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TRADITIONAL AND CONTEMPORARY APPRAISAL OF DUSHTA VRANA W.S.R TO VENOUS ULCERS

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ABSTRACT

Even since the birth of mankind, trauma is the first type of ailment which the man must have experienced & treatment of resultant effect of trauma viz, the wound must have been the lesion which received the first attention & which required surgical treatment. Due to constant exposure to trauma, man has been susceptible to wounding. The response of tissue to the injury has formed the basis of all surgical practices. Wound & its management have been dealt since the beginning of the Vedas to the current era & has been a major problem since the early stages of medical study. In spite of brilliant advances in surgical field, wound management still remains a subject of speculation. In Ayurveda particularly Sushruta has mentioned various types of wounds & their management which is of fundamental importance for any surgical practice. In Ayurveda, such infected wounds are treated as dustha vrana. All the wounds if not treated properly may turn into dustha vrana which always heal by secondary intention along with scar formation or may assume such proportions which may necessitate amputation. Systematized records about the management of wounds are available in Sushruta Samhita. Sushruta has exhaustively studied the subject of wound management. The problem of wound healing is a vital problem faced by clinician even today. Ulcer is a discontinuity, often excavation of skin exhibiting loss of epidermis and portions of the dermis and even sub-cutaneous fat. Though wound healing is a natural process it is influenced by both systemic and local factors, like micro organism, growth factors, vascularity and debris. Venous ulcer is abnormal hypertension in the lower third of the leg. Management of these ulcers has been explained by Acharya Sushruta in his Chikitsa Sthana. Hence, a detailed contemporary study is underlined here for the present study.

KEYWORDS: Dushta Vrana, Venous ulcer, Sushruta, Contemporary.

INTRODUCTION

Although varicose veins were probably recognized in pre history, the first written reference appears to be the Ebers papyrus, dated 1550 BC. However, Hippocrates was the first to note the association between venous veins and ulceration. During roman times, a number of physicians including Galen, Celsus, Aetius of aminda and Paules Aegien advised avulsion and cauterization for treatment of varicose veins and the use of bandages for the treatment of leg ulcers. In 10th to the 18th century, various physicians attributed ulceration of the legs to the accumulation of black bile, menstrual blood. They believed that ulceration in the legs served a useful purpose in getting rid of these vile substances. In 19th century various authors like Brodie, Astley Cooper, and Hodgson stressed the importance of leg ulceration and the term Varicose Ulcer was coined.[1]

Lots of advancement has taken place in modern science to diagnose & treat most of complicated diseases but management of chronic infected ulcer is still a problem before scientist. No doubt a simple traumatic ulcer does not require any special care, healing take place naturally. But sometimes the simple ulcer may change into a chronic non-healing ulcer. There are certain factors that are responsible for changing a simple ulcer into a chronic or non-healing ulcer. These factors are low vitality, smoking, alcohol addiction, malnutrition, old age, constant irritation to the ulcer, certain debilitating diseases like diabetes, tuberculosis, leprosy, hepatitis, poor surgical technique that leave devitalized tissue, foreign material of any kind including drain, sutures etc.

Even in our Ayurvedic classics the explanation of wound and its management were being explained in detail since the pre-vedic period. In Ayurveda, such infected wounds are treated as dustha vrana. All the wounds if not treated properly may turn into dustha vrana which always heal by secondary intention along with scar formation or may assume such proportions which may necessitate

amputation. Systematised records about the management of wounds are available in Sushruta Samhita. Sushruta has exhaustively studied the subject of wound management. The problem of wound healing is a vital problem faced by clinician even today. Acharya Sushruta has mentioned 60 upakramas for the treatment of Vrana. From these 60 upakramas kashaya, Varti, Kalka, Sarpi, Taila, Rasakriya, Avachurnana are used for Vrana Shodhana and Ropana.[2]

Review of Literature

Ayurvedic Review

Vrana Derivation

The word vrana is derived from the verb root "vrana gatra vi chornae". So the destruction or discontinuity of body part as tissue is called as vrana. Dalhana gives the meaning of verb "Vrana" as causing discoloration of the body.[3]

Vrana Definition

As the scar of a wound never disappears even after complete healing & as its imprint persists lifelong. It is called as vrana by the wise. Vrana is that which makes person to pray till his life exists that which exposes the interior of body.[4]

Classification

Vrana is mainly classified into two headings by our wise acharyas i.e Nija & Aagantuja depending upon the causative factors. The Doshas get initiated by their own causative factors as by the external agent.[5,10]

Nija or Shaareeraja vrana

Nija vranas are caused to the vitiation of doshas like vaataja, pittaja, kaphaja, Raktaja & Sannipaataja as 5 types described by Acharya Susruta. There are further classified into 15 types or the basis of permutation & combination of tridoshas along with Rakta.

Aagantuja Vrana

It's caused by trauma from purusha, pashu, pakshi, vyaala, prapatana, peedana, prahara, teekshna aoushadha, Agni, kshaara, visha, kapaala, shringa. Sushruta has mentioned 6 types chinna, bhinna, viddha, kshata, picchita, ghrishta. Astanga sangraha mentions 3 types chinna, viddha, picchita. Astanga hridaya mentions 8 types Ghrishta, Avakruta, Vicchinna, pravilambitas, paatita, viddha, Bhinna, vidalith.

Madhava Nidana has mentioned same as Sushruta and Sharangdhara has mentioned 8 types. Schematic representation of classification of Vrana:

- Kaarana - Nija, Aagantuja.
- Avastha – Dusta, Shuddha, Ruhyamaana, Roodha.
- Aakruthi – Aayatha, Chathurasra, Vrutha, Triputaka.
- Sadhyasaadhyatha-Sukhasaadhya, Kruchrasaadhya, Yaapya, Asadhya.

Nidaanas of Vrana

These are caused by vitiation of shariraja doshas & main reason for vitiation of the doshas are considered as aahara & vihara as mentioned in the Table No: 1.[11,12]

DOSHA	KAARANAS	
	AAHARAJA	VIHARAJA
Vata	Vata prakopaka ahara rasa i.e katu & Lavana. Laghuahara, Sushkasaaka, Valloora Uddhalaka etc.	Balavat vigraha, Ativyaama, Supression of Adhaarniya vegas, etc.
Pitta	Pittaprakopaka ahara rasa i.e katu, Amla, Lavana, Usna, Vidaahi, Teekshna, tila, Pinyaka, etc.	Krodha, shoka, Bhaya, Maithuna, Aayasa, Upavaasa etc.
Kapha	Kaphaprakopakaahara rasa i.e Madhura, Amla, Lavana, Sheeta, Snigdha ahara, Masha	Divaswapna, Avyayaama, Aalasya.

Vrana Lakshanas

Features of Vrana are of 2 types.[13]

1. Saamanya : Pain
2. Vishesha : Consists of signs & symptoms caused by Doshas.

Vishesha Lakshanas

Vataja Vrana Lakshanas

Vrana caused due to vaata is stabdha, Katina has shyaava or aruna varna, alpa sraava & vedana baahulyata. Lakshanas according to various Acharyas as mentioned in the Table No: 2.[14,18]

Lakshanas	Susruta	Charaka	Kashyapa	Asht. Sang	Asht. Hrid	Mad. Nid
Varna	Shyava or Aruna	Shyava	-	Shyava, Aruna, Krushna, Bhasma of Asti	Shyava, Krishna, Aruna, Bhasma Kapotha or Asti Varna	Shyava.
Vartma	Rooksha	Stabdha, Kathina	Stambha kathina	-	-	Stabdha, kathina
Vedana	Todha, Bheda, chatachatayana etc.	Teevra, Ruk, Sphurana	Maharuja	Sphurana Todha, Bheda	Todha Bheda	Maharuja
Sraava	Sheeta, picchila, Alpa Sraava	Manda Srava	Alpasrava	Alpasrava resembling Mastu, Kshaara Maamsa dhaavan Pulakodaka	Alpasrava resembling Mastu, Mamsa Pulakaambu	Manda Srava

Pittaja Vrana Lakshanas

Vrana caused due to pitta will be associated with daha, paka, raga, jwara, trishna, moha etc has kshipra utpatti with neela, peeta varna & pootisrava. Lakshanas according to various acharyas as mentioned in the Table No: 3.[19,23]

Lakshanas	Susruta	Charaka	Kashyapa	Asht. Sang	Asht. Hrid	Mad. Nid
Varna	Peeta, Neelabha	-	-	Peeta, Neela, Haritha, Krushna, Pingala.	Neela, Peeta, Kapila, Pingala	
Utpatti	Kshipra	-	-	Kshipra	Kshipra	-
Anya Lakshanas	Daaha, Paaka, Raaga, Studded with Peeta pidaka	Trishna, Moha, Jwara, Sweda	Jwara, Daha, Moha, Trushna.	Daha, Raga, Paka, Jwara, Dhoomayana	Raaga, Paka, Pain resembling Vrana Caused by kshaara.	Trushna, Moha, Jwara, Kleda, Daaha.
Sraava	Sraava resembling kimshuka flower, usna	Pooti sraava	Pooti sraava	Sraava large in quantity, resembling goomutra, solution of Bhasma, Kimshuka or Murdveeka or taila.	Sraava is warm, large in quantity resembling kimshuka Taila or solution of Bhasma.	Pooti srava

Kaphaja Vrana Lakshanas

Vrana caused due to kapha will have pandu or shweta varna associated with ugra kandu, mandha vedana, shukla, sheeta, pichila & Ghana srava. Lakshanas according to various acharyas as mentioned in the Table No: 4.[24,28]

Lakshanas	Susruta	Charaka	Kashyapa	Asht. Sang	Asht. Hrid	Mad. Nid
Varna	Pandu	Pandu	Pandu	Pandu	Pandu	Pandu
Vartma	Sthoola,covered with stabdha sira, snayu jaala Katina	Snigdha Guru, Bahu Piccha.	Sthaimithya, Maar--dhava	Snigdha Katina Sthoola.	Sthoola, Katina, Covered with Sira Snaayu Jaala.	Bahu Piccha, Guru Snigdha
Anya Lakshanas	Mandha vedana, Severe kandu feeling of heaviness.	Mandha vedana, chirakaari	Mandha vedana, chirakaari	Mandha vedana, Kandu, Swaapa, Sthaimithy	Alparuk, Kandu.	Mandha vedana, Sthaimthya.
Srava	Shukla, sheeta, Saandra	Alpa, Samkleda	Atisraava	Sraava resembling Navaneeta, Tila pishta, Naarikelodaka.	Large quantity of sweta Ghanasrava	Alpa samkleda chirapaki

Raktaja Vrana Lakshanas

In general this vrana will have features similar to that of pittaja Vrana, has pravaala (Rakta) Varna, Raktasrava covered with network of Krishna sphota, smells like turanga or Vaajisthaana. Lakshanas According to various scholars as mentioned in the Table No: 5.[29,32]

Lakshanas	Susruta	Asht. Sang	Asht. Hrid	Mad. Nid
Varna	Pravaala Dhala Nichaya	Pravaala (Rakta)	Pravaala (Rakta)	Raktha
Vartma	Covered with network of krushnasphota, Pidaka.	Covered with krushnasphota, Pidaka	-	-
Anya Lakshanas	Smella like turanga sthana, Vedanaayuktha, dhoomayana Sheela & having features of pitta.	Smells like Vaji Sthana, has other features of pitta.	Smells like vaaji sthana, has other features of pitta.	
Sraava	Rakta Srava	Sarakthapooya Srava.	Saraktha pooya Srava	Rakta Srava

Dvidoshaja Vrana Lakshanas

Susruta has explained the lakshanas depending upon combination of doshas while vagbhata & Madhavakara has also made the similar attempt. Lakshanas of Dvidoshaja Vrana as mentioned in the Table No: 6.[32]

Lakshanas	Vata-Pitta	Vata-Kapha	Pitta-Kapha	Vata-Rakta	Pitta-Rakta	Kapha-Rakta
Aakruthi	-	-	-	-	Ghritamanda	-
Gandha	-	-	-	-	Meenadhavantoya	-
Varna	Aruna, Peeta	-	-	Rakta, Aruna	-	Rakta
Vedana	Toda, Daha, Dhoomayana	Toda, Kandu	Daaha, Ushna.	Toda, Supta	-	Kandu
Srava	Peeta, Aruna	Sheeta, picchila, Alpa	Peeta, Pandu	Rakta, Aruna	Ushna, Krishna	Rakta, Pandu
Anya	-	Rooksha, Guru, Daruna	Guru	Ruksha, Tanu	Mridu, Visarpa	Guru, Picchila, Snigdha.

Tridoshaja & Sannipataja Vrana Lakshanas as mentioned in the Table No: 7.[33]

Lakshanas	Vata-Pitta-Kapha	Vata-Kapha-Rakta	Pitta-Kapha-Rakta	Vata-Pitta-Kapha	Vata-Pitta-Kapha-Rakta
Vedana	Spurana, Toda Daha, Dhoomayan	Kandu, Sphuran Chumchumayan	Daha, Kandu	Has vedana of 3 types	Nirdahan, Nirmathan, Spuran, Toda, Daha, Kandu.
Varna	-	-	-	Has varna of 3 types	-
Srava	Pandu, Ghana, Rakta	Pandu, Ghana, Rakta	Pandu Ghana Rakta	Has srava of 3 types	Nana Varna
Anya Lakshanas	-	-	Paaka, Raga	-	Paaka, raga

Dusta Vrana

Dusta is one in which there is localization of Doshas or Dusta means getting initiated by doshas. Vrana which smells badly (foul odour), has abnormal color & profuse discharge, intense pain & takes long period to heal is said to be dusta. The features of Dushta Vrana will vary according to the predominant Dosha present in it.[34,35]

Lakshanas of Dusta Vrana

Lakshanas depending upon the shape, discharge, consistency & chronicity according to various acharyas as mentioned in the Table No: 8.[36,40]

Susruta	Charaka	Asht. Sang	Asht. Hrid	Mad. Nid
Atisamvrutha or ativivrutha, Atikatina, or Mrudu, Utsanna or Avasanna, Atisheeta or Usna, having one of the colours krushna, Rakta. Peeta, Bhairava, filled with pootipooya, Maamsa Sira, Snaayu etc. moving in oblique tract, discharge excessive dusta shonita, dheerga kaalaanubanda	Mentioned 12 characteristic features indicating the advanced stage of morbidity of vrana. Swetatva, Avasanna, vartmatva, Atipinjaratva, neelatva, syaavatva, atipidakatva, Rakta, krushnatva, Atipootitva, Ropyatva, Kumbhimukhatva Vranas with pootigandha, vivarna, bahusrava, Maharuja.	Either atisamrrutha or ativivrutha, atiutsaadha or avasaadha, atisheeta or usna rakta, krushna or panduta, covered with pootimamsa, sira, snayu etc. discharges are pooti, pooya, daha, paaka, kandu, svayathu, vedana pitaka etc appearing as upadravas, dheergas, kalanubhandha	Either samvrutha or vivrutha, kathina or mrudu, atiutsanna or avasanna, atiushna or atisheeta, raktatva or panduta, discharges pooti, pooya covered with pootimamsa, sira snayu, associated with atirukdaha, swayathu, kandu and other complications, dheerga kaalanubhandha	Discharges pooti srava, or dusta ashruk, has utsanga (sinuses) inside, chirasthita emits pooti gandha and doesn't posses any features of shuddha vrana.

Shuddha Vrana

It is one, which is free from the localization of Doshas. Vrana which is not invaded by tridoshas, having shyaava oshta, which has developed sama pidaka, not having vedana & srava is said to be shuddha vrana. Vrana which resembles jihwa talaabu, Mrudu, Snigdha, not having vedana, srava & good looking is said to be shuddha. Features mentioned by susruta & vagbhata are almost similar.[41,42]

Ruhyamaana Vrana

Vrana which has kapotha varna, devoid of kledha & has sthira pitika is said to be Ruhyamana Vrana. Similar type of description is mentioned by vagbhata & in M.N.[43,45]

Samyaka Roodha Vrana

Lakshanas- Vrana which has healed in its (dweling place) with out eruptions (Granthi), Pain (Vedana) or swelling, has the colour as that of twak & is even said to be samyak Roodha.[46,47]

Vrana Pariksha

Sushruta emphasizes that before treating the Vrana one should know the shanmoola i.e the causative factors (V, P, K, Sanni, Rakta, Aagantuja). Ashta parigrahee i.e. 8 Vrana Adhistaanas (Twak, Mamsa, Sira, snayu, asti, sandhi, kosta, marma) pancha lakshana lakshita i.e. Vataja, Pitaja, kaphaja, sannipaataja & Agantuja Vranas as well as Varna, Srava, Gandha, Vedana, Aakruti & also 60 Upakarmas for the proper management of Vrana. Further it said that these 4 (i.e shanmoola, Astha parigraahi, pancha lakshanas & shastya Vidhana) are to be thoroughly understood by the vaidya before treatment, along with the chikitsa chatushpadha the treatment of Ulcer becomes easier.

The examination is carried out in 3 ways - Darshana, Sparshana, Prashna.

Darshana

By Darshana pareeksha age of patient, site of Vrana, Aakruthi, Varna, condition of Vrana, etc can be elicited.

Sparshana

It helps is eliciting the hardness or softness of Vrana, increase or decrease of local temperature, tenderness, bleeding etc.

Prashna

By prashna pareeksha the cause for Vrana, type of Vedana, Agnibala, satmya etc. are to be examined.

Susruta mentioned shadvidha pareeksha for the diagnosis.

Darshana & sparshana should be done by panchandriya pareeksha.[48,49]

Sthana of Vrana (Vranavasthu)

Site of Vrana is to be taken into consideration while examination. Twak, mamsa, sira, snayu, asthi, sandhi, koshta, marma – these 8 one Vranavaastu (the dwelling seats of vrana). In these all kinds of Vranas occur. Susrutha & vagbhata have mentioned sandhi as the site instead of medas which was mentioned by charaka.[50,53]

Madhavakara explained samanya & vishesha lakshana in case of injury to mamsa, sira, snayu, sandhi, asthi & marma.

Shape of Vrana

Normal shapes of Vrana are Aayatha, chaturasra, Vrutha, Triputaka, others with abnormal shapes are treatable with difficulty. Acc to vagbhata shape of Vrana is considered according to the shape of shalya. Shapes of Agantuja Vranas are Aayatha, chaturasra, Trayastra, Mandalina, Ardhachandraakara, Vishada & kutila etc. some resembling sharaavanimna madhyascha, others with elevation in the centre or agantuja Vranas have innumerable shapes.[54,55]

Vrana Gandha

Examination of Gandha of Vrana is also important. Susruta has mentioned katu for vata, teekshana for pitta, visra for kapha, loha Gandhi for Rakta & vyamishra for sannipatika. He further says laja, aatasi, taila sama, etc are prakrut where as other than this are vaikruta. Charaka has described 8 types of Gandha i.e sarpi, taila, vasa, pooya, Rakta, shyava, Amla, pootika. These have been included in discharges by other Acharyas.[56]

Vrana Varna

Colour of Vrana according to the involvement of Doshas as mentioned in the Table No: 9.[57]

Dosha	Colour of Vrana
Vaata	Bhasma, kapota, Asthi, Parusha, Aruna, Krushna.
Pitta and Rakta	Neela, peeta, Haritha, shyaava, Krushna, Rakta, Kapila, pingala
Kapha	Sweta, Paandu, Snigdha
Sannipataja	Sarva vrana

Vrana Vedana

Vrana Vedana according to Dosha involvement as mentioned in the Table No: 10.[58]

Dosha	Vedana
Vaata	Todha, Bhedana, Chedana, Taadana, Manthana, Vidaarana, Chumachumaayana. Nirdahana, Sphotana, kampana etc.
Pitta	osha, Chosa, Daha, Dhoomayana, Vedana as if kshara is put in Vrana.
Kapha	Kandu, Gurutwa, Suptata, Alpa vedana
Rakta	Similar to that of pitta.
Sannipataja	All types of vedana.

Vrana Sraava

Susruta and Vagbhata have given list of discharges based on location (vranavastu) or involvement of Doshas. Vrana srava according to involvement of Doshas as mentioned in the Table No: 11.[59]

Dosha	Vrana Sraava
Vaata	parusha, Shyaava, Dadhimastu, Kshaarodaka, Maasadhaavana, pulakodaka
Pitta	Gomeda, Gomootra, Shanka, Kashaayodaka, Maadveeka taila etc
Kapha	Navaneeta, kaasisa, majja, naarikelodaka, varaahavasa
Rakta	Like pitta but more of Rakta sraava.
Sannipataja	Narikelodaka, priyanguphala, kanjeeka etc.

Vrana Sraava according to Sthaana as mentioned in the Table No: 12.[60,63]

Sthaana	Sraava
Twak	Sulilaprakasha, peetaavabhasa.
Mamsa	Sarpiprukasha, Sheeta, Picchila
Sira	Rakta atipravruthi, Pooya comes out after paaka
Snayu	Snigdha, Ghana, singhanaka pratima, sarakta
Asthi	Discharge mixed with Rakta and majja.
Sandhi	Picchila, saphenarudhira
kostha	Discharges asruk, mootra, pureesha, pooya, udaka.

Saadhyaasadhyata

Sukha saadhya vrana Characters

- Vrana arising in Madhya Vayah (Vrana heals quickly because of pratyagra Dhatus), Dhruda (Body having sthira, Bahu Mamsa, Shastras even though used in treatment do not cause damage to the siras, Snaayus etc), praanavantha & satwavanta.
- Vranas arising in twak, mamsa as adhisthaana.
- Ayatha, chaturasra, Vrutha, Triputa aakruthi Vranas.
- Vranas treated by good vaidhyas & patient who is aatmavantha.
- Vrana situated in sphik, paayu, prajanana, lalaata, Ganda, Oshta, prusta, Karna, phalakostha, Udara etc.
- Location of vrana in easily approachable site.
- Vranas of recent origin & not associated with upadravas.

Kruchrasaadhya Vrana Characters

- Vranas arising in Vruddha, Krusha, Alpapraana, Bheeru etc.
- Vranas having Vikruta Aakruti
- Vranas situated in Akshi, Dantha, Naasa, Apanga, Srotra, Naabhi, Jatara, Sevani, Nitamba, Parshwa, Kukshi.
- Vranas of those suffering from Kushta, Visha, shosha, Madhumeha.
- Vrana associated complications.
- Vrana treated by quacks & patient who is anaatmavatitha.
- Vranas which exude phena, Pooya, anila, having shalya, elevated, bhagandhara etc.

Yaapya Vrana Characters

Vranas of Avapaatika, Nirddhaprakasha, Sanniruddha Gudha, Jathara, those suffering from twak dosha, prameha, kanthashaaloka, Dantashankara etc.

Asaadhya Vrana Characters

- Vrana in spite of being situated in location not near marma sthaana free from siras, sandhis, asthi, spreads all over the body.
- Vrana situated in all ground materials with Anumukha & maamsa Budbudha. Vranas situated in shira, kantha from which air escapes making sound.
- Vranas in heena mamsa person discharging pooya, Rakta, associated with arochaka, Avipaaka, Kaasa, Swaasa like Upudravas.
- Bhinna Vrana in shira, Kapaala, followed by appearance of Mastulunga, features of all the 3 vitiated Doshas or kaasa & swaasa are uncurable.
- Vranas discharging vasa, Majja, Mastulunga are curable if caused by Aagantuja kaaranas, otherwise it is incurable.
- Vranas with pulakodata like sraava from pakvashaya, Kshaarodaka type of sraava from Raktaashaya, kalaaya type of Srava from aamaashaya & trikasandhi pradesha.
- It proper treatment is not done saadhya vrana becomes yaapya, yaapya becomes asaadhya & asaadhya may kill the person.[64,69]

Contemporary Review

Ulcer

An ulcer is the break in the continuity of the covering epithelium, either skin or mucous membrane due to molecular death. The word wound and an ulcer are used synonymously though it has some similar and dissimilar features. Chronic ulcers are the wounds that fail to heal, in general they have a fibrotic margin and a bed of granulation tissue which may include areas of slough (necrotic tissue).[70]

Causes of ulcer

There are various causes for ulcers. According to the causes, they are classified as[71,72]:

1. Traumatic ulcer
2. Arterial ulcer
3. Venous ulcer
4. Neurogenic ulcer
5. Infective ulcer
6. Tropical ulcer
7. Cryopathic ulcer
8. Martorells ulcer
9. Bazin's ulcer
10. Diabetic ulcer

Causes of wound

1 Trauma-either accidental or surgical
2 Physical, chemical and microbial agents
3 Ischaemia, which leads to infarction.[73]

Classification of Ulcers

Two types of classification of ulcers are possible as mentioned in the Table No: 13

1) Clinically
2) Pathologically.

Clinically		
Spreading ulcer	**Healing ulcer**	**Callous ulcer**
-No granulation tissue. -Plenty of discharge. -Excessive slough. -Surrounding area inflamed and oedematous. -Purulent smell present.	Red granulation tissue. Minimal serous discharge. Slough absent. Signs of inflammation are minimal. Smell absent.	Pale granulation tissue. Serous discharge. Slough present. Induration at base and surrounding area. Smell present.

Pathologically

A. Non-specific ulcer
B. Specific ulcers
C. Malignant ulcers

A. Non-Specific Ulcers

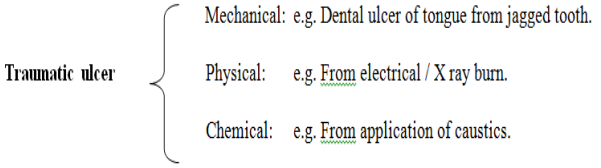
These are further classified as,

1. Traumatic ulcer

Occurs due to trauma in the areas where skin is closely applied to bony prominences (shin, malleoli, and back of the heel).

Characteristic features

It is circular, small in size and painful. E.g.: Foot baler's ulcer, plaster sores, dental ulcer of tongue.



2. Infective

These are due to secondary infection of wounds by pyogenic organisms like staphylococcus, streptococcus, etc.

3. Pyogenic ulcer

Causes: Commonly staphylococcus, and occasionally streptococcus. Predisposing factors are anemia, poor nutritional status.

Characteristic features

These are multiple, small, red, scabbed sores on leg or ankle.

4. Arterial ulcer/ Ischemic ulcer

These are due to peripheral arterial diseases and poor peripheral circulation. The condition is more often seen in older people and is episodes of trauma and infection of the destroyed skin over a limited area of the leg or the foot. Such ulcers tend to occur on the anterior and outer aspects of the leg, dorsum of the foot, on the toes or the heel.

Characteristic features

Pain is the main complaint with punched out edge and floor may expose the tendons.

5. Neurogenic ulcers /Neuropathic / Trophic / Penetrating ulcers

Occurs due to, impairment of the nutrition of tissues, inadequate blood supply and neurological deficit or repeated trauma to the insensitive part of the body.

Characteristic Features

These ulcers are commonly seen on the heel and ball of the foot when patient is ambulatory and on buttocks, back of heel when patient is non-ambulatory. Edge is punched out, base is slightly indurated and floor is covered with slough. Surrounding skin has no sensation and these are painless. E.g.: Bed sore, perforating ulcers.

6. Martorells ulcer

Occurs in patients who are usually hypertensive/ atherosclerotic.

7. Cryopathic ulcer

These result from intense cold & chilly weather.

8. Tropical ulcer

Characteristic feature of this ulcer is callousness towards healing. Edge is slightly raised and exudes copious serosanguineous discharge. Pain is an important symptom. In some cases it destroys surrounding tissue and spreads widely.

9. Diabetic ulcer

In this slight injury to the glucose laden tissue may cause chronic infection and ulcer formation. Ulceration in diabetes may be precipitated by ischemia due to diabetic atherosclerosis, infection or peripheral neuritis. When the ulcer is due to neuropathy a trophic ulcer results (features are same as trophic ulcer but surrounding sensation of skin will be less. When ulcer is due to ischaemia, ischemic ulcer results but it is less painful than typical arterial ulcer. Toes and feet are normally affected.

10. Miscellaneous ulcers

Ulceration of leg may be associated with gross anemia, leukemia, polycythemia, systemic sclerosis, RA, ulcerative colitis, poliomyelitis, arteriovenous fistula, acholuric jaundice, various collagen disorders, chronic lymph edema, cortisone ulcers etc.

B. Specific Ulcers

These are seen in T.B, syphilis, soft chancres, leprosy, actinomycosis and Meleny's ulcer.

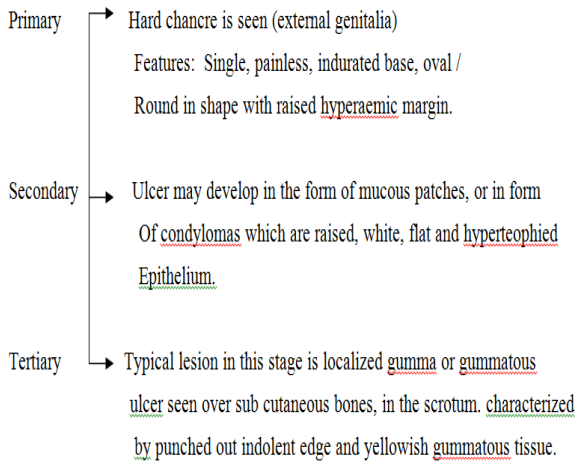
1. Tuberculous ulcer

Such ulcer usually develops due to bursting of cold abscess; may form from matted tuberculous lymph nodes or TB of bone or joint & from sub mucous lesions e.g intestinal TB.

Characteristic features

It is oval in shape generally with irregular crescentic border, often multiple in number with thin reddish blue, undermined edge and slightly indurated base. It is usually shallow, accompanied with slight pain, variable amount of discharge and floor is covered with pale granulation tissue.

2. Syphilitic ulcer



3. Soft chancre/chancroid (ducrey's)

It is a contagious disease caused by gram –ve haemophillus ducreyi. 3 to 5 days after exposure multiple acute sores develop on external genetalia. These are often painful, gradually become pustular and ulcerate to form soft sores. These are multiple, soft, rounded, painful and readily bleed and edges are undermined.

4. Actinomycosis

This condition causes multiple ulcers. At first area becomes indurated, nodules appear, which soften and later ulcerates in various places. Surrounding skin often looks bluish in color. Discharges yellow colour sulphur granules.

5. Meleny's ulcer

These are in post operative wounds commonly seen over abdomen, thorax, etc. it is very painful with signs of toxaemia. It has undermined edges, foul smelling granulation tissue with seropurulent discharge.

C. Malignant Ulcer

1. Rodent ulcer/ Basal cell carcinoma

It is locally invasive carcinoma of basal layer of epidermis. It is of low grade malignancy. It is commonly seen on the face, above line from corner of mouth to ear, innercanthus of eye, nose on and around nasolabial fold, has risen and pearly white beaded edge, irregular in shape and floor covered with coat of dried serum, epithelial cells.

2. Epithelioma (squamous cell carcinoma)

This occurs commonly, in the dorsum of hands, in the face, limbs, lips, vulva, penis etc. It has normal temperature and usually not tender, oval or circular in shape with raised and everted edge, indurated base and floor is covered by necrotic tumour, serum & blood.

3. Marjolins ulcer

It is the name given to a squamous cell carcinoma which arises in a chronic benign ulcer or scar. It is slow growing malignant lesion, painless and edge is not always raised and everted.[73]

4. Varicose ulcer

The loss of skin surface in the drainage area of a varicose vein, usually in the leg resulting from stasis and infection (also known as Stasis ulcer). It's the commonest ulcer of the leg. The basic cause of venous ulcer is abnormal venous hypertension in the lower third of the leg; ankle and dorsum of the foot. Various terms are been used e.g. Varicose ulcers, Post thrombotic ulcer, Gravitational ulcer etc.

Venous ulceration may be associated with demonstrable varicose veins or may follow Thrombosis (formation or presence of thrombus, clotting with in a blood vessel which may cause infarction of the tissues supplied by the vessel) and Phlebitis (inflammation of veins) in the deep and perforating veins. The second group presents as an ulcerated Oedematous leg with demonstrable superficial varices in only about 1/3rd of cases. In all cases of this second group there will be history of long standing Oedema of the leg.[73]

Pathology

Incompetence of valves in the deep communicating veins and less frequently in the superficial system produces stasis of blood, and a rise in the local venous pressure. The Venous pressure causes leakage of fluid of large molecules from capillaries into tissue space. This results in fibrinogen escaping into tissues which is converted to fibrin. A peri-capillary cuff of fibrin forms and acts as a diffusion barrier. This thickening in the wall of the capillaries affects the transport of oxygen and nutrient substances required for cellular survival. There is thus local cellular necrosis and ulceration.

There is further evidence to suggest that local venous hypertension opens up the normally closed Arteriovenous shunts, and Arterial blood reaches the Venous channels by bypassing the capillary circulation. The shunting of Arterial blood produces local tissue Anoxia, Necrosis and Ulceration. These changes are confined to the skin and subcutaneous tissue in the lower inner half of the leg, and are limited by the deep fascia in the early stages. In more advanced ulcers, the process involves the deeper structures as well. When the ulcer heals, the subcutaneous fat is never replaced and there is formation of scar tissue. In advanced stages, the skin, subcutaneous tissue and deep fascia becomes welded together into a firm solid mass. The fibrotic process affecting the skin and subcutaneous fat comprises the condition of Lipodermatosclerosis. This may be the precursor of leg ulceration. It's a terraced simple ulcer with gently sloping edges. The granulations in its base vary with state of healing of the ulcer. These appear red and velvety if the ulcer is uninfected and healing well, white and fibrous if it's longstanding and stationary, and yellow and smelly if it's infected and enlarging.

The Venous ulcer usually lies just proximal to the medial or lateral malleolus. Ulceration is mainly confined to the lower half of the leg. They are usually associated with Oedema of the leg. Before the appearance of frank ulceration, the skin in the affected area often shows Eczematous changes. The skin becomes pigmented due to deposition of Haemosiderin derived from the breakdown of extravasated blood in the sub-cutaneous tissue. A later and a more serious stage is Lipodermatosclerosis in which palpable induration develops in the skin and sub-cutaneous tissue. This may be a precursor of leg ulceration.

The presence of obvious varicose veins should be recorded although these are not visible. An examination of the peripheral pulses should be carried out as Venous and Arterial disease of the lower limb often co exist especially in more elderly patients.[74]

Ambulatory Venous Pressure (AVP)

Ambulatory venous pressure (AVP) is the "gold standard" test of the efficiency of the calf musculovenous pump. It is performed by placing a small needle into one of the veins on the back of the foot and connecting the needle to a blood pressure measurement machine. The test has three parts:

1. The subject is then asked to stand up and the standing venous pressure is measured.
2. The subject is asked to perform ten heel raise exercises to work the muscluovenous pump and the ambulatory venous pressure (AVP) is recorded.
3. The subject is asked to rest again in the standing position and the rate at which the ambulatory pressure returns to the standing pressure is measured, called the refilling time.

Normal Result

In a normal subject the standing venous pressure is around 90 mmHg (depending on their height). During exercise this should fall to around 30 mmHg and after exercise this should only rise slowly over half a minute or so back to the standing pressure.

Abnormal Result

- The pressure does not fall normally during exercise, which indicates that the calf pump is not working effectively. There are many causes for this
- The pressure rises rather than falls during exercise, which indicates that the deep veins are occluded.
- The AVP returns to the standing pressure too quickly, which indicates reflux in either the deep or superficial veins due to absent or damaged valves.

The greater the ambulatory venous pressure (AVP) the more severe the problem with the musculovenous pump and the more likely the subject will suffer from leg ulcers.[75]

Course events of an ulcer

It consists of 3 phases

1) Stage of extension/spreading/ sloughing.
2) Stage of transition
3) Stage of repair

Stage of extension

- Floor- covered with exudates and slough; no granulation tissue.
- Discharge-often purulent even blood stained.
- Edge- sharply defined, thickened and inflammed.
- Surrounding area- inflammed and oedematous.
- Base- indurated and fixed.
- Slough and small amount of discharge may dry to become scab. A layer of dead tissue may become dehydrated and form a dark brown eschar.

Stage of transition

- This stage prepares for healing.
- Floor becomes cleaner with slough separating. Small reddish areas of granulation tissue appear which link ultimately to cover whole surface.Discharge becomes more serous.
- Base- induration diminishing.

Stage of repair

- Ulcer may show signs of healing or characters of callous stage.
- Signs of healing:
- Floor- contains smooth and even red granulation tissue covered by single layer of epithelium. Granulation tissue is transformed to fibrous tissue which contracts to form scar.
- Edge- becomes more shelving with the bluish epithelium gradually extending from margin onto the floor of the ulcer to cover it up.
- Discharge is merely serous.
- Surrounding skin soft, flexible, free from congestion.
- Base- is free from fixity.
- Change indolent/ callous ulcer-
- This means the ulcer refuses to heal by itself.
- Floor covered with unhealthy pale granulation tissue.
- Edge- thickened, oedematous, indurated and often discoloured.
- Surrounding area- edematous and indurated Base- indurated.[76]

Clinical Examination of an Ulcer

This should be conducted in systematic manner. Proper history should be taken regarding the ulcer, the history include mode of onset, duration, pain, discharge and associated disease if present.

Physical examination

In case of ulcer, one should not give all attention the ulcer only, due consideration must be given to the general examination of the patient. Ulcer may well be a

sequel of malnutrition, general Atherosclerosis, Syphilis, T.B etc.

Local examination

Inspection

- Site: This is very important and often by itself gives a clue to diagnosis. Majority of varicose ulcers occur in the lower 1/3rd of the leg towards the medial malleolus.
- Size: size of an ulcer is important to know the time required for healing. A bigger ulcer will take a longer time to heal particularly in relation to the length of history.
- Shape: varicose ulcers are usually vertically oval in shape. Gummatous ulcer are circular.
- Number: T.B, Gummatous, Varicose ulcers, Soft chancres may be more than one in number.
- Margin: It's the junction between normal epithelium and ulcer.
- Edge: It is an area between the margin and floor of ulcer. Edge is an important finding of an ulcer which by itself not only gives a clue to diagnosis of ulcer, but also the condition of the ulcer. E.g. spreading ulcer edge is inflamed and Odematous, in Healing ulcer. If the edge is traced from red granulation tissue in the centre towards periphery will show a blue zone (due to thin growing epithelium) and a white zone due to fibrosis of the scar.

There are 5 types of edges

a) Undermined edge
b) Punched out
c) Sloping/shelving- usually seen in Varicose ulcers
d) Raised and pearly white beaded
e) Rolled out or everted- seen in Carcinomatous ulcer

- Floor: this is an exposed surface of an ulcer. When floor is covered with red granulation tissue ulcer seems to be healthy and healing. In slowly healing ulcer floor is covered with smooth and pale granulation tissue. In Gummatous ulcer floor is covered with wash leather slough, Trophic ulcers penetrates down even to the bone and in Malignant melanoma black mass at floor is seen.
- Discharge: the character of discharge, smell and amount should be noted. In healing ulcer scanty serous discharge, in spreading and inflamed ulcer purulent discharge and in Tuberculous ulcer/Malignant ulcer serosanguinous discharge is seen. Purulent discharge indicates active infection and blue green coloration suggests infection with Pseudomonas pyocyaneus.
- Surrounding area: in acute inflamed ulcer surrounding area is glossy, red and Oedematous and Varicose ulcer skin is eczematous and pigmented.

Vascular insufficiency

Examination of this should be done when the ulcer is situated on lower part of the leg. One should always search for Varicose veins in upper part of the leg or thigh. If there is no Varicose vein and the cause of ulcer is not determined, the clinician must examine the condition of the arteries proximal to the ulcer. Atherosclerosis, Burger's disease, Raynaud's disease, etc may be the cause of the ulcer from poor circulation.

Palpation

- Edge: during palpation consistency of edge should be noted marked indurations of the edge is characteristic feature of a carcinoma. A certain degree of indurations are expected in any chronic ulcer whether it is Trophic/ Gummatous/ Syphilic ulcer.
- Base: Its better felt than seen. It is that on which the ulcer rests. If an attempt is made to pick up the ulcer between thumb and index finger the base will be felt. Slight induration of base is seen in chronic ulcers, marked induration of base is seen in Squamous cell carcinoma and sometimes it is attached to deep structures. E.g. Varicose ulcers to the tibia.
- Depth: It can be recorded in millimeters. Trophic ulcers are as deep as to reach even the bone.
- Bleeding: Bleeding to touch is a common feature of Malignant ulcer.
- Tenderness: An acutely inflamed ulcer is exquisitely tender. Chronic ulcers such as Tuberculosis and Syphilitic ulcer are slightly tender. Varicose ulcers may not be tender.

Examination of Varicose veins

Examination of the varices is very important, the aim is to locate the incompetent valves communicating the superficial and deep veins.[77,78]

Trendelenburg test

It is done to find out the site of leak or defect in a patient with varicose veins. Only the superficial veins and the perforating veins can be tested, not the deep veins. The patient is made to lie down and the veins are emptied by raising the limb and stroking the Varicose veins in a proximal direction. Now pressure is applied with the thumb at the saphenofemoral junction, and the patient is asked to stand up quickly. To test the superficial veins, the pressure is released. Quick filling of the Varicose veins from above indicates incompetency of the superficial veins.

To test the perforating veins, the pressure at the saphenofemoral junction is not released, but maintained for about a minute. Gradual filling of the varices indicates incompetency of the perforating veins, allowing the blood to pass from deep to superficial veins.

Perthe's test

Employed to test the deep veins. A tourniquet is tied around the upper part of the thigh, tight enough to prevent any reflux down the vein. The patient is asked to walk quickly for a while with the tourniquet in place. If the perforating and the deep veins are normal, the

Varicose veins shrink, where as if they are blocked, the varicose veins become more distended.

Ulcer Management

In the last few years there have been many new wound dressings, topical products, and skin equivalents made available. It is necessary to tailor wound care plan to the etiology of the ulcer. The use of cost-effective methods is strongly recommended for long term treatment plans.

Conservative treatment

- Elevation of the affected limb is important. Vertical leg drainage is a simple and valuable method of reducing and eliminating leg oedema. The patient is advised to sleep with the legs at 90 degrees to the horizontal plane by putting a vertical board at the end of the bed or pushing the bed against the wall. The frequency of daily leg elevation depends on the rapidity of oedema formation.
- Passive movements to maintain the mobility of foot and ankle.
- Active movements of the calf muscles.
- A firm elastic 'blue line' bandage is applied spirally from the base of the toes upto knee joint. While walking this bandage will alternatively stretch and relax and thus helping in venous pumping. A piece of rubber with beveled edges are cut to a size more than the ulcer and is inter posed in the bandage over the ulcer to reduce the local oedema. This bandage should be worn whenever the patient is out of bed. The most important factor in achieving healing of such ulcer is the use of high levels of compression. Pressure of 30 to 45 mmHg is the ideal for early healing. This can be achieved by compression stockings (class 3 stocking exerts about 30 mmHg compression at the ankle) or by bandaging. This compression should be applied to the ulcer region, so patients should wear below the knee stockings. Those patients, who cannot manage the stocking, can be treated by multilayer bandaging.
- The 4 layered bandaging is the upto date technique used nowadays for acquiring the right compression pressure over the ulcer.[79]

Venous ulcer management

Venous ulcers should be debrided of necrotic and fibrinous material to allow a healthy granulation tissue to develop. In the absence of apparent local wound infection, antibiotics seem to have little effect in treating venous ulcers. Although Povidone-iodine, acetic acid, sodium hypochlorite, and hydrogen peroxide have been shown to be toxic to cultured fibroblasts, they are helpful and remain in use. At concentrations that preserve fibroblast function these products can be used as debriding and topical antibacterial agents. Moistened saline gauzes may be appropriate for initial management of all types of leg ulcers but moisture retentive dressings are preferred. The latter help debride necrotic tissue, relieve pain and reduce the frequency of dressing change. They also are more cost-effective. Patients with venous insufficiency are advised to elevate their legs above the heart level while sleeping, and to avoid standing for long periods. The mainstay of Venous ulcer management is compression to achieve an external pressure between 30-40 mm Hg at the ankle, this is required to prevent capillary transudate. For compression bandaging to be safely applied the ankle brachial pressure index must be at least 0.8. The bandages should be changed once or twice a week.

The healing rate depends on the initial size of the ulcer, but 65-70% of venous ulcers heal within six months. The five-year recurrence rate of healed Venous ulcers can be as high as 40%. Other predictive factors for Venous ulcer healing include duration of the ulcer, size, a fibrinous ulcer bed, the presence of Lipodermatosclerosis, along with history of venous surgery, hip or knee replacement, and ankle brachial pressure index of less than 0.8. Surgery to correct superficial venous incompetence, as well as the ligation of incompetent perforating veins may be beneficial, curative, and may prevent recurrence. At the present time, venous surgery should be reserved for patients who fail to respond to conservative treatment measures and who are adherent to medical treatment. In patients with healed ulcers who have not had surgery, the mainstay of preventing recurrence is graduated elastic compression stockings.

Leg Ulcer Treatment Modalities

Dressings

Pentoxifylline

Pentoxifylline is FDA approved for the treatment of intermittent claudication. Its use in venous leg ulcers was evaluated. Pentoxifylline 800 mg three times a day appears to be an effective adjuvant to compression bandaging for treating venous leg ulcers.

Cilostazol (Pletal)

Cilostazol was approved by the FDA in 1999 to treat intermittent claudication but not for the treatment of leg ulcers. It is a type 3 Phosphodiesterase inhibitor. In 4 randomized placebos controlled studies enrolling 1534 patients with claudication Cilostazol 100 mg twice daily was found to improve both pain-free and maximal treadmill walking distance.

Vacuum-assisted closure (VAC)

The FDA recently approved VAC, an innovative technique using negative pressure, for closure of chronic wounds. The technique consists in placing an open-cell foam dressing into the wound cavity and applying a controlled subatmospheric pressure (typically 125mm Hg below ambient pressure). This will remove chronic Oedema, and leads to increased localized blood flow resulting in enhanced formation of granulation tissue. Evidence suggesting that VAC may be superior to saline gauze dressings in healing chronic wounds. The VAC may be used as an adjunct treatment for chronic, Nonhealing wounds, especially those that are deep and complicated.

Surgery
Surgical treatment to correct venous hypertension or treating the ulcer itself by skin grafting is one treatment of many that could be used. Other surgical procedures include superficial stripping and excision of varices, subfascial perforating vein interruption, excision and skin grafting, excision and free flap coverage.[80]

Subfascial ligation of Cockett and Dodd
Once the ulcers have healed the incompetent perforating veins should be identified and divided. An incision is made in the lower part of the leg 2.5 cm behind the posterior border of the tibia. The incision is deepened till the deep fascia is reached. The margins are undermined. The deep fascia is incised along the line of incision. The margins of the deep fascia are lifted up. The perforating veins are ligatured under direct vision and divided.

Linton developed a radical surgical approach. In this technique the superficial varicosities were ligated and stripped with subfascial ligation of the perforating veins. A by- pass operation may be performed for thrombosed deep veins. Such occlusion can be relieved before or at the same time that the incompetent perforators are ligated. The saphenous vein has been used to by – pass segmental venous occlusion of the ileofemoral or femoro-popliteal vein. For ilio-femoral occlusion, the contra lateral saphenous vein is passed suprapubically and anastomosed to the affected side distal to the occlusion this is known as palma operation. For femoro-popliteal occlusion, the obstructed segment can be by-passed by anastomosis of the saphenous vein to the popliteal-tibial trunk below the occlusion at the level of the knee joint. Better assessment of a case can be made by isotope clearance technique perhaps combine with foot volumetric studies and Doppler assessment of reflux. At present these techniques are being combined with ascending and descending phlebography.

Valvular repair
Venous valves in the deep veins are repaired if their incompetence is a consequence of primary valve failure. This may lead to successful long term maintenance of leg ulcer healing.

Valve transplant by Autograft
A portion of the vein which contains defective valves following deep vein thrombosis may be replaced by transplanting a segment of axillary vein or brachial vein of the same person which contains competent valves.[81]

Skin grafts
Pinch grafts may be performed as an outpatient procedure in patients with small ulcers. Small punch biopsies are taken from the patient's thigh and placed dermal side down on the ulcer bed. Split thickness graft is used for large ulcers. The graft may be meshed to avoid build-up of exudate underneath it. This procedure requires anesthesia and has the disadvantage of creating a new donor site ulcer.

Apligraf (Graft skin)
Apligraf is a bi-layered viable skin construct manufactured using neonatal foreskin keratinocytes and fibroblasts with bovine type I collagen. It was approved by the FDA for treatment of hard to heal leg venous ulcers, and for Diabetic foot ulcers. In a multicenter, randomized, controlled clinical trial, Apligraf has been shown to be safe and effective. It achieved more cases of complete Venous ulcer closure faster than standard compression therapy alone. In a recent prospective randomized multicenter trial involving 208 patients with diabetic foot ulcers Veves et al. concluded that application of Apligraf for a maximum of 4 weeks resulted in a higher healing rate compared to saline moistened gauzes (standard of care). Prior to Apligraf application to a wound, the ulcer bed preparation should be performed. This involves debridement and control of infection.

Oasis
Oasis, an FDA approved product, is used for wound management. It is a small submucosal derivate of pig intestine biomaterial, with an intact extracellular matrix; it provides a three-dimensional scaffold for remodeling to enable host cells to incorporate. It is biocompatible, acellular, has an extended shelf life, and does not require refrigeration.

Other methods used in wound closure
Cultured keratinocyte allografts could be grown in advance, cryopreserved, and stored. They provide rapid coverage of wounds. Keratinocyte allografts represent "off-the-shelf" skin replacements which avoid both the need for a patient donor site and the delay required for autologous keratinocyte culture. The chief action of keratinocyte allografts is probably cytokine-mediated. Keratinocyte allografts were used for donor sites, and partial-thickness burns. These allografts are being used as adjunct treatment for selected chronic leg ulcers, but they are not yet commercially available.

Other methods of wound closure include infrared UV, low energy and laser irradiation, ultrasonography, electrical stimulation, and hydrotherapy. Constant tension approximation (a technique that applies constant-tension traction to wounds), and warming therapy with heat bandages, as well as many other growth factors have been used.[82]

DISCUSSION
Varicose ulcer and its complication are a common recurring problem. The management scheme for venous ulcer oedema, hyper pigmentation have been evolving through years, with the primary goal of reducing venous congestion and enhancing tissue perfusion and wound healing. Typically conservative management with a regime of double elastic stockings, leg elevation at rest and calf muscle exercise, requires good and prolonged patient compliance and has its own problem.

According to Acharya Sushruta symptoms of dusta vrana can be co-related to varicose ulcer and treatment regime for this kind of vrana has been explained in sixty measures of wound management. Healing of ulcers to this day stands as a challenge. Even though various methods have been used to promote healing but the actual process of wound healing has to be taken up by the body itself. Wound & their management is fundamental practice of surgery since ancient time. Acharya Sushruta had mentioned everything about wounds & ulcers as below-

1. Characteristics of ulcers like clean, unclean ulcer.
2. Common features of different types of ulcers.
3. Factors which converts ulcer to non-healing type.
4. Causes of recurrence of ulcers.
5. Management of ulcer by shasti upakrama.
6. Bandaging of wounds.
7. Prognosis such as curable, incurable etc.

From this it is clear that Sushruta appreciated wound healing & regarding this he must have performed several experiments.

CONCLUSION

From the Above review it is cleared that how narratively Dushta vranas w.s.r to varicose ulcer has been explained in both Ayurvedic and Contemporary views. It is cleared that the Vrana should be protected from Dosha Dusthi and from various micro- organisms, which may afflict the Vrana and delay the normal healing process. For the early and uncomplicated healing of Vrana, treatment is necessary. Before starting the treatment we must to assess which type of Vrana, level of Dusthi, predominance of Dosha, involvement of Dhatu, site and size of the Vrana, Sadhyaasadhyata of Vrana. When wound will be completely free from discharge, slough, foul smell, burning sensation, itching, then healing can be achieved very well.

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