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## A Conceptual Study on *Madhumehajanya Vrana* - A Type of *DustaVrana*

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### ABSTRACT

Diabetic ulcer is a chronic and common complication of poorly controlled diabetes forming as a result of skin tissue breaking down and exposing the layer underneath. Diabetic ulcer can lead to infection, gangrene, amputation and even death if proper management and appropriate patient education is not provided. Wound healing is a natural process but factors like foreign body, vascular insufficiency, contamination of wound, immune compromised state like Diabetes mellitus affects the normal physiological process of healing. Diabetic ulcer is one type of *DustaVrana*(non-healing ulcer)which has continuously flowing putrefied pus along with blood, abnormal colour, intense pain, foul smell, takes long time to heal. *DustaVrana* needs *Ropana* (wound healing) followed by *Shodhana* (debridment) *Chikitsa*. Acharya Susrut broadly described the *Shashtiupakrama* (Sixty procedure) for the management of *Vrana*. Wound in lower extremities require proper care before it convert into *DustaVrana*.

### KEYWORDS

*DustaVrana*, diabetic ulcer, *Shashtiupakrama*, *Sodhana*, *Ropana*



## INTRODUCTION

Diabetic foot ulcer is a universal problem. In 2019, Approximately 463 million adult (20-79yr) were living with diabetes, by 2045 this will rise to 700 million<sup>1</sup>. Every 30 second a lower limb or a part of lower limb is lost due to amputation somewhere in the world as a consequence of diabetes<sup>2</sup>. In patient with Diabetes mellitus, years of poorly managed hyperglycemia lead to multiple vascular complications that impact microvessels and macrovessels. Vascular disease may damage skin integrity and can advance to form deep ulcers. Patients with poorly controlled diabetes mellitus are susceptible to bacterial contamination because of the adverse effect of hyperglycemia on the immune system<sup>3</sup>. In Ayurvedic literature, *MadhumehajVrana* (Diabetic ulcer) is considered as a *Upadrava of Prameha*. It is the most alarming and destructive complication of *Prameha*. *Prameh* means *Avilprabhutmutrata* (excessive urination with turbidity<sup>4</sup>). *Prameh* is categorized into 3 types according to *Doshika* predominance *Vataj*, *Pittaj*, *Kaphaj* which have again been classified into 20 subtypes. *Sheetmeha* (*Kaphaj*), *Ekshumeh* (*Kaphaj*) and *Madhumeh* (*Vataja*) are nearly the same as glycosuria, where patients pass sweet urine. Among these, *Madhumeh* refers to diabetic

glycosuria while *Ekshumeh* and *Sheetmeh* are nondiabetic glycosuria<sup>5</sup>. *Acharya Susrut* has described the complete chapter on the management of *Madhumeha* and *Prameha Pidika*. *Acharya Susrut* and *Vagbhata* have given opinions that *Prameh* if left untreated or not treated properly leads to *Madhumeha* and further complications may develop like *Prameha Pidika* (boils). The three vitiated *Doshas*, after spreading in the tissue with excessive *Vasa* (fat) and *Meda* (fatty tissue) in patients suffering from, produce 10 types of *Pidika Saravika*, *Sarsapika*, *Kacchapika*, *Jalini*, *Vinata*, *Putrini*, *Masurika*, *Alaji*, *Vidarika*, *Vidradhi*<sup>6</sup>. According to *Susrut*, *Carak* and *Vagbhata* 10, 7 and 10 types of *Prameh Pidika* are explained, respectively. These *Pidika* commonly manifest in the lower part of the body due to weakness of the *rasa* carrying channel<sup>7</sup>. When these *Pidika* are not managed properly they might convert into *DustaVrana*. *Vranaimplies* destruction of a part of the body or tissue. *DustaVrana* is referred to as a chronic ulcer, which is difficult to heal due to the localization of vitiated *Vata*, *Pitta* and *Kapha Doshas*. Wound healing is a natural process. It is a complex and dynamic mechanism of replacing devitalized and missing cellular structure. In wound most apprehensive



circumstances appear after infection, wound may get turn into *Dusta Vrana* (non healing ulcer) due to multiple factors like microorganism, microangiopathy, neuropathy and altered immune system. *Dusta Vrana* is referred to as ulcer in modern science. Ulcer is a discontinuity of skin and mucous membrane. Diabetic ulcer is described as *Madhumehajanyavrana* in ayurveda text. “The father of surgery” *Acharya Susrut* has elaborated *Vrana* in detail in *Susrut Samhita*. In explaining the *Chikitsa of Prameh Pidika*, if *Prameha Pidika* is present that must be treated according to *Shopha Chikitsa*, if *Vrana* is present that should be treated according to *Vrana* **Definition-** *Vrana* means ‘*Gatravichurnne*’ the destruction or discontinuity of body part or tissue is called *Vrana*<sup>9</sup>. *Acharya Dalhan* stated that it involves tissue destruction, discolouration and spreading of lesion<sup>10</sup>.

Scar of wound never disappear even after complete healing and as its imprint persist long time. It is called *Vrana*<sup>11</sup>.

***Dusta Vrana-*** *Dusta Vrana* means difficult to heal due to localisation of *Vata*, *Pitta* and *Kapha*. The wound which has bad smell, profuse discharge, unpleasant appearance, abnormal colour, intense pain or no pain, contaminated, slow healing, longstanding ulcer is called *Dusta Vrana*.

15 types of *Dushit/Ashuddha Vrana* described according to predominance of *Doshas*<sup>12</sup>.

### ***Nidana***<sup>13</sup>

(1) *Nija Vrana – Nija Vrana* is caused by vitiation of *Vata*, *Pitta*, *Kapha* and *Shonita* and various combination of *Vatadi Doshas* alone or in combination of two *dosha* or more *doshas*.

(2) *Agantuj Vrana-* It is produced as a result of trauma inflicted by human beings, animals, birds etc or due to fallen down, compression and injury through thermal, caustic and poisonous agent.

### **Probable *Samprapti/pathogenesis* of**

***Madhumehjanya Vrana-*** In premonitory stage of *Prameh* the patient is prescribed fasting and other medication. In patient who do not adhere to these and continue the use of sweet foods, their urine, sweat and *Slesmaa* become sweet. If purifactory therapies are not performed, *Prameh* end up well manifest. The *Doshas* get aggravated, vitiate blood and muscle, produce *Pidika* or other complication. If treatment prescribed for *Pidika* are no longer performed, the swelling (*Pidika*) build up greatly gives burning pain. It have to be dealt with the aid of surgical approach followed by treatment of wound. If Affected individual does not follow these therapy, then pus gets collected greatly inside and formed a big pocket like structure. *Prameha pidika* will



become incurable<sup>14</sup>. This is a type of *Dusta Vrana*. Above described *Madhumehjanya Vrana Samprapti* is *Nija type*. Even these *Agantuj Vrana* when gets vitiated by *Vata* and other *Doshas*, becomes *NijaVrana*. *Acharya Susrut* clearly described the phenomena of formation of pus in *DustaVrana*. Vitiated *Pitta* get aggravated due to coarse of time, it overcome the *Vata* and *Kapha Doshas* forcibly and thus sets up the suppurating phenomena through the blood vitiated *Pitta* burn the *Rakta* and results in formation of pus. There is no pain without vitiated *Vata* neither there is any

suppuration without *Pitta* nor there is any pus without vitiated *Kapha* and hence at the time of suppuration all three *Dosha* takes part<sup>15</sup>. Any inflammation mild or severe, if left without treatment increases and leads to suppuration. Then it has a broad base which is diffuse causes necrosis become deep seated and hence curable with difficulty<sup>16</sup>.

### **Lakshan of DustaVrana according to different Acharyas-**

General features of *DustaVrana* had stated in Ayurvedic literature by wise. *Dusta Vrana Lakshan* are explained in Table 1.

**Table 1** *Dusta Vrana Lakshan*

| S.No. | <i>Susrut Samhita</i> <sup>17</sup>   | <i>Carak Chikitsa</i> <sup>18</sup>   | <i>Astang Samgraha</i> <sup>19</sup>   | <i>Astang Hridaya</i> <sup>20</sup>   |
|-------|---|---|--|---|
| 1.    | <i>Vedana</i> (severe pain),  | <i>Maharuja</i> (excessive pain)  | -  | -   |
| 2.    | <i>Atidaha</i> ( excessive burning sensation),  | -   | -  | <i>Daha</i> ( burning sensation)  |
| 3.    | <i>Kandu</i> ( Itching)   | -   | <i>Kandu</i> ( Itching)  | <i>Kandu</i> ( Itching)   |
| 4.    | <i>DurgandhyuktDustaRaktasrava</i> ( excessive discharge of vitiated blood with unpleasant smell) | <i>Puigandha</i> ( foul smell)  | -  | <i>Putipuyaparisruta</i> ( Excessive discharge with foul smell)                 |
| 5.    | <i>Dirghakalin</i> ( very chronic)  | -   | -  | <i>Dirghakalanubandhi</i> ( very chronic)                                       |
| 6.    | <i>Atisankuchit</i> mukha or <i>Ativivritta</i> mukha(Excessive narrow mouth or wide mouth)       | <i>Kumbhika</i> ( pinpoint)   | <i>Atisamvritta</i> or <i>Ativivrutta</i> (excessive narrow or wide mouth) , | <i>Samvritta</i> or <i>Vivrutta</i> (excessive narrow or wide mouth             |
| 7.    | <i>Atikathin</i> or <i>Atimridu</i> (Excessively indurated or soft ulcer)                         | <i>Shevta</i> (fibrosis)  | <i>Kathin</i> or <i>Atimridu</i> (hard or soft)                              | <i>Kathin</i> or <i>mridu</i>   |
| 8.    | <i>Utsanna</i> or <i>Avsanna</i> (Excessively elevated and depressed)                             | <i>Avsannavartma</i> or <i>Atisthulavartma</i> ( Undermined edge or elevated) | -  | <i>Atiutsanna</i> or <i>Avsanna</i> (Excessive elevated or excessive depressed) |
|       | <i>Atisheeta</i> or <i>Atiushna</i> (Very cold or very hot)                                       |   | <i>Atisheeta</i> or <i>Atiushna</i>  | <i>Atisheeta</i> or <i>Atiushna</i>   |



|     |  |   |                                  |                              |
|-----|--|---|----------------------------------|------------------------------|
| 9.  | <i>Vivarn</i><br>(Discolouration black red, yellow and white)                                | <i>Atipinjar, Neel, Shwet, Rakta, Krishna</i> | -                                | <i>Rakta, Pandu, Krishna</i> |
| 10. | <i>Putimansasirasnayu Prabhiviyapt</i> ( full of pus and sloughing muscle, vessel, ligament) | <i>Atiputitava</i> ( excess pus foul smell    | <i>Putimansa, sirasnayu</i> etc. | <i>Putimansasirasnayu</i>    |

### Diabetic foot ulcer-

Diabetic patients are more prone for development of ulcer in foot. Foot ulceration occur as a result of trauma in presence of neuropathy and/or peripheral vascular disease, with infection occurring as a secondary phenomenon following disruption of protective epidermis. Most ulcer develop at the sites of a plaque of callus skin beneath which tissue necrosis occurs and eventually break through to the surface<sup>21</sup>. Diabetic neuropathy is due to formation of sorbitol from sugar. Sorbitol causes demyelination of large fibre, new Arteriovenous shunt open underneath skin and nutrient flow away from it. This ischemic tissue is vulnerable for infection causing nerve ischemia. Touch, pain, temperature sensation are lost. Atherosclerosis results in ischemia of foot. Ulcer starts due to minor trauma such as thorn prick, trimming of nail or due to shoe bite<sup>22</sup>.

### Management

Once an ulcer has developed, the cause should be determined. In diabetic patient,

firstly the hyperglycemic state should be managed by appropriate

method. The Primary motto of every medical professional is better wound restoration with least scar. In Ayurveda text, *Prameh Chikitsa* is explained into 2 categories.

1. *Krish / Sahaj Pramehi* should be treated with *Vrunhan Chikitsa*.
2. *Sthula / Apathyanimmitaj Pramehi* should be treated with *Samshodhan Chikitsa*<sup>23</sup>.

Treatment of *Apakv Prameh Pidika* – *Ekadasha Upakrama* and *Shiravedh* prescribed for the non-suppurative boil/*Apakv Pidika*.

Treatment of *Pakv Prameh Pidika/ Madhumehaj Vrana*- It should be treated with *Shastrakarma* (Surgical instruments), followed by treatment of the *Vrana*<sup>24</sup>. *Shastiupakrama* explained by *Acharya Susrut* for the management of *Vrana*. It includes systemic, local, parasurgical & surgical procedure.

Systemic procedure- Above described *Vrunhan Chikitsa* (Promotive treatment) and *Samshodhan Chikitsa* (Evacuation



therapy-*Vaman*, *Virechana*etc) comes under systemic procedure.

Local application-*Shodhan* (Debridment) and *Ropana* (Woundhealing) are prime method for the management of *Vrana*. *Ropana* is always related with *Shodhan*. Actually a wound can not be healed if there is any *Lakshna of Dosha Dusti*. Different *Vrana Shodhan* and *Ropana* drugs are mentioned in literature. Use of different *Kashaya*, *Varti*, *Kalka*, *Sarpi*, *Tail*, *Raskriya*, *Avchurnana*, *Vrana Dhupan* etc are described by the wise for *Vrana Shodhan* and *Ropana*<sup>25</sup>.

*Shodhan Kashaya* and *Kwath-AragvadhadiGana*, *ArkadiGana*, *SursadiGana*, *SalsaradiGana Kashaya* for bathing of wound, *Nyagrodhadi* or *BaladiGana* acts as refrigerant applied as sprinkle or paste.

*Medicated Varti- JatyadiVarti*, *NimbapatradiVarti*, *AjgandhadiVarti*, *AragvadhadiVarti*.

*VranaDhupan* with *Chandan*, *Agru*, *Vijaysara* and *SalsaradiGana* drugs. Wound attain hardness by being fumigated with aromatic substances. The same get softened if fumigated with *Ghrita*. Due to fumigation pain, discharge, foul smell, maggots, softness and hardness are removed<sup>26</sup>.

*Vrana Utsadana/* encouraging granulation tissue formation – *KalkolyadiGana* drugs and *Apamarga*, *Ashvagandha* etc

*VranaRopana* drugs- *JatyadiGhrita*, *Jatyadi Tail*, *TiktadyaGhrita*, *Tilkalkamadhusarpi*,

*PanchvalkaladyaChunra*,

*PriyangvadiGana* and *Ambasthadigana* drugs etc. Medicated *Kwath* and *Kashaya* prepared from bark of the tree, which are astringent and which do not possess hot properties are useful for healing<sup>27</sup>.

Surgical and Parasurgical procedure- Appropriate application of *Astavidhashastrakarma (bhedana, lekhana etc)*/eight surgical procedure should be performed for removal of necrotizing tissue, pus pockets.

***Jalaukaavcharan( Leech therapy)-***

*Acharya Vagbhata* had clearly noted, the swelling and ulcer which are tough , disfigure, tender, blood must be taken out by *Raktamokshana* method, especially using leeches in order to relieve pain and prevent ripening / suppuration<sup>28</sup>. *Acharya Carak* and *Susrut* have also explained the importance of *Raktamokshana* (Blood letting) in the management of wound. *Jalaukaavcharan* is very gentle method of blood-letting treatment. Application of leech is preferable for weak and delicate person<sup>29</sup>. In diabetic patient, vascular disease can occlude the free flow of blood



circulation in toes, feet, hand, fingers. When blood flow become severely restricted, the affected tissue can die<sup>30</sup>. Hirudin, Hyluronidase, Histamine like substances in leech saliva improve the blood circulation and keeps it from blood clotting. Potential bioactive substance like Antistasin, Hirustasin, Bdellins, carboxypeptidase-A have analgesic, anti-inflammatory effect, Hirudin, Calin, Factor Xa inhibitor have anticoagulant action, Hyaluronidase, Destabilase, peptide B have antimicrobial effect and Acetylcholine, Histamine have vasodilator effect. In modern modality, Diabetic ulcer management includes debridement of wound, prevention from infection with antimicrobial agents. Any necrotized tissue of the floor of wound should be debrided and the wound is cleaned with antiseptic solution and wound dressing applied to ensure a moist environment. Antibiotics may be prescribed if there is significant infection resulting in cellulitis or osteomyelitis. Hyperbaric oxygen therapy(HBOT) and surgical intervention is required to reduce morbidity and mortality.

**Investigation**<sup>31</sup>- Complete blood picture, Blood and urine sugar estimation, Pus for culture sensitivity, X-ray of foot to rule out osteomyelitis which may cause for chronicity of the ulcer, Lower limb arterial

duplex scan is an important investigation to check patency of vessels.

**Prevention**<sup>32</sup>-1.Optimise diabetes control to reduce neuropathic and vascular complication.

2. Preventive skin and nail care.
3. Prompt treatment of Athelite's foot, Cracked heal, Dermatitis.
4. Comfortable footwear.
5. Regular or frequent foot examination

**Discussion-** Diabetic ulcer/*Madhumehaj Vrana* is fearful complication of Diabetic mellitus. It affects the patient's quality of life. The hyperglycemic condition lead to vascular, neuropathic complication and immune compromised state. Neuropathy and poor blood supply to the foot keeps diabetic patient at high risk for bacterial contamination. So Diabetic ulcer on lower limb than any other part of the body require proper foot care before it convert into infected wound. Prior to initiate treatment of wound, we must control the hyperglycemic state of patient and gain knowledge about predominance of *Dosha*, involvement of *Dhatu*, size, shape and site of *Vrana*, type of *Vrana*, *Sadhyaasadyata* of *Vrana*. *Tridoshas* are responsible for pain, suppuration and pus discharge phenomenon. Any inflammation, if left untreated increases and lead to suppuration. After that necrosis spread due to involvement of *Dhatus* (tissues) and dealt



with difficulty or incurable. Thus all the Diabetic ulcer/*Madhumehajanya vrana* comes under *Dustavrana*. In modern modality HBOT, Skin graft etc techniques and use of antibiotics, these are not safe and affects the economical status of the patient. So there is urgent need to find out safe and worthwhile treatment of Diabetic ulcer. In Ayurveda text, the effective and safe remedies and sixty procedure has been explained by the wise for wound debridement and healing. The wound healing contains three cardinal stages- inflammation, proliferation and maturation. The wound healing is always followed by debridement of wound. A wound will not heal, if there is pus discharge or slough. After debridement, wound will be completely *Shudha* (cleaned wound) and wound healing can be attained precisely. Multiple procedure, *Vrana Shodhan-Ropana* medication are mentioned in classical texts, such as *Jatyadi Ghrita*, *Prapondrakadi Tail* and *Aragvadhadi* preparation is very effective in *Madhumehajanya* complication. Leech therapy is a glimmer of hope for diabetic ulcer patient. The potent bioactive substance which are found in leech saliva having antimicrobial, anti-inflammatory, analgesic, anticoagulant, vasodilator effect. It is easily available and very effective to

remove dead cells and improves circulation and healing process at the site of lesion.

## CONCLUSION

In Diabetic ulcer, there is pus discharge, ugly appearance, discolouration, firm, diffused in nature, chronic ulcer. All these characteristics present in *DustaVrana*. Thus we can say Diabetic ulcer or *Madhumehaj Vrana* is a type of *DustaVrana*. The wound healing is a physiological process of the body. Naturally wound will heal in one week if no *Doshic* invasion takes place. There is no suppuration without vitiated *Tridosh*. Diabetic patient are more susceptible for Infection. Infection is an important factor which impair wound healing. A healthy wound heal with minimum scar by primary intension and infected wound/*MadhumehajVrana* is healed with ugly scar by secondary intension. Management of Diabetic ulcer is a challenge for physician. The sixty procedure of *Vrana Shodhana –Ropana* and multiple effective formulation are safe choice for wound management. In a Diabetic patient; neuropathy, angiopathy and diminished immune response delayed physiological healing process of Diabetic ulcer. If appropriate care and therapy is not done, it can lead to amputate the affected part of the body and death. Different kinds



of wound cleansing and healing application, surgical and parasurgical method particularly *Jalaukaavcharan*/Leech therapy, are effectual in management of *MadhumehajVrana./ DustaVrana*.



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