

A Review from Ayurveda Perspective on *Dushta Vrana* (Infected Wound)

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ABSTRACT

Background: Wound infection now a day is one of the major issues in health science. Current data indicates nearly 6 million people suffer from chronic wounds worldwide and in an Indian study, the prevalence of chronic wound in the community was reported as 4.5 per 1000 population whereas that of acute wounds was nearly doubled at 10.5 per 1000 population. Infected wound can be compared with *Dushta vrana* and sixty different procedure for the management explained by Sushruta in Ayurveda. **Material and Methods:** Ayurvedic literature, modern texts as well as the data web-based search engines, journal, were used to search for relevant literature and information. **Result:** *Dushta Vrana* is one which occurs in the human body due to faulty diet habits and two types of aetiologies have been mentioned for a wound i.e., *Nija* and *Agantuja*. *Nija Vrana* includes three *doshas* namely *Vata*, *Pitta*, *Kapha* and *Agantuja vrana* due to external trauma. A *doshaja vrana* occurs due to *vatadi doshas* which vitiate in the body from the very beginning and later it becomes a wound and in an *Agantuja vrana* arises first due to external factors such trauma, injury, fall, etc. **Conclusion:** In classical text, *Dushta Vrana* and their management in the form of sixty *upakramas* have been broadly mentioned along with diet, drinks, regimens and pathya-apathya.

Keywords: *Agantuja Vrana*, *Dushta Vrana*, Infected wound, *Nija Vrana*, *Upakramas*

1. INTRODUCTION

Shalya Tantra is one of the important branch of Ayurveda in which many surgical and para-surgical techniques have been described for the management of diseases. *Vrana* is one of them which have been managed by human being from starting of civilization. Under the circumstances the first thing which the man came across was the injury from different sources which was causing *Vrana* (wound). *Vrana* is seen as debilitating and disabling disorder usually seen affecting the human being at any age. *Vrana* is an important chapter of *Shalya Tantra* due to its involvement in many surgical conditions. A broad classification of *Vrana*, as *Shuddha Vrana*, *Dushta Vrana*, *Nadi Vrana*, *Sadyo Vrana*, *Dagdha Vrana* etc. and their management in the form of sixty *upakramas* which are from *Apatarpana* to *Rakshavidhana* are given in the text.

2. AIMS AND OBJECTIVES

To review *Dushta Vrana* (Infected Wound) from Ayurvedic point of view.

3. MATERIALS AND METHODS

The pertinent literature was found and presented in a methodical manner using all the pertinent Ayurvedic texts, the databases Google Scholar, PubMed, Medline, AYUSH Research Portal,

and Digital Helpline for Ayurveda Research Articles (DHARA), dissertations from Ayurvedic colleges, studies accessible on Research Gate web-based search engines, and journals.

4. RESULT

Ayurvedic Review

4.1. ETYMOLOGY:

The word *dushta vrana* is composed of two different words (*Dushta* + *Vrana*) imparting two different meaning. The word '*Vrana*' is derived from the root "*Vriya*" having the meaning of "to recover", which is further suffixed by "ach" in the sense of *bhava*. The "Ch" sound is joined and the form remains "*Vran*" + "a", in the sense of "*Gatra Vichuranane*".

Sushruta has stated it is a phenomenon of tissues destruction and tissue discolouration¹. *Dalhana* described that wounding induces destruction and discolouration of tissues and during this process it spreads and envelopes².

4.2. Characteristic feature of *Dushta Vrana*:

Sushruta has elaborated *dushta vrana* in a ray comprehensive way explaining minute details. The sign and symptoms of *dushta vrana* with respect to their smell, discharge, pain, colour etc. are exhibited according to their *doshic* involvement. *Sushruta* has described the feature of a *Dushta vrana* in detail; the main features are as follows³ –

Shabda kalpa druma has recorded that *dushta vrana* have symptoms like foul smell, irregular shape with cavities, discharge, pain with everted edge and margin of the wound. According to *Acharya Madhava*, *dushta vrana* are of chronic nature, elevated from the surface, discharges pus and impure blood with foul smell.

4.3. Aetiology:

A *vrana* changes into *Dushta vrana* either due to vitiated and accumulated *Doshas* or due to improper treatment of *Doshic* and *Agantuja vrana*.

On analysing the etiological factors described by *Charaka*, they are can be together classified into three groups⁴:

- ✓ Presence of foreign bodies in the wound
- ✓ The faulty habits of patient
- ✓ The improper treatment of *Agantuja Vrana*

4.4. *Agantuja Vrana* / *Sadyovrana* (Accidental / Traumatic wound):

Sushruta classified *Agantuja vrana* into six subtypes based on type of weapon and site of injury⁵. *Charaka* has not given any specific classification. *Vagbhata* has classified *Agantuja vrana* into eight subtypes. Here *Vidalita* and *Patita* appears to be synonymous with *picchita* and *chinnna vrana* while *Avkrita* and *Pravilambita* seen to be closely related with *Ghrista* and *kshata vrana* respectively as mentioned by *Sushruta*. *Astanga Sangraha* mentioned *picchita*, *chhinna* and *viddha* then further sub classified. *Chhinna vrana* into five subtypes, *viddha vrana*

into eight subtypes and *picchita vrana* into two subtypes. *Sharangdhara* also classified *Agantuja vrana* into eight types.

Table 1: Types of *Agantuja Vrana*

Sr.	<i>Sushruta Samhita</i>	<i>Astanga Hridaya</i>	<i>Astanga Sangraha</i>	<i>Sharangdhara Samhita</i>
1	<i>Chinna</i>	<i>Patita</i>	<i>Chhinna</i>	<i>Chinna</i>
2	<i>Bhinna</i>	<i>Bhinna</i>	<i>Viddha</i>	<i>Bhinna</i>
3	<i>Viddha</i>	<i>Viddha</i>	<i>Picchita</i>	<i>Viddha</i>
4	<i>Kshata</i>	<i>Pravilambita</i>		<i>Vilambita</i>
5	<i>Picchita</i>	<i>Vidalita</i>		<i>Avikalpita</i>
6	<i>Ghrista</i>	<i>Ghrista</i>		<i>Ghrista</i>
7		<i>Avkrita</i>		<i>Nipatita</i>
8		<i>Vicchinna</i>		<i>Prachalit</i>

4.5. Definition of *Vrana*:

Vrana is a phenomenon which destroy the tissue and after healing leaves behind a scar which remains for whole life on the individual⁶. *Vrana* do not limit themselves only to the cutaneous lesion but may also affect muscles; blood vessels, ligaments, bones, joints, viscera and other vital parts of the body⁷.

4.6. Aetiology of *Vrana*:

On the basis of aetiology, *Sushruta* has described two types of *Vrana*⁸ –

- *Sharira vrana* – Due to intrinsic factors
- *Agantuja vrana* – Due to extrinsic factors

***Sharirika (Nija) Vrana*:** is caused by bodily derangement of *doshas* – *Vata*, *Pitta*, *Kapha*, *Rakta* and *Sannipata*, due to faulty habits, mode of living and seasonal variations. The deranged *doshas*, after going a series of pathological process (*Kriyakala*) get lodged at a particular site resulting in the formation of *Vrana*.

***Agantuja Vrana*:** is caused by trauma from human beings, animals, birds, ferocious beats, reptiles, falling, pressing, striking, fire, caustic alkali, poison, irritant drugs, pieces (of wood etc.) earthen ware, horn, circular weapons, arrows, axe, etc.

Kashyap has also included supernatural factors such as Mantras, Curse, etc.

4.7. Pathogenesis of *Vrana*: Concept of *Shad-Kriyakala*

***Nija Vrana*:** The concept of *Kriyakala* is one of the unique contribution of *Sushruta*. He described pathogenesis of all diseases in six stages which are together called as *shad-kriyakala*. There is alteration of *doshas* in all six steps that produces respective features according to stage of diseases. These are accumulation, aggravation, spread, localization at abnormal site that produce prodromal features, manifestation of diseases, sequel and complications⁹.

Table 2: Pathogenesis of *Nija Vrana* explained in the pattern of *shad kriyakala*

Sr.	<i>Kriyakala</i>	Pathogenesis
1	<i>Sanchaya</i>	Accumulation of <i>doshas</i> at a site

2	<i>Prakopa</i>	Vitiated <i>doshas</i> , stage of aggravation of <i>doshas</i>
3	<i>Prasara</i>	Spread of aggravated <i>doshas</i> in body through circulatory machinery
4	<i>Sthanasanshraya</i>	Specific localization of vitiated <i>doshas</i> at various site or organ (<i>Vrana shophya</i>)
5	<i>Vyakti</i>	Clinical manifestation of diseases (<i>Vidradhipaka</i> leading to formation of <i>Vrana</i>)
6	<i>Bheda</i>	Variants or complication of disease (<i>Vrana upradava</i>)

Agantuja Vrana: is caused by various types of trauma. In contradistinction to *Nija Vrana* here the destruction of tissues occurs first followed by the disturbance in *doshic* balance¹⁰.

Dalhana comments on this, that the traumatic wound ceases to be of traumatic character after seven days when it is considered to be as *Nija Vrana*.

4.8. Classification of *Vrana*:

I. According to Etiology

- Nija Vrana* (Endogenous) – *Acharya Sushruta* and *Vagbhata* have classified into 16 types i.e. *Vataja*, *Pittaja*, *Kaphaja*, *Raktaja*, *Sannipataja*, *Vata-Pittaja*, *Vata-Kaphaja*, *Pitta-Kaphaja*, *Vata-Shonitaja*, *Pitta-Shonitaja*, *Kapha-Shonitaja*, *Vata-Pitta-Shonitaja*, *Vata-Kapha Shonitaja*, *Pitta-Kapha Shonitaja*, *Vata-Pitta-Kaphaja* and *Suddha Vrana*¹¹
- Agantuja Vrana* (Exogenous)

II. According to clinical features

- Shuddha Vrana*
- Ruhyamana Vrana*
- Rudha Vrana*
- Dushta Vrana*

III. According to Prognosis

- Sadhya*
- Krichha sadhya*
- Yapya*
- Asadhya*

4.9. The Method of Examination:

The method of examination is a technique by which the particular disease and the involved dosha are determined. Grossly, the examination of *vrana* can be divided into two groups.

- General examination (For *Vrana* i.e. patient)
- Local examination (For *Vrana*)

Acharya Charak has advocated the “*Trividha pariksha*” for this¹²:

- ✓ *Darshana* (Inspection)
- ✓ *Sparshana* (Palpation / percussion)
- ✓ *Prashana* (Interrogation)

Sushruta has advocated the “*Shadvidha pariksha*” which includes the ‘*Panchendriya pariksha*’ and ‘*prashna pariksha*’¹³.

Astavidha pariksha – *Nadi, Mutra, Mala, Jihwa, Shabda, Sparsha, Drig* and *Akriti* given by *Yoga Ratnakara* for examining the general condition of patient i.e. *Vrana*.

By all these methods, the thorough examination of *Vrana* and *Vrani* is done to reach the definite diagnosis and having a clear knowledge of complication and prognosis of the *Vrana* and also help in their management.

***Vrana Pariksha* (Local examination)**

Local examination of *vrana* is described by *Sushruta* based on five parameters known as “*Panch Lakshana*” – *Gandha, Vrana, Srava, Vedana* and *Akriti*¹⁴.

4.10. Clinical Features of *Vrana*:

The sign and symptoms of *Vrana* are according to its *doshic* preponderance and the *adhishtana* of *Vrana*. The sign and symptoms can divided into two categories:

General sign and symptoms: Involvement of all three *doshas* is mandatory for *vrana* manifestation but occurrence of pain is due to *vata*, burning sensation and suppuration are due to *pitta* and pus formation is the characters of *kapha*. The relative predominance of the vitiated *dosha* produces prominent symptoms also depends on the *Dhatu* which might be the seat of *dosha*.

Specific sign and symptoms: The specific sign and symptoms of *Vataja, pittaja, Kaphaja, shonitaja, Dushta Vrana* as follows¹⁵:

<i>Lakshana</i>	<i>Vataja</i>	<i>Pittaja</i>	<i>Kaphaja</i>	<i>Shonitaja</i>
Colour	Blackish or Reddish	Yellowish, Bluish	Anemic look whitish	Like collection of coral with a network of black blisters and pustules, dull lustre tendency to bleed.
Associated signs / symptoms	Different types of pain like cutting, pricking, etc.	Burning, smoke coming out covering with burning charcoal, Rise of temperature, Pain as same caustic poured, suppurating and angry looks.	Severe itching, mild pain, numbness, coldness,	Painful and associated with other characters of <i>Pittaja vrana</i> .
Discharge	Like freest, Yogurt, alkaline, rice Water, Washing of meat	Foul discharge, washing, <i>gomeda</i> , gem cow's urine, ash water of conch	Whitish, cold, sodden, Slimy, Like butter, <i>Kasisa</i> , bone	Discharge like <i>pittaja</i> and bloody discharge present.

		shell, astringent water, oil like, etc.	marrow, rice, sesamum seed, water of coconut and fat of pig.	
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Lakshanas of Dushta Vrana:

Sushruta (Su. Su. 22/7)	Charaka (Cha. Chi. 25/24-25) (Cha. Chi. 25/83)	Ashtanga (As. Hr.25/24)
Extremely narrow or wide mouthed. Too soft. Elevated or Depressed Black or red or white coloured. Too cold or hot. Full of slough or pus or veins or flesh or ligaments or putrid pus. Upward or oblique course of suppuration. Pus formation in to cavity and fissures cadaverous smell. Burning sensation. Redness. Itching. Pustules crop up around secrete with blood.	No specific <i>Lakshanas</i> mentioned by <i>Charaka</i> , but by classification it is characterized in 12- White. Depressed path. Too thick path. Too yellow, blue, blackish, grey. Black foul smelling. Wide cavity filled with pus. Narrow mouth.	Too hard / Too soft Too elevated / Too inverted. Too hot / Too cold. Colour of <i>Vrana</i> is red / <i>pandu</i> / black. Severe painful. Burning sensation. Inflamed. Redness and itching is present. Chronic in nature.

4.11. Prognosis – Sadhyaasadhya:

All *dushta vrana* do not equally respond to the treatment. Some of them are cured with great difficulty other are either *yapya* (hardly curable) or *asadhya* (not curable). According to Ayurvedic classics, the prognosis of wound depends upon the presence or absence of the following factors¹⁶:

- Site of the wound – buttock, rectum, genital, forehead, etc., heal up easily.
- Shape of the wound – long, rectangular, circular, etc., easily curable.
- Content or presence of foreign bodies in the wound – cure with difficult.
- Certain specific disease – suffering from leprosy, poison are cured with difficulty
- Constitution of the patient – easily curable in patients are young, strong, full of vitality.

All these factors play their individual role in the prognosis of the *dushta vrana* the incurable wound has the following symptoms¹⁷:

- **Gandha (odour):** The odour of wine, *agru*, *ghrita*, dog, rat, putrid meat all these smell indicates the bad prognosis of the wound.

- **Srava (Discharge):** If *pulakodaka* like from *pakwashaya gata vrana*, stool and urine like discharge from *kosthagata vrana*, discharge of *vrana*, *majja*, *medha mastulunga* from *nija vrana* are not curable.
- **Akriti (shape):** Shape of *sakthi*, *kunta*, flag, horse, wound cropping up like a fleshy swelling with raised margins. It is indurated like a cow's horn.
- **Varna (colour) and Vedana (pain):** Patient feels pain and burning sensation in *kaphaja vrana*. *Kanakushta* and *kesar* colour wound, if absence of pain in *vataja vrana* even if it is black in colour. All these sign and symptoms indicate that the wound is not curable.
- **Shabda (sound):** A wound which makes gurgling or groaning sound marked by the emission of wind with a loud sound and confine to skin and muscle is incurable.

4.12. Principle of management of Vrana:

The management of *Vrana* is described in Ayurveda in a classical way. After the observation of different stages, *Dosha* and situation of *vrana*; the principle of the treatment is decided. Several procedure broadly have been given for the treatment of *vrana*¹⁸. These are *vimlapana*, *Avasechana* for *Amavastha*, *upanaha* and *patina* for *pachyamanavastha* and for *Pakwasvastha*. *Shodhana* and *Ropana* have been prescribed after *pakwavastha*. In case of *Ashudha vrana*, primarily *shodhana* then *Ropana* and in case of *Shuddha vrana* only *Ropana* is advocated. The process of *shodhana* aims to keeping the wound free from unwanted and harmful materials, thus minimizing reactionary inflammation and *Ropana* maintains a nutritional reserve in the site and moderates the *doshic* forces, so the wound undergoes an uneventful healing course.

After healing, discolouration and keloids etc are treated by *Vaikritapaha* procedure. *Charaka* described 36 methods for the treatment of *Vrana*¹⁹. *Sushruta* described sixty *upakramas*²⁰ for management of all clinical stages of *vrana* as *Amavastha*, *Pachyamanavastha* and *Pakwasvastha*. These include number of general and specific surgical procedure for management of *Shuddha*, *Asuddha*, *Rudyaman*, *Ruhya* and *Atiruhyan* condition of *vrana*. The whole of this management schedule has been divided into pre-operative, operative and post-operative. Apart from this, there is also clear mention about the measures to be adopted to overcome wound complication, para-surgical and nourishing measure.

Before commencing the treatment, *Sushruta* advised certain measure in *Vranitopasaniya* chapter, which should be adopted. These measures includes maintaining good general condition of the patient, providing a clean environment by construction of *Vranagara* and use of *Dhoopana dravya* as *Sharshapa*, *Nimba*, *Sarpi*, *Guggulu*, etc. for ten days twice a day which certainly help in disinfecting the surrounding. *Sushruta* seven principles in the management of *vrana* are *Vimlapana*, *Avasechana*, *Upanaha*, *Patana*, *Shodhana*, *Ropana* and *Vaikritapaham*.

Diet: The diet of a patient entertaining an open wound should preferably consist of light dietetic articles in small quantities. Food always should be taken freshly cooked with fatty articles. Dietetic constituents as prescribed by *Sushruta* should be advised for quicker healing and avoiding the complication.

Hot liquefied food prepared from old rice, mixed with ghee in small quantity with meat soup a good diet for wounded by which quick healing with occur. Other food mentioned by *Vagbhata*

and *Sushruta* are *Yava*, *Godhuma*, *Shashtika*, *Dadima*, *Vilepi*, *Kulmasha* and boiled water for drinking.

Contraindicated Diet: The wounded person have to avoid food items such as *Navadhanya*, *Tila*, *Masha*, *Kalaya*, *Kulattha*, *Shaka*, *Mamsa*, *Anupa Audaka* animals, cold water, *Krishara*, *Payasa Dadhi* and food items which are *Visthambhi*, *Vidahi*, *Guru* and *Sheeta* also should be avoided.

Drink: The person having the habit of taking liquors should be avoided *Aristha*, *Asava*, *Sidhu*, and different types of *sura*, because of the reason that all these liquors are *Amla* in *Rasa*, *Ruksha* in *Guna*, *Tikshana*, and *Ushna* in *Virya* by the use of these it will absorbed quickly in the body through the *srotas* and gives complication to the patients.

Regimens: The patient should be always kept in a neat and clean room. At the same time his nails should be cut in proper time. He should wear white clean clothes. He should avoid journey on horse like animals as it causes movement to the wounded parts, sleeping in the day time, coitus, straining works, etc.

5. DISCUSSION

Charaka defined *Ashudha Vrana* as a foul smelling, discoloured, painful and excessively discharging condition. However according to *Sushruta dushta Vrana* shows clinical features like fierce looking, excessive pus, sloughing of ligaments and muscles, unpleasant smell and appearance, severe pain.

Healing of *vrana* is explained by *Sushruta* in mainly 4 stages. These are *Dushta*, *Shuddha*, *Ruhyamana* and *Rudha*. The main purpose of treatments of *Dushta Vrana* is mainly converting *Dushta Vrana* into *Shuddha Vrana*. The concept of wound bed preparation now-a-days is very much similar to that mentioned by *Sushruta* for management of *Dushta Vrana*. *Sushruta* explained a sixty different procedure for the management of *Dushta Vrana* of which about forty procedures aimed at converting *Dushta Vrana* into *Shuddha vrana* i.e. associated with concept of wound bed preparation. These include surgical and medical management. Apart from this, number of methods described for restoration of normalcy of scar.

6. CONCLUSION

Dusta vrana can be compared with Infected wound according to modern. Due to improper hygienic condition and also due to stress, unawareness of various diseases infection and improper dressing. Ayurveda provides conservative and holistic approach of management using *Priyanvadi taila* having *shodhana* and *ropana karma* properties and also modification of lifestyle through diet, drink and regimens described in Ayurveda texts.

COMPETING INTEREST

No competing interest exist.

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