1. **Definition**
   It is a condition of impaired venous return due to reflux, obstruction or muscle pump failure, which results in sustained venous hypertension and manifests as specific changes in the skin and subcutaneous tissue of the leg.

2. **Pathophysiology**
   2.1. **Chronic venous insufficiency is caused by:**
   - Superficial venous reflux (varicose veins, v. saphena magna / parva incompetence)
   - Deep venous reflux:
     - Primary
     - Secondary to DVT (post-phlebitic/post thrombotic syndrome), AV fistulas, AV-malformation
   - Perforator vein reflux - not as important as an isolated abnormality, usually in association with superficial or deep venous reflux
   - Deep vein occlusion (e.g post thrombotic, trauma, extrinsic compression, tumor)
   - Impaired muscle pump (neurological, musculo-skeletal)
   2.2. **Consequences of chronic raised venous pressure:**
   - ↑ Venous pressure →
     - Increased hydrostatic pressure in capillary bed
     - Extravassation of fibrinogen → Fibrin cuff around capillaries
     - → Local tissue ischaemia.
   - Extravassation of rbc’s → Cell lysis
     - → Haemosiderin deposit,
       release of Fe++
     - ↓ → O2 free radicals.
     - Trapping of wbc in capillaries → Activated wbc’s release:
       - → Proteolytic enzymes
       - → O2 free radicals
       - → Inflammatory mediators → ↑Capillary permeability
   - Opening of A-V communications → Blood diverted away from skin
     - → Local tissue ischaemia
   - ↑ In tissue pressure
   - Leakage of macroglobulins into dermis → Trapping of growth factors

   All of the above contribute to the changes in the skin and subcutaneous tissues that are so typical of chronic venous insufficiency.
3. **Complications / clinical signs of chronic venous insufficiency**
   - Varicose veins
   - Chronic swelling
   - Hyperpigmentation of the skin
   - Eczema, dermatitis
   - Lipodermatosclerosis
   - Venous ulceration

4. **Diagnosis**
   - **History** of varicose veins, previous surgery for varicose veins, DVT, hypercoagulability
   - **Clinical features**:
     - Swelling
     - Varicose veins
     - Hyperpigmentation
     - Lipodermatosclerosis
     - Ulceration
   - **NB** Determine adequate arterial supply: feel pulses, ABPI
   - **Special investigations**:
     - Venous Duplex Doppler
     - Ambulatory venous pressure monitoring
     - Plethysmography
     - Venography
   - **Special investigations to establish**:
     - Patency
     - Competency
     - Superficial system reflux
     - Perforator incompetence
     - Adequate arterial supply

5. **The classification of chronic venous insufficiency: CEAP**
   - **C** Clinical signs (class 0-6), supplemented by A for asymptomatic and S for symptomatic presentation
     - **CLASS 0**: No visible or palpable signs of venous disease
     - **CLASS 1**: Telangiectases, reticular veins, malleolar flare
     - **CLASS 2**: Varicose veins
     - **CLASS 3**: Oedema without skin changes
     - **CLASS 4**: Skin changes attributed to venous disease (e.g. pigmentation, venous eczema, lipodermatosclerosis)
     - **CLASS 5**: Skin changes as defined above with healed ulceration
     - **CLASS 6**: Skin changes as defined above with active ulceration
   - **E** Etiologic classification
     - **Congenital** (B_C) The cause of the venous disease has been present since birth
     - **Primary** (B_P) Chronic venous disease of undetermined cause
     - **Secondary** (B_S) Chronic venous disease with an associated known cause (post-thrombotic, post-traumatic, other)
A  Anatomic distribution
• A_{S3-5}  Superficial veins
• A_{D6-36}  Deep veins
• A_{P17-LK}  Perforating veins

P  Pathophysiologic dysfunction
• P_R  Reflux
• P_O  Obstruction
• P_{RO}  Reflux and obstruction


6. Management of chronic venous insufficiency
Aim of treatment is to reduce and prevent venous hypertension / congestion.

6.1. Conservative:
• Acute phase:
  o Bed rest
  o Elevation
  o Intermittent pneumatic compression
  o Compression bandages
• Long term:
  o Supportive elastic stockings (class 3)
  o Life style modification
    ▪ ↓ Weight
    ▪ Avoid standing or sitting for long periods
    ▪ Adequate exercise program

6.2. Surgery:
• Superficial venous incompetence:
  o Ligation and stripping of the greater or lesser saphenous veins
  o Perforator vein surgery
    ▪ Subfascial ligation
    ▪ SEPS
• Deep vein surgery:
  o Venous bypass surgery
  o Valve repair
  o Valve implantation  \{ Experimental