Disclaimer

LEG ULCERS

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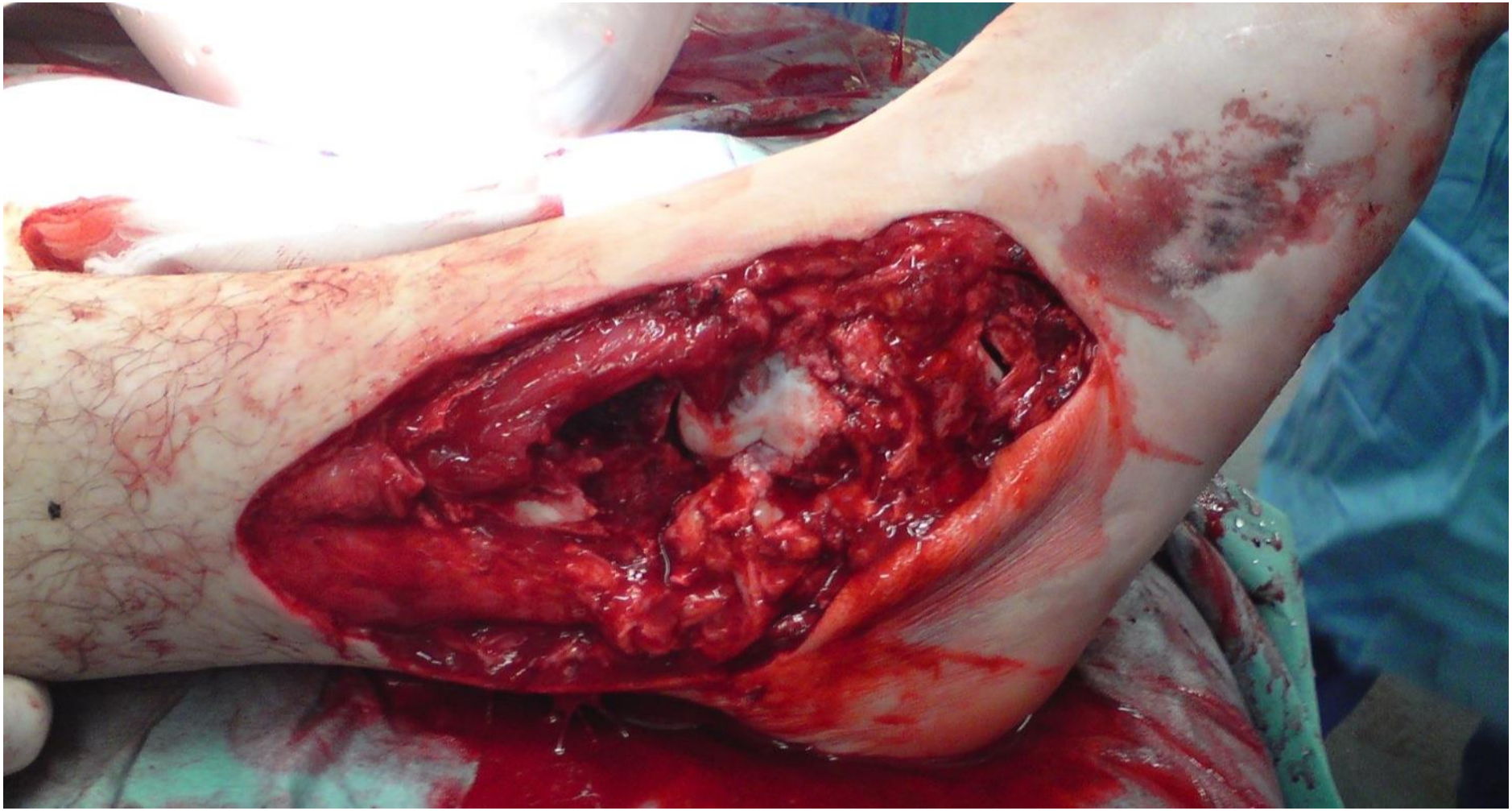

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FRACS SYLLABUS

leg ulceration – all aetiologies (venous, arterial, medical); assessment for operative and non-operative management

multidisciplinary management of diabetic and other neuropathic foot problems

Practical management of the leg ulcer patient in your plastic surgery outpatient clinic

How to manage the inpatient referred to you with a leg ulcer

INTERDISCIPLINARY TEAM

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GOALS OF TREATMENT

Complete healing of the ulcer

Return to ambulatory status

Prevention of recurrence

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CHRONIC LEG ULCERATION

A chronic wound of the leg &/or foot that shows no tendency to heal after 3 months of appropriate treatment or is still not healed after 12 months.

Loss of epidermis, portions of dermis and even fat

Increasing incidence in Australia / NZ

Symptoms include PAIN, secondary INFECTION, with ODOUR and deteriorating quality of life.

Considerable healthcare and personal cost

UK – approx £600m per year on health costs for ulcers

INCIDENCE

0.6 – 3% aged over 60

Rising to 5% over 80

In Western Australia *(Baker)*

- **1.1 per 1000 population**
- **24% had ulcers for 1 year**
- **35% had ulcers for 5 years**
- **45% were housebound**

Baker & Stacey. Epidemiology of chronic leg ulcers in Australia, ANZ J Surg, 64:258, 1994

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Aetiology	
VASCULAR	Venous, Arterial, Mixed
NEUROPATHIC	Diabetes, Paraplegia
METABOLIC	Diabetes, Gout
HAEMATOLOGICAL	Sickle Cell, Cryoglobulinaemia
TRAUMA	Pressure, Injury, Burns
TUMOUR	Squamous Cell Carcinoma, Basal Cell Carcinoma
INFECTION	Bacterial (including OM), Fungal, Viral, Protozoal
AUTOIMMUNE	Rheumatoid arthritis, Vasculitis,
INFLAMMATORY	Pyoderma Gangrenosum
LYMPHATIC	Lymphoedema

Interdisciplinary approach to ascertain pathogenesis, diagnosis and optimal treatment

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AETIOLOGY

Venous Ulcers
70%

Arterial Ulcers
10%

Combination / other
20%

(Vascular, Neuropathy, DM)

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PATIENT EVALUATION

History:

- **Onset, location, and progress of ulcer**
- **Ambulatory status and shoewear**
- **Prior trauma, surgery, malignancies, infections**
- **Prior treatments**

Comorbidities including: Diabetes, Peripheral Vascular Disease (Intermittent Claudication, Rest Pain), Deep Venous Thrombosis

Medications

Smoking and alcohol

Nutritional status

Social network, occupation, support

EXAMINATION

- **The patient**
  - **General status**
- **The legs**
  - **Lying and standing**
  - **General inspection**
  - **Warmth, pulses**
  - **Venous hypertension**
  - **Hip, knee and ankle**
  - **Sensation**

EXAMINATION

- **The Ulcer**
  - **Site, size, appearance**
  - **Wound base and exudate**
  - **Surrounding skin**
  - **Oedema**
  - **Pain**
- **Ankle Brachial Pressure Index (ABPI)**

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ABPI SYMPTOMS: MANAGEMENT GUIDE

Index	Symptoms	Severity	Managment
>0.8 – 0.95	None, mild claudication	Mild arterial disease	Modify risk factors, stop smoking, exercise, antiplatelt
>0.5 – 0.8	Intermittent claudication	Moderate	As above, refer to vascular surgeon
>0.3 – 0.5	Severe claudication and rest pain	Severe	As above, plus duplex / angio urgently
0.3 or below	Critical ischaemia	Risk of losing limb	Surgical / radiological intervention
Abnormally HIGH	Variable	Vessel calcified	Refer to vascular surgeon

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INVESTIGATIONS

Accurate and regular assessment of the wound

Consider clinical photography and other tools

Quantitative Bacterial culture

Ulcer biopsy

Baseline blood investigations

FBC, ESR, Blood sugar (and HbA1C), Lipids, U&E, LFT

Lab screening tests for vasculitis

Urine analysis for proteinuria, haematuria,

Antinuclear antibodies, Rheumatoid factor, complement C4, circulating immune complexes, paraproteins, immunoglobulin fractions, antineutrophil cytoplasmic antibodies, serological tests

INVESTIGATIONS

Lab screening tests for clotting disorders

APPT, PT, TT, factor V Leidin mutation, factor II mutation, antithrombin III, protein C and S, and lupus anticoagulant anticardiolipin

Imaging

Plain film X-ray

Duplex utrasonography

Angiography (MRA, CTA, DSA)

Isotope bone scans

VENOUS ULCERS

Fibrin Cuff theory

Leukocyte entrapment theory

Microangiopathy theory

Painful, shallow margin ulcer.
Slough and granulation tissue
Moderate to heavy exudate

VENOUS ULCERS

Patient presents with an ulcer on a background of:

- **Chronic oedema**
- **Varicosities**
- **Lipodermatosclerosis**
- **History of DVT in the past**
- **‘Trivial’ trauma to the leg that has got worse**

Ulcer present in the ‘gaiter’ area of the leg

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TREATMENT

Reduce obesity, improve mobility, elevation, better nutrition

4 layer compression bandaging

Completely heals ulcers in a mean of 8 weeks when delivered by trained leg ulcer nurses in the community (Moffatt BMJ 1992)

40mmHg at the ankle

Dressing + wool, crepe, light compression, cohesive compression

Superficial surgery (Stripping, ligation)

minimal impact on ulcer healing, but marked impact on reducing recurrence of ulceration (Gohel BMJ 2007)

Plastic surgery intervention

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ARTERIAL ULCERATION

- History of claudication or rest pain (in some)
- Reduced pulses, cool extremities with cyanosis and rubor and shiny hairless skin
- Punched out and painful
- Requires revascularisation procedure by the vascular surgeons

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ARTERIAL ULCERATION AND PRESSURE

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DIABETIC ULCERATION

History of longstanding DM

Peripheral neuropathy

Examination reveals poor sensation

Often co-existing vascular cause

Foot care, pressure relief

Better diabetic control

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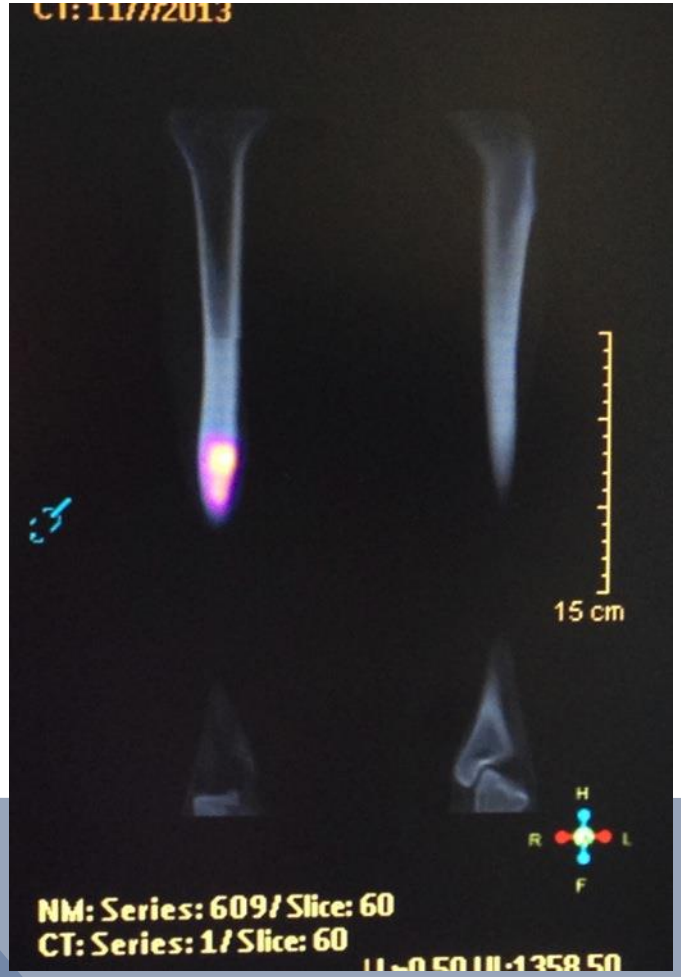
OSTEOMYELITIC ULCERATION



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MALIGNANCIES

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VASCULTIC ULCERS

History of systemic inflammatory disease

- **Rheumatoid arthritis**
- **Lupus etc**

Investigation and management should be by rheumatology service.

Patient may still need dressing care from the plastic surgery service (and occasionally surgery.)

Patients on steroids and blood thinners

PLASTIC SURGERY

Majority of ulcers are best managed non-surgically

Optimisation of the patient and good wound care

In selected (and optimised patients) plastic surgery techniques may be indicated, and can benefit patients tremendously

Use of NPWT very useful in ulcer patients

Reconstruct cautiously

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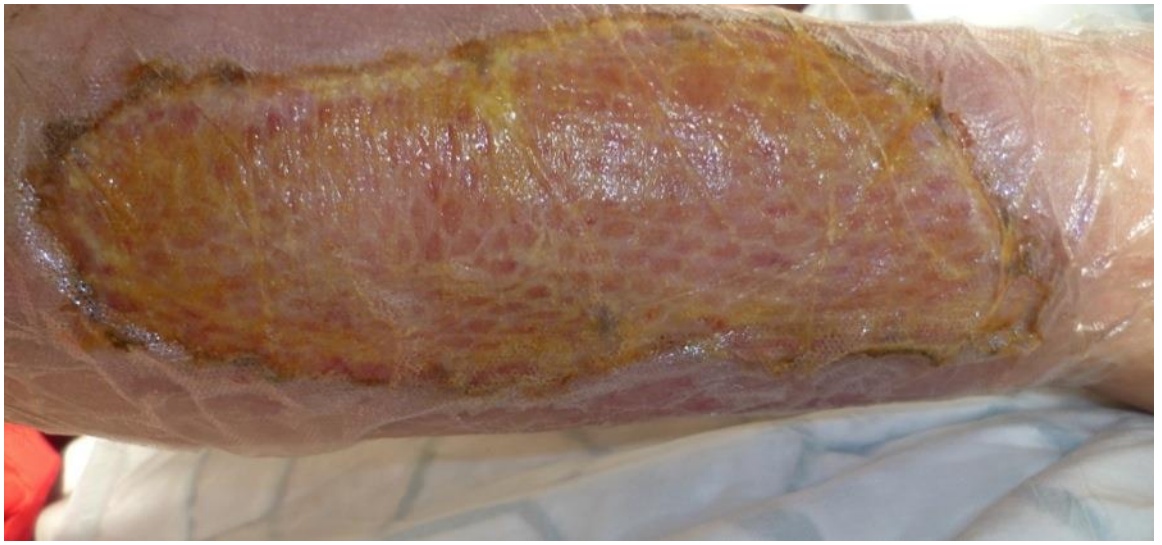
SKIN GRAFTS

SKIN GRAFTS



Jackson PC, Wilks D, Rawlins J, Matteucci PL
Ann R Coll Surg Engl. 2014 Sep;96(6):e20-2

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LOCAL FLAPS

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EMERGING AND NOVEL THERAPIES FOR LEG ULCERATION

NEGATIVE PRESSURE WOUND THERAPY

Good at controlling exudate and encouraging wound contraction

Useful over skin grafts also

HYPERBARIC OXYGEN

In combination with other 'optimisation' techniques

STEM CELLS and GROWTH FACTORS

Largely experimental

NON-CULTURED / CULTURED AUTOLOGOUS CELLS

eg ReCell. Early pilot studies show encouraging results

Multi-centre international trial in progress

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DIFFICULT WOUNDS

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CONCLUSIONS

Interdisciplinary approach

Consider the whole patient and the local environment of the ulcer and optimise both of these before surgery

Be sensitive to *donor site* when considering grafts and flaps for leg ulcers

In patients 'at risk' for ulceration, consider optimisation of circulation, DM etc prior to surgery to reduce the chance of poor wound healing and the development of chronic leg ulceration

THANK YOU

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TITLE

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