and Avachurnana modality were tested in this study on patients of Garbhashayagreevagata Vrana(n=50). For Agnikarma, a Shalaka/ Probe was prepared out of Haridra, Yashti, Amalaki, Karonja & Nimba was used. Dhatrinishadi churna was used for Avachurnana. Nimba patra Kwatha Prakshalana was done for both the group of patients. Agnikarma surpass over Avachurnana modality in this condition.

DISCUSSION
Man’s quest for Knowledge is never ending. Medical sciences working hard to find new devices, new things to combat the big question on health i.e., Illness. Vrana; a topic on which, several studies are completed and many still in progress. Man is looking back to the nature to get away from this big question. That is why Traditional systems of Medicines are getting valued and the herbs are searched for their medicinal uses.

Healing a wound though looks simple at times is yet a complex phenomena. “I Dressed the wound, God heals”, doesn’t apply everywhere. As sciences is advanced day by day, the reasons & obstacles for problems in healing need to be answered scientifically.

On reviewing the thesis on vrana, the following points can be noted down. Many herbs were tested for wound healing activity. The study conducted at IPGT & RA reveals several things. Reviews of classical texts were done by the authors and drugs said to have wound healing property were tested. All the works, in majority were clinical.

First clinical trial conducted at IPGT & RA, was at 1968. The study was targeted on evaluating efficacy of Rasayana effect of Trial drug on Vrana Rogi. The sample size in that study was less. Trial drug was adjudged to have antimicrobial activity.

The research protocol has changed over the years. Texts are being regularly reviewed for getting a proper healing drug. Majority of research works were done in two categories, one in acute wounds & the other in chronic type of wounds. 7 single drug formulation and 15 compound drug formulations were studied. In majority works, the drugs having wound healing property were combined in unique way and were tested. The type of preparation used in the studies, taila dominate with 5 research works, while internal medication, Ghrita and Malahara accounts for 4, 3, and 1 work respectively. In Tailas – Jati, Pilu, Asthi shri nkhala, Durvadi and Jatyadi, among Ghritas - Karonjadi, Karpooara, Manjishtadi, Nyagrodhadi had been tested. On garbhashaya greevamukhagata vrana (Cervical Erosion) agnikarma was performed using a shalaka prepared out of drugs having wound healing properties which yield good results in healing the wound. Randomization of sample was done only in few studies. Statistically results were presented in few studies only.

CONCLUSION
On analysing the research works it seems all these works mainly were targeted for finding a best shodhana and rropa drug for the wound. The drug used in the research works has lekhana, shoshana, shodhana, kledahara, Krimighna with kashaya, tikta, madhura rasa, ushna...
virya, teekshna guna. Majority of drug preparations has tannins with phytosterols which reduces secretions and acts as good emulsifiers. Tannins & Phytosterols promote the healing process by wound contraction with increased capillary formation and fibroblasts proliferation followed by enhancing the rate of epithelialisation. Majority of preparations used in these research works are having ghee, oil and malahar base which symbolize this facilitate enhanced drug penetration for early and uncomplicated wound healing.

“Healing of wound is not a science but the intuitive art of wooing nature”

W. H. Auden.

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