

Leg Ulcers



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Take a minute to reflect....

- What is a leg ulcer??
 - List the different types of leg ulcers you know
 - How do **you know** what type of leg ulcer you are looking at or treating???
-

Leg Ulcer

is not a diagnosis.....



- a manifestation of underlying pathology/disease process usually in combination with other co-morbidities and sometimes psychosocial issues
-

Leg Ulcer

A loss of skin integrity from multi-factorial causes with arterial, venous, mixed or neuropathic origins due to underlying disease, trauma or allergic response

Carville 2001

Leg Ulcers

- Vascular
 - Arterial
 - Venous
 - Mixed Venous/Arterial
 - Lymphatic
 - Traumatic
 - Pressure
 - Marotell (hypertensive)
 - Vasculitic
 - Marjolins
 - Dermatological issues
-

Holistic Assessment

- H History
- E Examination
- I Investigations
- D Diagnosis
- I Implementation / Evaluation

History

- Medical
 - Past
 - Current
 - Allergies
- Pharmacological
 - Prescribed
 - Over the counter
- Pain
- Psychological
- Psychosocial
- Risk Factors



- Lifestyle
- Age
- Family History
- Dietary Intake / BMI
- Mobility/ Gait/ Aids
- Occupation
- Hygiene needs



H istory

- ❑ Abnormal sensation – numbness, tingling, pain due to ischaemic nerves
- ❑ Neuropathy
- ❑ Paralysis with inability to wriggle toes – muscle atrophy
- ❑ Sleep patterns
- ❑ Rest pain
- ❑ Claudication
- ❑ Resting /confined to bed
- ❑ DVT's
- ❑ How the wound occurred
- ❑ Bumps or knocks -trauma
- ❑ Duration
- ❑ Past treatment
- ❑ Presence/absence of pain
- ❑ Factors that aggravate &/or alleviate signs and symptoms



E xamination

- ❑ Examine bilateral legs
- ❑ Buerger's test
 - pallor on leg elevation followed by persistent dusky redness in dependency
- ❑ Palpate all arterial leg pulses –
 - Femoral
 - Popliteal
 - Dorsalis Pedis
 - Posterior Tibial



E xamination

- Capillary refill
- Thickened nails
- Temperature - cool
- Colour/Pigmentation
- Mottled skin
- Shiny/atrophic skin
- Erythema/cellulitis
- Hair growth
- Signs of malnutrition
- Dorsi-flexion
- Gait / movement of joints

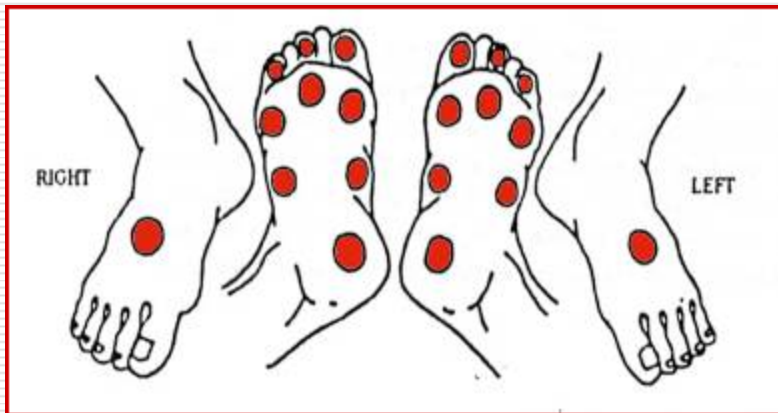


- Ulcer Location
- Tissue - Ulcer Base
 - depth
 - Tissue type
 - Colour/ pale/ blood supply
- Inflammation/Infection
- Moisture – exudate
- Edge of wound
 - Undermined
 - Rolled
 - inverted
- Ulcer Shape
 - Regular/irregular border
 - Punch out appearance
- Surrounding Skin
- Other Involvements



Investigations

- Blood Pressure
- Bloods (Fasting lipids, HBA1c, FBC,ESR, nutritional screen, albumin levels)
- Wound swab if signs of clinical infection
- Biopsy
- ABPI
- Toe Pressure
- Monofiliment





Investigations – ABPI



$$\text{ABPI} = \frac{\text{Ankle Pressure (highest)}}{\text{Brachial Pressure (highest)}}$$

0.9 – 1.2 Normal
0.5 – 0.9 Claudication
< 0.5 Ischaemia

- ❑ Calcification of the arterial wall prevents accurate pressure measurements
- ❑ ABI may be artificially elevated in people with – Diabetes, Chronic Renal Failure (CRF) or Rheumatoid Arthritis



Investigations – Toe Pressures

< 30mmHg Unlikely to heal

40 – 60 mmHg Moderate likelihood of healing

> 60 mmHg Should heal

➤ If diabetic < 40mmHg Healing unlikely



Investigations – Vascular Tree

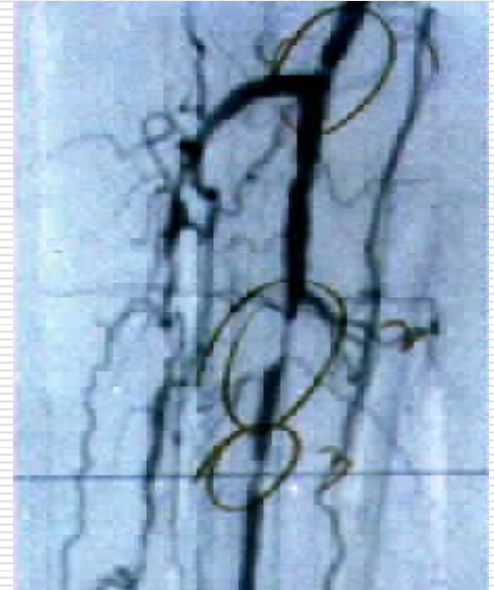
| Modality | Advantage | Disadvantage |
|----------------------------------|--|--|
| Duplex U/S Venous Arterial | <ul style="list-style-type: none"> ✓ Non-invasive ✓ Inexpensive | <ul style="list-style-type: none"> ✗ Difficulties with calcium and adipose tissue ✗ Operator dependent |
| MRA | <ul style="list-style-type: none"> ✓ Non-invasive ✓ Non-toxic ✓ Moderate cost | <ul style="list-style-type: none"> ✗ Contraindications ✗ May “overcall” stenosis |
| CTA | <ul style="list-style-type: none"> ✓ Non-invasive ✓ Fast ✓ Moderate cost | <ul style="list-style-type: none"> ✗ Contrast load ✗ Difficulties with calcified vessels |
| DSA | <ul style="list-style-type: none"> ✓ Excellent definition | <ul style="list-style-type: none"> ✗ Invasive ✗ Contrast load ✗ expensive |

Investigations - Angiography

- ❑ Local anaesthetic
- ❑ Catheter inserted in groin under X-ray guidance
- ❑ Dye injected to reveal disease, narrowing of arteries and stenosis

Complications

- ❑ Bleeding from the puncture site
- ❑ Haematoma of groin
- ❑ Migration of closure device
- ❑ False aneurysm



Diagnosis – Arterial Ulcer

- ❑ Rarely acute onset
- ❑ Progressive disease process
- ❑ Acute/on chronic
- ❑ More severe in people with diabetes
- ❑ Pain
- ❑ Decreased ability to walk - claudication
- ❑ Change of lifestyle
- ❑ Non healing wounds / Gangrene
- ❑ Rest pain
- ❑ Loss of digits/limbs/life



I mplementation

- Listen to the patients needs – involve pt in decisions
- Plan in consultation with key stakeholders including family members if possible
- Refer on.....
- Explore the options
- Obtain consent and commitment for planned care
- Discuss pain issues and look at options – pain relief
- Discuss lifestyle , risk factors, nutrition
- Education
- Regular follow up – shared care, Multi-D



Implementation – treatment options – non operative

- ❑ Stop smoking
- ❑ Regular exercise- walking program
- ❑ Control hypertension
- ❑ Antiplatelet Agents
- ❑ Control high cholesterol (statins)
- ❑ Control diabetes - regular HbA1c checks
- ❑ Balanced diet/Healthy weight
- ❑ Good hygiene/skin care/keep dry
- ❑ Foot care/leg care
- ❑ Offload pressure
- ❑ Treat infection with correct antibiotics
- ❑ Leave dry gangrene/eschar intact – body's barrier to bacteria



Never debride until revascularised

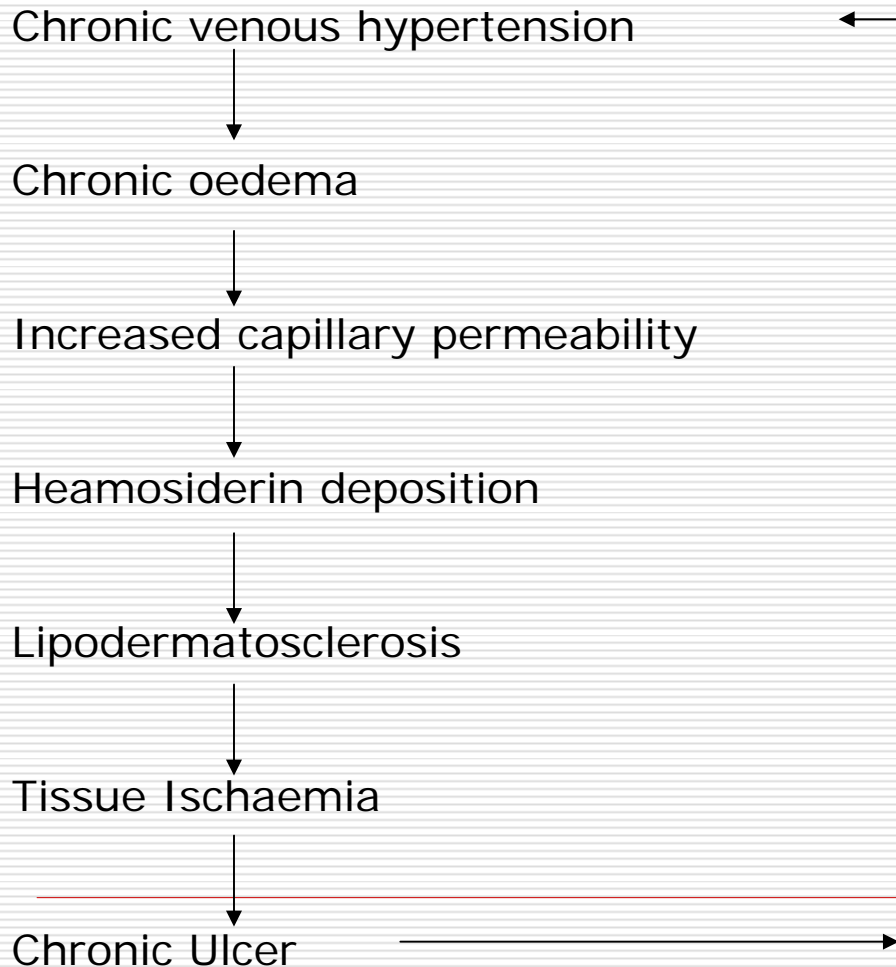


Implementation – operative indications

- Unresolved Infection with Antibiotics / systemic sepsis
- Critical Limb Ischaemia
- Progression of claudication that is life limiting
- Rest Pain
- Gangrene
- Non Healing Ulcer



Diagnosis – Venous Ulcer



Diagnosis – Venous Ulcer

- Varicose Veins
- Venous eczema
 - Skin irritation
 - Eczematous changes, redness, scaling, pruritus
- Ankle flair
 - Red threads around the ankle
 - Dilatation of malleolar venules
- Haemosiderin staining
 - Gaiter region
 - Haem deposits in tissue after red blood cell break down
 - Red / brown discoloration
- Varicosities
- Lipodermatosclerosis (hard, woody)
- Atrophe blanche



Implementation – Compression Therapy

- Gold standard treatment & prevention venous ulcers
- Control of leg oedema (water)
- Applies pressure to skin and underlying tissue
- Increases venous flow
- Improves venous pump function
- Tubular (10mmHg)
- Low stretch (short)
- High stretch (elastic)
- Multi layered
- Coban 2 + lite = stiffness
- Multi layered stockings
- Graduated compression maintenance stockings



Prior to Compression

- Client assessment
 - Heart failure
 - Other co-morbidities
 - Pain
 - Mobility
 - Ability to tolerate – don/doff
- Limb assessment
 - Arterial supply
 - Foot deformities
 - Skin
 - Shape of limb
 - Measure ankle circumference
 - Correct system/ combination of bandages
- Wound assessment
 - Mapping, photo
 - Document



Prior to Compression

- Address hygiene
 - Use medi sponge – pH neutral soap
 - Debride devitalised tissue / scale – harbor bacteria – friction & shear - ulceration
- Wound contact material
 - Skin care – emollient/ moisturiser
 - Avoid products that induce allergy or irritation
 - Consider cotton liner under compression
 - Choose products that address odour, infection, exudate, pain
- Psychological preparation
 - Commitment to treatment
 - Risk factor minimisation
 - Lifestyle changes



Issues for Consideration

- ❑ Tissue–debride devitalised tissue
- ❑ Inflammation/Infection - biofilm
- ❑ Moisture – exudate
- ❑ Edge of the wound – healing?

- ❑ Peri wound skin
- ❑ Arterial supply
- ❑ Pain – pain relief
- ❑ Quality of life issues
 - Loss of earnings
 - Oedema
 - Odour
- ❑ Safety
 - Showering
 - Footwear



Re-assess if no improvement or deteriorates
Involve Multi-D team or refer on.....

Biofilms Made Easy (2010) Vol 1, Issue 3; www.woundsinternational.com

Exudate Management Made Easy (2010) Vol 1, Issue 2; www.woundsinternational.com

Standard 1 Collaborative Practice and Interdisciplinary Care (2002) AWMA Standards for Wound Management

Standard 4 Best Practice In Wound Care (2002) AWMA Standards for Wound Management

World Union of Wound Healing Societies (2008) Principles of Best Practice: Compression in Venous Leg Ulcers *A Consensus Document* London, MEP Ltd





Day 1



Day 7



Day 11



Day 16

D iagnosis – Mixed Venous/Arterial

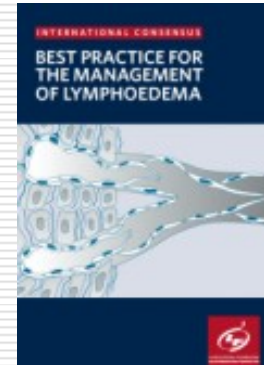
- ❑ Difficult to diagnose – requires more extensive investigations
- ❑ HEIDI
- ❑ Do NO Harm
- ❑ Requires a Multi –D approach

- ❑ Modified compression may be acceptable
- ❑ Local wound care
- ❑ Good skin care
- ❑ ? Revascularisation
- ❑ Offload pressure
- ❑ Footwear/podiatry
- ❑ Control co-morbidities & risk factors



Diagnosis - Lymphatic

- ❑ Abnormal collection of lymph - groin dissection, cancer
- ❑ Bacterial infection & venous HT/ congestion/ valvular insufficiency – transport system does not work
- ❑ Failing lymphatics – overload of fluid with protein – degradation & chronic inflammation; lymph stasis;
- ❑ Oedema is water – protein & water are the difference – Heart failure; Chronic venous insufficiency; ascites; pregnancy, inactivity



Implementation –

- ❑ Skin care
- ❑ Local wound care
- ❑ Debride
- ❑ Skin care
- ❑ Local wound care
- ❑ Treat infection
- ❑ Exercise and movement
- ❑ Massage
- ❑ Compression bandages/ hosiery
- ❑ Lifestyle Management
- ❑ Education
- ❑ Support



Diagnosis - Lymphatic

- Filariasis - worm-transmitted via mosquito (1.3 billion around world) www.filarisis.org



- Podocononosis "Mossy Foot" – barefoot exposure to volcanic clay soil
 - Good foot hygiene, footwear, compression bandaging & elevation



Diagnosis - Traumatic

- ❑ Commences with trauma – skin tear, gash, knock, pressure
- ❑ May have infection present
- ❑ May be non healing



Treat underlying pathophysiology

- ❑ Treat infection
- ❑ Local wound bed preparation and care
- ❑ Surgical debridement
- ❑ Skin care
- ❑ Offload pressure
- ❑ Education/support
- ❑ Risk factor minimisation - lifestyle



Diagnosis – Martorell (HT)

- ❑ Result of poorly controlled diastolic hypertension.
- ❑ Painful - Necrotic edges
- ❑ Usually lateral aspect of the lower leg
- ❑ Peripheral pulses are present but ischaemia
- ❑ Exclude vasculitis or vessel obstruction
- ❑ HT control – heal 4-12 months; re-occurrence is common
- ❑ Control Risk factors
- ❑ Local wound care



Diagnosis – Vasculitis

- ❑ General term – Inflammation of blood vessel walls
- ❑ Immune pathologies – Rheumatoid arthritis, Lupus
- ❑ Extremely painful
- ❑ Confirmed by biopsy
- ❑ Systemic management – steroids (prednisolone)- immune suppression



Diagnosis – Marjolin's Ulcer

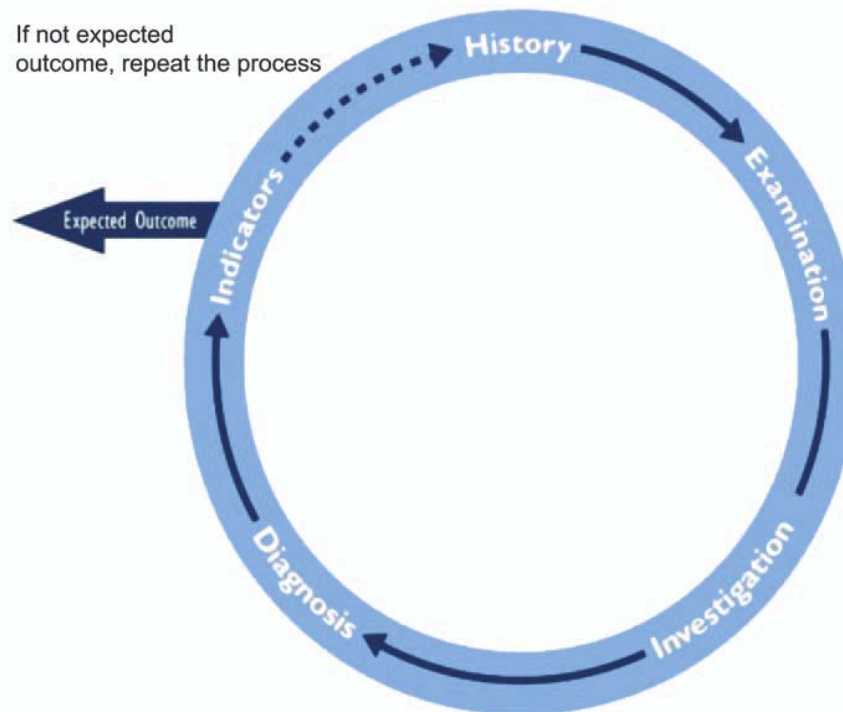
- ❑ Rare aggressive tumours
- ❑ Originate in chronic wounds – friable tissue, purulent exudate
- ❑ Malignancy usually SSC
- ❑ 1.5% of Marjolin's ulcers develop in chronic osteomyelitis
- ❑ Diagnosis with biopsy
- ❑ Radical resection/ amputation
- ❑ Radiotherapy, chemotherapy, cryotherapy not effective
- ❑ Education
- ❑ Support



HEIDI



If not expected
outcome, repeat the process



European Wound Management Association (2008) Position Document "Hard to Heal Wounds: A Holistic Approach. London, MEP Ltd.

Harding K, Gray D, Timmons J, Hurd T (2007) Evolution or revolution? Adapting to complexity in wound management *International Wound Journal*; 4 (Suppl. 2): 1-12.

World Union of Wound Healing Societies (2008) Principles of Best Practice: Diagnostics & Wounds. *A Consensus Document*. London, MEP Ltd.



Compression in venous leg ulcers A consensus document



Wounds INTERNATIONAL

Best Practice Statement:
Care of the Older Person's Skin

www.woundsinternational.com

POSITION DOCUMENT

Understanding compression therapy

- Understanding the pathophysiology of compression
- Compression bandages: principles and definitions
- Cost effectiveness of compression therapy
- Compression therapy: a guide to safe practice

WOUND HEALING RESEARCH

LYMPHOEDEMA bandaging in practice

- The science of lymphoedema bandaging
- The Lymphoedema Framework: a consensus on lymphoedema bandaging
- Practical guidance on lymphoedema bandaging of the upper and lower limbs
- Lymphoedema bandaging for the hand, breast and genitalia

TEMPLATE FOR PRACTICE

Compression hosiery in lymphoedema

Lymphoedema and the construction and classification of compression hosiery

Evidence for the use of compression hosiery in lymphoedema

Role of hosiery in lower limb lymphoedema

POSITION DOCUMENT

Hard-to-heal wounds: a holistic approach

- Wound complexity and healing
- Psychosocial factors and delayed healing
- Economic burden of hard-to-heal wounds

POSITION DOCUMENT

Identifying criteria for wound infection

- Understanding wound infection
- Global distribution of wound infection: a DEPI approach
- Identifying criteria for pressure ulcer infection
- Identifying surgical site infection in wounds healing by primary intention

POSITION DOCUMENT

Management of wound infection

- An integrated approach to managing wound infection
- Classifying sites
- Medical management of infected grade 2 and 3 pressure ulcers
- Local antimicrobial and surgical debridement

Best Practice Statement
Compression Hosiery

MANAGEMENT OF CHRONIC OEDEMA IN THE COMMUNITY

ACTA

INTERNATIONAL CONSENSUS

THE ROLE OF PROTEASES IN WOUND DIAGNOSTICS

an expert working group review

Biofilms made easy

exudate management made easy

Thankyou

