

VENOUS WOUNDS AND VASCULAR DISEASE ASSESSMENT

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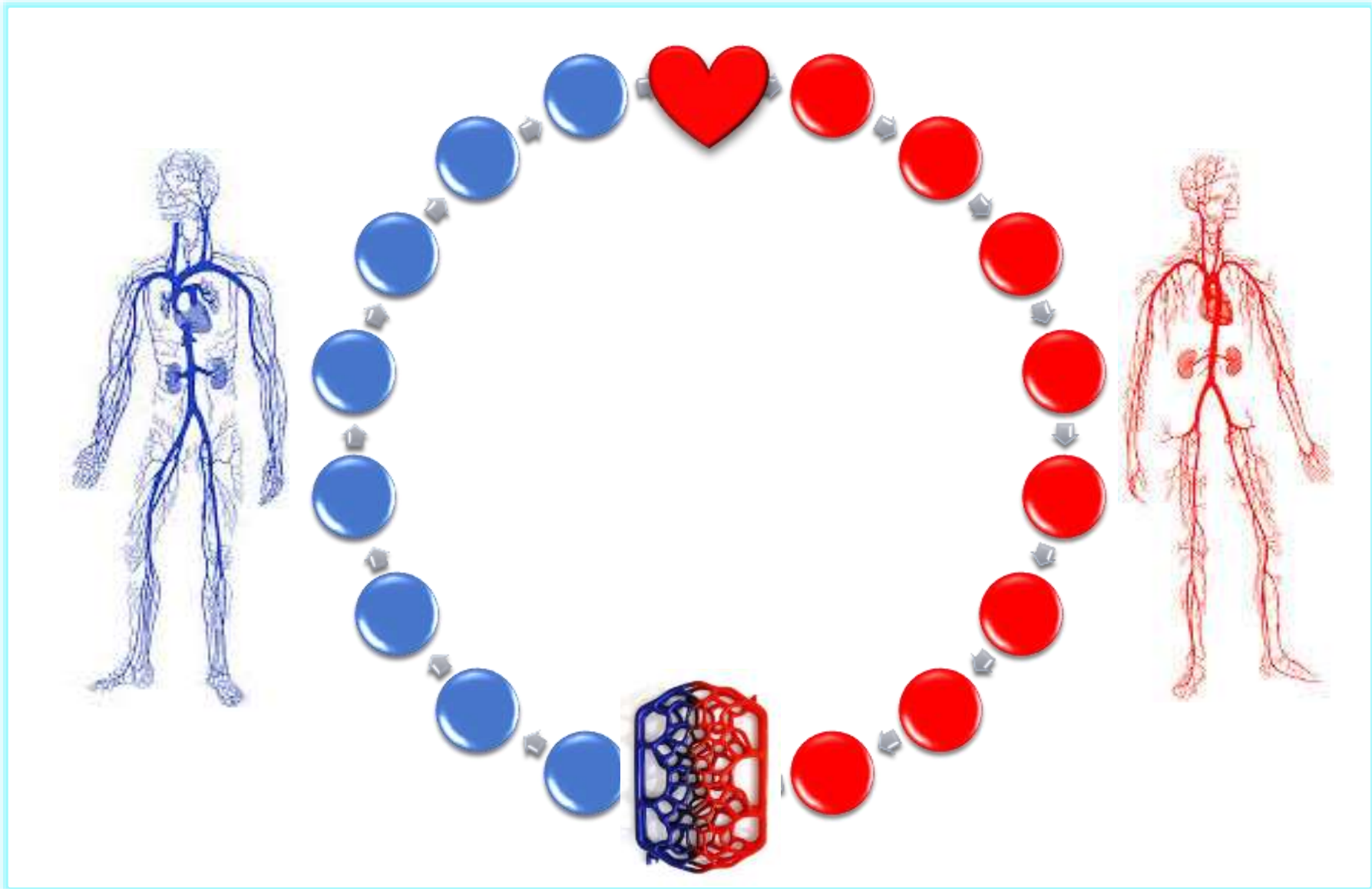
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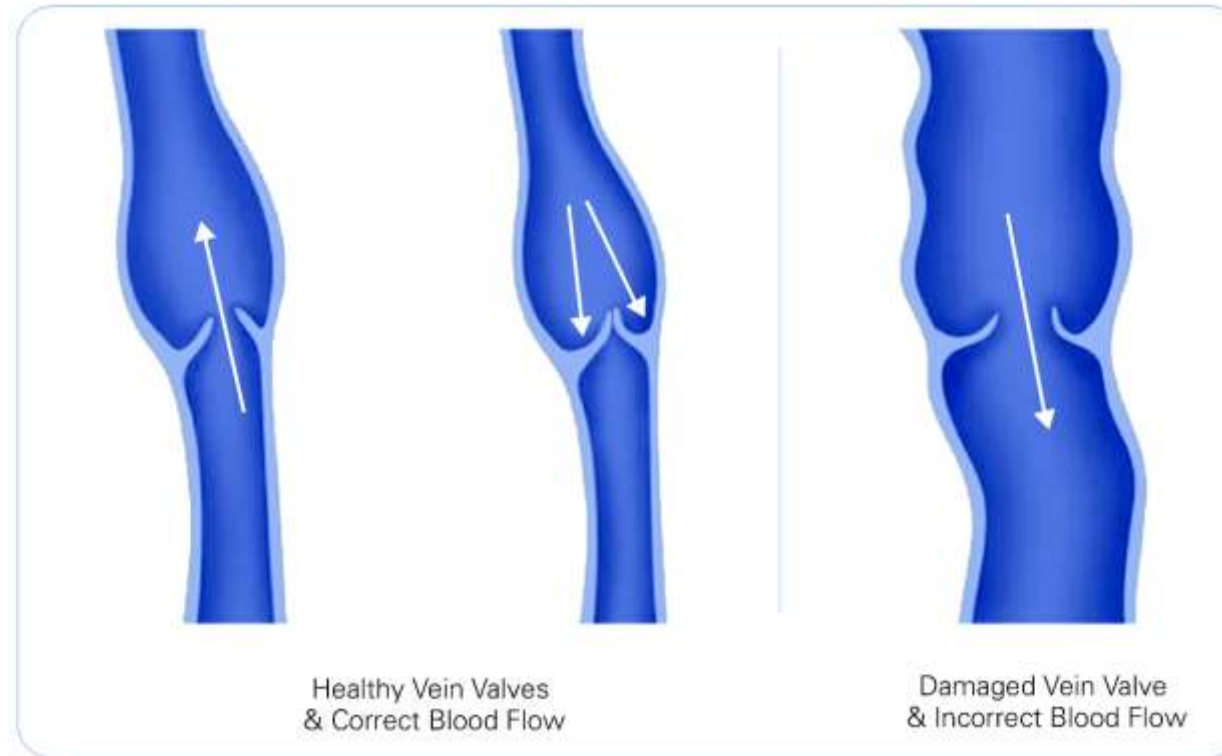
VENOUS PUMP

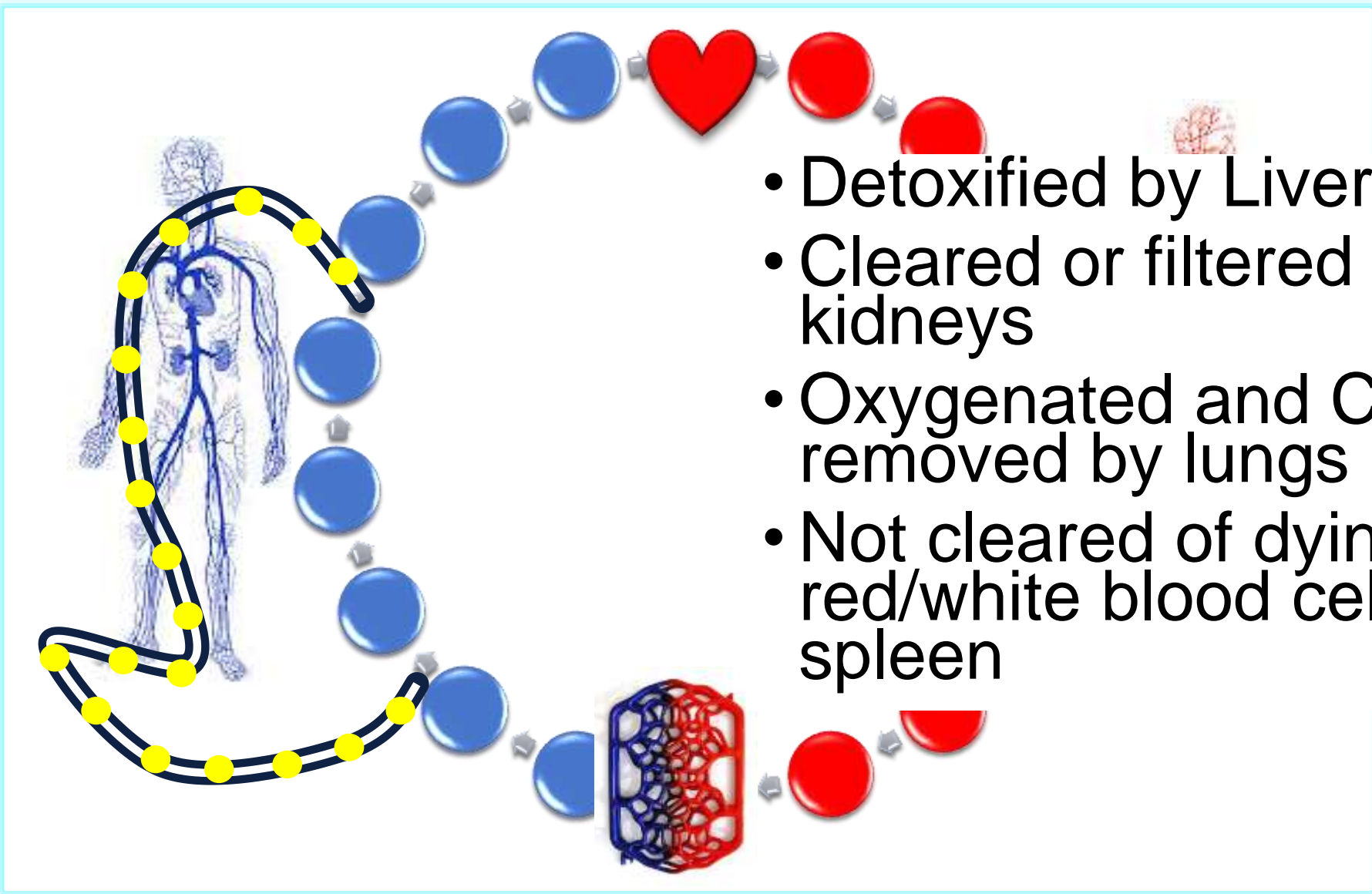


Blood return to the heart

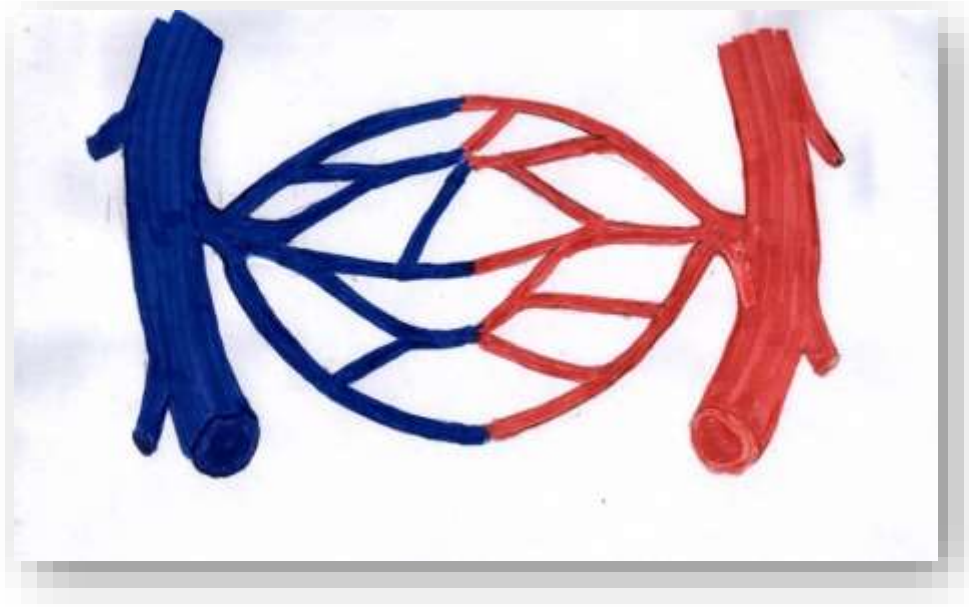
- Muscle contraction
- Inspiration

PATHOPHYSIOLOGY OF VENOUS INSUFFICIENCY





- Detoxified by Liver
- Cleared or filtered by kidneys
- Oxygenated and CO₂ removed by lungs
- Not cleared of dying red/white blood cells by spleen



- Venous Hypertension
- Leukocyte Trapping
- Release of Proteolytic Enzymes
- Destruction of CBM
- Leakage of Plasma Proteins
- Tissue Hypoxia
- Dermatitis & Lipodermatosclerosis

IMPACT OF VENOUS DISEASE ON CHRONIC NON-HEALING WOUNDS

- The annual cost of treatment for non-healing wounds is estimated between \$2-3 billion per year in the United States
- Approximately 70% of non-healing wounds and up to 80% of non-healing wounds in the lower extremities are secondary to venous insufficiency
- Only a small percentage of these affected individuals get an appropriate workup for venous insufficiency

CEAP CLASSIFICATION

- CEAP (Clinical signs, Etiological classification, Anatomical distribution, Pathophysiological dysfunction)
- 0- Heaviness, pain, itching in legs
- 1- Telangiectasia (spider veins) or reticular veins
- 2- Visible/palpable varicose veins
- 3- Venous edema without skin changes
- 4- Skin changes attributed to venous insufficiency
- 5- Healed ulcer with skin changes attributed to venous insufficiency
- 6- Active ulcers with skin changes attributed to venous insufficiency

BOTH THE SOCIETY FOR VASCULAR SURGERY AND AMERICAN VENOUS FORUM REFERENCE SAME GUIDELINES

Management of venous leg ulcers: Clinical practice guidelines of the Society for Vascular Surgery[®] and the American Venous Forum

Endorsed by the American College of Phlebology and the Union Internationale de Phlébologie

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GUIDELINE 1.1: VENOUS LEG ULCER DEFINITION

- We suggest use of a standard definition of venous ulcer as an open skin lesion of the leg or foot that occurs in an area affected by venous hypertension.

GUIDELINE 2.2: VENOUS LEG ULCER PATHOPHYSIOLOGY

- We recommend a basic practical knowledge of venous physiology and venous leg ulcer pathophysiology for all practitioners caring for venous leg ulcers

GUIDELINE 3.1: CLINICAL EVALUATION

- We recommend that for all patients with suspected leg ulcers fitting the definition of venous leg ulcer, clinical evaluation for evidence of chronic venous disease be performed.

Edema

Cramps

Restless Legs

Varicose Veins

Stasis Dermatitis

Leg Ulcers

GUIDELINE 3.3: WOUND DOCUMENTATION

- We recommend serial venous leg ulcer wound measurement and documentation.

GUIDELINE 3.4: WOUND CULTURE

- We suggest against routine culture of venous leg ulcers and only to obtain wound culture specimens when clinical evidence of infection is present. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 3.7:ARTERIAL TESTING

- We recommend arterial pulse examination and measurement of ankle-brachial index on all patients with venous leg ulcer. [GRADE - I; LEVEL OF EVIDENCE - B]

GUIDELINE 3.9: VENOUS DUPLEX ULTRASOUND

- We recommend comprehensive venous duplex ultrasound examination of the lower extremity in all patients with suspected venous leg ulcer. [GRADE - I; LEVEL OF EVIDENCE - B]

GUIDELINE 3.13: VENOUS PROCEDURAL OUTCOME ASSESSMENT

- We recommend venous procedural outcome assessment including reporting of anatomic success, venous hemodynamic success, procedure-related minor and major complications, and impact on venous leg ulcer healing.

GUIDELINE 4.2: DÉBRIDEMENT

- We recommend that venous leg ulcers receive thorough débridement at their initial evaluation to remove obvious necrotic tissue, excessive bacterial burden, and cellular burden of dead and senescent cells.
[GRADE - I; LEVEL OF EVIDENCE - B]

GUIDELINE 4.12: SYSTEMIC ANTIBIOTICS

- We recommend that venous leg ulcers with clinical evidence of infection be treated with systemic antibiotics guided by sensitivities performed on wound culture. [GRADE - I; LEVEL OF EVIDENCE - C]

GUIDELINE 5.1: COMPRESSION—ULCER HEALING

- In a patient with a venous leg ulcer, we recommend compression therapy over no compression therapy to increase venous leg ulcer healing rate. [GRADE - I; LEVEL OF EVIDENCE - A]

GUIDELINE 5.2: COMPRESSION—ULCER RECURRENCE

- In a patient with a healed venous leg ulcer, we suggest compression therapy to decrease the risk of ulcer recurrence. [GRADE - 2; LEVEL OF EVIDENCE - B]

GUIDELINE 5.4: COMPRESSION—ARTERIAL INSUFFICIENCY

- In a patient with a venous leg ulcer and underlying arterial disease, we do not suggest compression bandages or stockings if the ankle-brachial index is 0.5 or less or if absolute ankle pressure is less than 60 mm Hg. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 5.5: INTERMITTENT PNEUMATIC COMPRESSION

- We suggest use of intermittent pneumatic compression when other compression options are not available, cannot be used, or have failed to aid in venous leg ulcer healing after prolonged compression therapy.
[GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.1: SUPERFICIAL VENOUS REFLUX AND ACTIVE VENOUS LEG ULCER—ULCER HEALING

- In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we suggest ablation of the incompetent veins in addition to standard compressive therapy to improve ulcer healing. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.2: SUPERFICIAL VENOUS REFLUX AND ACTIVE VENOUS LEG ULCER—PREVENT RECURRENCE

- In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - I; LEVEL OF EVIDENCE - B]

GUIDELINE 6.3: SUPERFICIAL VENOUS REFLUX AND HEALED VENOUS LEG ULCER

- In a patient with a healed venous leg ulcer (C5) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - I; LEVEL OF EVIDENCE - C]

GUIDELINE 6.4: SUPERFICIAL VENOUS REFLUX WITH SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B)

- In a patient with skin changes at risk for venous leg ulcer (C4b) and incompetent superficial veins that have axial reflux directed to the bed of the affected skin, we suggest ablation of the incompetent superficial veins in addition to standard compressive therapy to prevent ulceration.
[GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.5: COMBINED SUPERFICIAL AND PERFORATOR VENOUS REFLUX WITH OR WITHOUT DEEP VENOUS REFLUX AND ACTIVE VENOUS LEG ULCER

- In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have reflux to the ulcer bed in addition to pathologic perforating veins (outward flow of >500 ms duration, with a diameter of >3.5 mm) located beneath or associated with the ulcer bed, we suggest ablation of both the incompetent superficial veins and perforator veins in addition to standard compressive therapy to aid in ulcer healing and to prevent recurrence. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.6: COMBINED SUPERFICIAL AND PERFORATOR VENOUS REFLUX WITH OR WITHOUT DEEP VENOUS DISEASE AND SKIN CHANGES

- We suggest ablation of the incompetent superficial veins to prevent the development or recurrence of a venous leg ulcer. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.7: PATHOLOGIC PERFORATOR VENOUS REFLUX IN THE ABSENCE OF SUPERFICIAL VENOUS DISEASE, WITH OR WITHOUT DEEP VENOUS REFLUX, AND A HEALED OR ACTIVE VENOUS ULCER

- In a patient with isolated pathologic perforator veins (outward flow of >500 ms duration, with a diameter of >3.5 mm) located beneath or associated with the healed (C5) or active ulcer (C6) bed regardless of the status of the deep veins, we suggest ablation of the “pathologic” perforating veins in addition to standard compression therapy to aid in venous ulcer healing and to prevent recurrence. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.8: TREATMENT ALTERNATIVES FOR PATHOLOGIC PERFORATOR VEINS

- For those patients who would benefit from pathologic perforator vein ablation, we recommend treatment by percutaneous techniques that include ultrasound-guided sclerotherapy or endovenous thermal ablation (radiofrequency or laser) over open venous perforator surgery to eliminate the need for incisions in areas of compromised skin. [GRADE - I; LEVEL OF EVIDENCE - C]

GUIDELINE 6.10: DEEP VENOUS REFLUX WITH SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B), HEALED (C5) OR ACTIVE (C6) VENOUS LEG ULCER—LIGATION

- In a patient with infrainguinal deep venous reflux and skin changes at risk for venous leg ulcer (C4b), healed venous leg ulcer (C5), or active venous leg ulcer (C6), we suggest against deep vein ligation of the femoral or popliteal veins as a routine treatment. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.14: PROXIMAL CHRONIC TOTAL VENOUS OCCLUSION/SEVERE STENOSIS WITH SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B), HEALED (C5) OR ACTIVE (C6) VENOUS LEG ULCER—ENDOVASCULAR REPAIR

- In a patient with inferior vena cava or iliac vein chronic total occlusion or severe stenosis, with or without lower extremity deep venous reflux disease, that is associated with skin changes at risk for venous leg ulcer (C4b), healed venous leg ulcer (C5), or active venous leg ulcer (C6), we recommend venous angioplasty and stent recanalization in addition to standard compression therapy to aid in venous ulcer healing and to prevent recurrence. [GRADE - I; LEVEL OF EVIDENCE - C]



THANK YOU



GUIDELINE 6.9: INFRAINGUINAL DEEP VENOUS OBSTRUCTION AND SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B), HEALED (C5) OR ACTIVE (C6) VENOUS LEG ULCER

- In a patient with infrainguinal deep venous obstruction and skin changes at risk for venous leg ulcer (C4b), healed venous leg ulcer (C5), or active venous leg ulcer (C6), we suggest autogenous venous bypass or endophlebectomy in addition to standard compression therapy to aid in venous ulcer healing and to prevent recurrence. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.12: DEEP VENOUS REFLUX WITH SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B), HEALED (C5) OR ACTIVE (C6) VENOUS LEG ULCER D VALVE TRANSPOSITION OR TRANSPLANTATION

- In a patient with infrainguinal deep venous reflux and skin changes at risk for venous leg ulcer (C4b), healed venous leg ulcer (C5), or active venous leg ulcer (C6), we suggest valve transposition or transplantation for those with absence of structurally preserved axial deep venous valves when competent outflow venous pathways are anatomically appropriate for surgical anastomosis in addition to standard compression therapy to aid in venous leg ulcer healing and to prevent recurrence. [GRADE - 2; LEVEL OF EVIDENCE - C]

GUIDELINE 6.13: DEEP VENOUS REFLUX WITH SKIN CHANGES AT RISK FOR VENOUS LEG ULCER (C4B), HEALED (C5) OR ACTIVE (C6) VENOUS LEG ULCER—AUTOGENOUS VALVE SUBSTITUTE

- In a patient with infrainguinal deep venous reflux and skin changes at risk for venous leg ulcer (C4b), healed venous leg ulcer (C5), or active venous leg ulcer (C6), we suggest consideration of autogenous valve substitutes by surgeons experienced in these techniques to facilitate ulcer healing and to prevent recurrence in those with no other option available in addition to standard compression therapy to aid in venous ulcer healing and to prevent recurrence. [GRADE - 2; LEVEL OF EVIDENCE - C]