Management of Leg Ulcers

Current Recommendations

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# Leg Ulcers Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Causes</th>
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<tbody>
<tr>
<td>VENOUS</td>
<td>80 - 90%</td>
<td>VVs, DVT, Central Venous HT - OBESITY, Gravity, Stasis</td>
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<tr>
<td>ARTERIAL</td>
<td>20 – 30%</td>
<td>AB INDEX &lt; 0.8</td>
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<tr>
<td>TRAUMATIC</td>
<td>MINOR or MAJOR trauma, Breakdown old surgical wounds, VVs, CABG</td>
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<tr>
<td></td>
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<td>Infection – Cellulitis, NON-HEALING skin lesion, biopsy/excision wounds</td>
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<tr>
<td>MALIGNANT</td>
<td>BCC, SCC, MELANOMA</td>
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<tr>
<td>VASCULITIS</td>
<td>AUTOIMMUNE, Vasculitis, Rheumatoid, Myeloproliferative disorders, Arteritis, Drug sensitivity, Martorell’s</td>
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<tr>
<td>DIABETIC</td>
<td>NEUROPATHIC, Mainly FOOT, Small +/- large vessel arterial disease</td>
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<tr>
<td>INFECTIVE</td>
<td>Tropical Ulcers, Osteomyelitis, TB Myotic</td>
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<tr>
<td>OLD BURNS / SCAR</td>
<td>Marjolin’s Ulcer</td>
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Leg Ulcer Patient: HISTORY

- How did it begin? Trauma cellulitis VV’s DVT # joint Sx prev ulcers & Rx footwear job activities/walking weight old scars Pain level
- Arterial disease PVD Coronary AD CerebroVD
- Skin condition - possibly generalised excema and ? skin malignancies
- Co-morbidities DM autoimmune resp cardiac
- Medications and allergies
- Family history of leg ulcers !!
- Current ulcer duration precipitation previous investigations Rx so far & results
- Home situation dressings compression elevate foot bed ?
Leg Ulcer Patient: **EXAMINATION**

- Ulcer site – important, size? multiple character-angry quiet & healing shallow/deep/cavity PAIN
- **Lying** Pulses
- Signs of CVI CEAP C3 to C6 Swelling 1/both legs
- Weight!!
- Examine skin generally and see them walk
- **Standing** expose legs VV’s - towards ulcer gait calf muscle pump deformity
- Ulcer **base** slough necrotic clean **edge** healing/angry **surrounding skin**? infection
- Footwear fungal infection toes
- Photograph and accurate records
Leg Ulcer Patient INVESTIGATIONS

- Bloods  recent results from other doctors
- Swab  C & S  current  ? Value  ? contamination
- Biopsy  if malignancy /vasculitis suspected
- **Venous incompetence duplex scan**  standing exposing full length of leg - remove dressings
  - SVI  DVI  Perfs size competence
  - ? Evidence of proximal venous obstn
  - ? Old DVT changes +/- deep vein reflux
- **Arterial assessment**  vascular lab  ABSI  0.8

- Then make a provisional diagnosis -  may be **several contributing factors**
Leg ulcers associated with VENOUS disease – part of the CEAP venous classification “C” clinical

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>C 0</td>
<td>No evidence of venous disease</td>
</tr>
<tr>
<td>C 1</td>
<td>Superficial spider veins or reticular veins</td>
</tr>
<tr>
<td>C 2</td>
<td>Varicose veins</td>
</tr>
<tr>
<td>C 3</td>
<td>Ankle / calf oedema of <em>venous origin</em></td>
</tr>
<tr>
<td>C 4a</td>
<td>Skin pigmentation in the gaiter area \ Varicose eczema</td>
</tr>
<tr>
<td></td>
<td>Atrophie blanche \ Lipodermatosclerosis</td>
</tr>
<tr>
<td>C 5</td>
<td>A healed venous ulcer</td>
</tr>
<tr>
<td>C 6</td>
<td>An open venous ulcer</td>
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**CVI** Chronic Venous Insufficiency is C3 to C6 in the CEAP classification
CHRONIC VENOUS INSUFFICIENCY

Persistently high venous pressure FROM WHATEVER CAUSE MAY result in the

SIGNS OF CVI

OEDEMA
PIGMENTATION
VARICOSE ECZEMA
LIPODERMATOSCLEROSIS
ATROPIE BLANCHE
LEG ULCERATION
+- VISIBLE VARICOSITIES
Ambulatory Venous Pressure (post-op)

AVP = 30 mm Hg
RT = 8 sec
How does high venous pressure lead to leg ulceration?

**Early** investigators looked at suspected hypoxia from

- Stagnation or pooling of blood
- Arteriovenous shunting
- Peri-capillary fibrin cuff reducing oxygen diffusion

**Recent** investigators are looking at

- Extravasation of RBCs and macromolecules
- CYTOKINES signaling molecules cellular communications
- Leukocyte activation INFLAMMATION Release of other cytokines and growth factors in the dermis
- Fibroblast activity
- Remodeling of the dermis, producing fibrosis
CVI Pathophysiology  Sequence of Events

High venous **pressure**

**Extravasation**  RBCs and $\alpha$2 macroglobulins & fibrinogen

**Degradation & chemotaxis** beginning the inflammatory process

**Leukocytes attracted** especially mast cells and monocytes

Release of **Transforming GF $\beta_1$ - TGF $\beta_1$**

**Fibroblast activity** is modified by TGF $\beta_1$

Other **cytokines & growth factors** released (VEGF, PDGF)

**Extracellular matrix changes**  Soft tissue destruction

Dermal fibrosis and remodeling producing  **VENOUS LEG ULCER**
Common causes of persistently high Venous Pressure

- **Leg** pathology
  - Varicose veins
    - DVT
    - DVI
    - Iliac V obstruction
    - Perforator vein incompetence
    - Vascular malformation

- **Functional** high venous pressure
  - Obesity
  - Immobility
  - Dependency
  - CCF
  - Resp
  - Renal
  - Sleep in a CHAIR
Aims of Treatment in CVI legs

Reduce the persistently high venous pressure
   Treat and eliminate venous reflux
   Relieve venous obstruction
   Elevate the foot of the bed to relieve oedema and pressure
   Graduated compression stockings
   Weight reduction and increased walking

Modify the inflammatory process occurring in the gaiter area of these legs
   Block the release or activation of TGF 1
   Modify fibroblast activity
   Reduce leukocyte attraction

C6 patients: Wound care, dressings, compression medications to encourage wound healing
Treatment Focus Areas in Leg Ulcer patient

- **Systemic** problems cardiac immune DM anemia

- **Functional** problems obesity walk more elevate foot bed

- Specific pathology **in the leg** A’s V’s Lymphatics

- The **ulcer** itself Wound care and dressings

- Graduated **compression & mobilisation**

  Oedema (when present) is a **major enemy**
Systemic problems / management in Leg Ulcer Patients

• Anaemia
• Diabetes mellitus
• CCF Hypoxia AF
• Sepsis antibiotics oral/iv
• Autoimmune diseases RA complex imm def
• Obese and immobility and gravity/stasis
• Medication to reduce inflammatory process
   .....much research into this
Leg factors to improve in Leg Ulcer patients

- Arterial insufficiency refer off when significant
- Varicose veins superficial venous insufficiency requiring Rx Sclerotherapy Thermal ablation Open venous surgery
- Deep vein disease DVT DVI Prox obstructn
- Oedema is this venous lymphatic capill
- Cellulitis sepsis
Leg Ulcers: Fighting the Oedema

GRAVITY

ELEVATE FOOT OF THE BED

LEG UP WHEN SITTING  NOT VERY USEFUL  splinted

COMPRESSION

GOOD QUALITY STRONG COMPRESSION BANDAGES

LOW STRETCH (eg. COMPRILAN) vs HIGH STRETCH (eg. BLUELINESETOPRESS)

WHITE CREPES HOLD DRESSING IN PLACE ONLY, THEY APPLY NO COMPRESSION AT ALL

COHESIVE BANDAGE  eg  HANDIGRIP COHESIVE

TUBULAR BANDAGE  eg  TUBIGRIP TENSOGRIP

COMPRESSION STOCKINGS WHEN ULCER HEALED
Specific Wound Management in Leg Ulcers

- **Base**: dry necrotic sloughy biofilm exudate granulation tissue
- **Debridement**: autolytic using moist wound dressings or sharp debridement
- **Edge**: angry and enlarging or evidence of epithel ingrowth Zinc paste to adjacent skin
- **Primary wound dressing**: Secondary dressing
- **Retention to hold dressing**: NO TAPE on skin
- **THEN ADD**: COMPRESSION
Leg Ulcer Wound Management

• Moist dressings to promote autolytic debridement separation of necrotic tissue
• Sharp surgical debridement quicker extensive
• Hydrogels hydrocolloids enzymatic pastes
• Alginates hydrofibers polyurethane foams
• Anti-bacterials iodine silver topical a/biotics
• Granulation and advancing epithelium expect
• Continuous suction VAC Skin grafting
• Protect surrounding intact skin Oral ABiotics
Graduated Compression for leg ulcers

- With good compression **patient encouraged to walk**
  Resting vs Working pressure
- Without compression rest & elevate leg
- Compression **stockings** vs **bandages**
- Low stretch vs high stretch bandages
- Multi layer stiffness = rigid exterior
- Change of dressings - exudate who will do?
- Ulcer stockings Be aware excellent Rx
- Velcro multi segment compression **Ready Wraps**
- Unna zinc paste “boot”
The role of the GP in leg ulcers

• Initial Dx, associated medical issues contributing - correspondence, routine bloods and swab, elevate foot bed dressing and mild compression
• Refer to leg ulcer clinic with appropriate correspondence and results not.....“see & treat”
• Mx plan enacted by you or your GP nurse or community nurse
• Management of PAIN, antibiotics, general support and various specialists already involved
• Supervise progress or deterioration and liaise with the clinic. Are other factors involved? Other specialists may need consultation ID haem
Trends in our Sydney Leg Ulcer Clinic

• Reduction in purely venous disease as a cause fewer primary VV’s and DVT cases
• Increase in complex “mixed aetiology” ulcers
• Co-morbidities  Autoimmune/Cardiac/Renal/Respiratory/Malignancy
• OBESITY  High central venous pressure
• Lympho-venous disease increasing
• Interaction with Infectious diseases doctors  
  Dermatologists  Immunologists  Cardiologists
• Increase in IV drug users presenting with leg ulcers
Tips with venous leg ulcers

• Elevate the foot of the bed - simple
• Foam **sclerotherapy** in the ulcer clinic helps
• **Thermal ablation** & **open surgery** help heal the ulcers. We can Rx the VV’s with an active ulcer.
• VV Rx is supposed to reduce ulcer **recurrence** but it also **speeds healing**. Cochrane review?
• Pinch grafting LA speeds healing
• **Lympho-venous oedema** may occur. The lymphatics often stop functioning need help.
• Possibility of proximal venous obstruction.
Changes in Leg Ulcer patients

- **Venous hypertension** still causes many of the leg ulcers we see, but the venous pathology is rarely VV’s, and less frequently DVT. It is **obesity dependence** and **immobility**

- **Compression** more of a CHALLENGE!

- **Vasculitic** contribution rising

- **OBESITY** the current curse **Lymphovenous prob**

- Is **lymphatic drainage** an option **Pneumatic comp**

- **Co-morbidities** producing ulcers of a more complex nature

- **Arterial disease & VV’s** are being addressed earlier
Practical difficulties with leg ulcers

- Massive Obesity                Immobility         poor gait
- Lympho-venous oedema          Low calf muscle activity
- Patients who never go to bed - recliner
- Can’t stand anything tight on legs !! Pain discomfort
- Contaminated ulcers    smelly leg +/- fungus  No air no sun
  SOGGY moist weeping leg and low-grade infection
- Dermatological   legs      basic skin problems
- CCF legs          Fluid retention basic problem
- Paper thin skin legs
- Hypersensitive    “allergic” to EVERYTHING
- Uncontrolled autoimmune factors dictating ulcer
- Anaemia            Patients on warfarin
Practical Points when using stockings in CVI

- **Below-knee** almost always
- **NOT TED Stockings** low pressure badly fitted
- Patient often unable to apply or remove strong stockings
- Stockings may **aggravate venous eczema** due to heat under stocking
- Two **lower compression stockings** easier to apply than a very strong one
- Fitting and education **VITAL** Who is fitting
Leg Ulcer Clinic

COMMUNITY NURSES  ----  GP

LEG ULCER CLINIC

PATIENT TAKES CLINIC NOTES / CHARTS TO ALL VISITS

ALL CORRESPONDENCE TO ALL PRACTITIONERS, INCLUDING COMMUNITY NURSES

ROTATE COMMUNITY NURSES AND GPs THROUGH THE CLINIC
Thank you....