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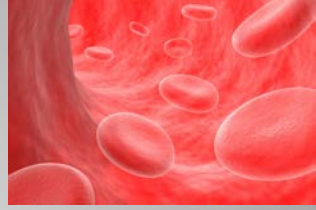
Faculty/Presenter Disclosure

- **Faculty: Dr. Stephan Mostowy**

- **Relationships with financial sponsors:**
  - **NONE**

From head …

…to gangrenous toes.



VASCULAR SURGEONS

BLOOD FLOW DELIVERY BUSINESS

CAROTID DISEASE

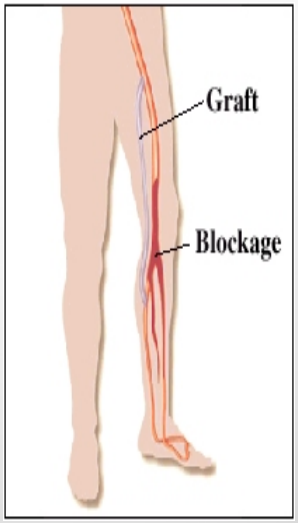
pipe cleaning

AAA

blood safety
redirection

TRAUMA

stop the bleeding



PERIPHERAL VASCULAR DISEASE

blood supply
redistribution

OBJECTIVES

- To develop an approach to peripheral vascular disease and wounds- medical risk factor management, work up and referral to a Vascular Surgeon
- To ensure appropriate communication when transferring a critical ‘life or limb’ patient and ensure optimal treatment at base hospital before patient leaves to a vascular centre
- To understand the treatment options for limb salvage- the endovascular evolution, bypass, and the importance of amputation
- To improve understanding of post operative care and ensuring success in wound healing and limb salvage
- Review approach and treatment to the swollen limb
- To review venous disease management- classification of venous disease, venous ulcers, treatment options for varicose veins, and DVT

PRESENTATION OF PVD

- ***Symptomatic – 10%***

  Intermittent claudication

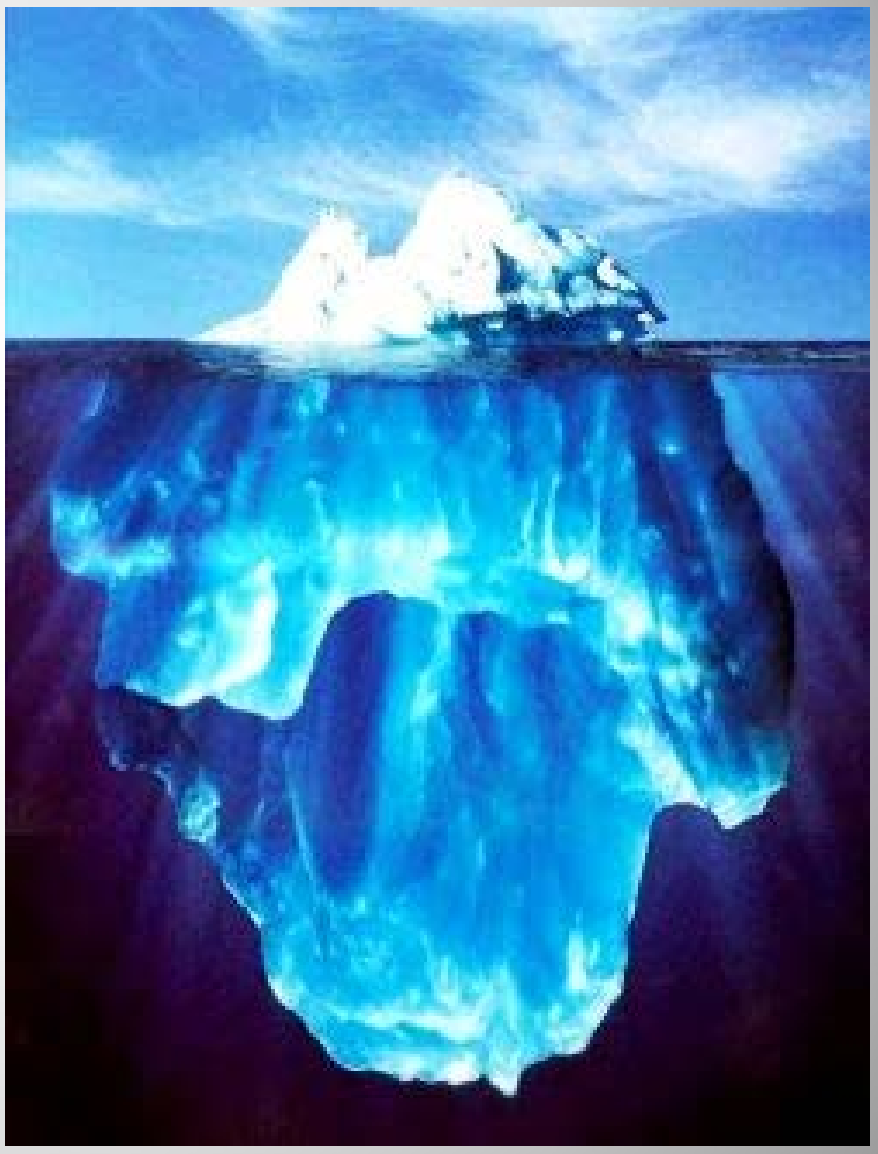
  Critical Limb Ischaemia

  -Pain at rest

  - Tissue loss

  -Gangrene

- ***Asymptomatic – 90%***



ANKLE BRACHIAL PRESSURE INDEX

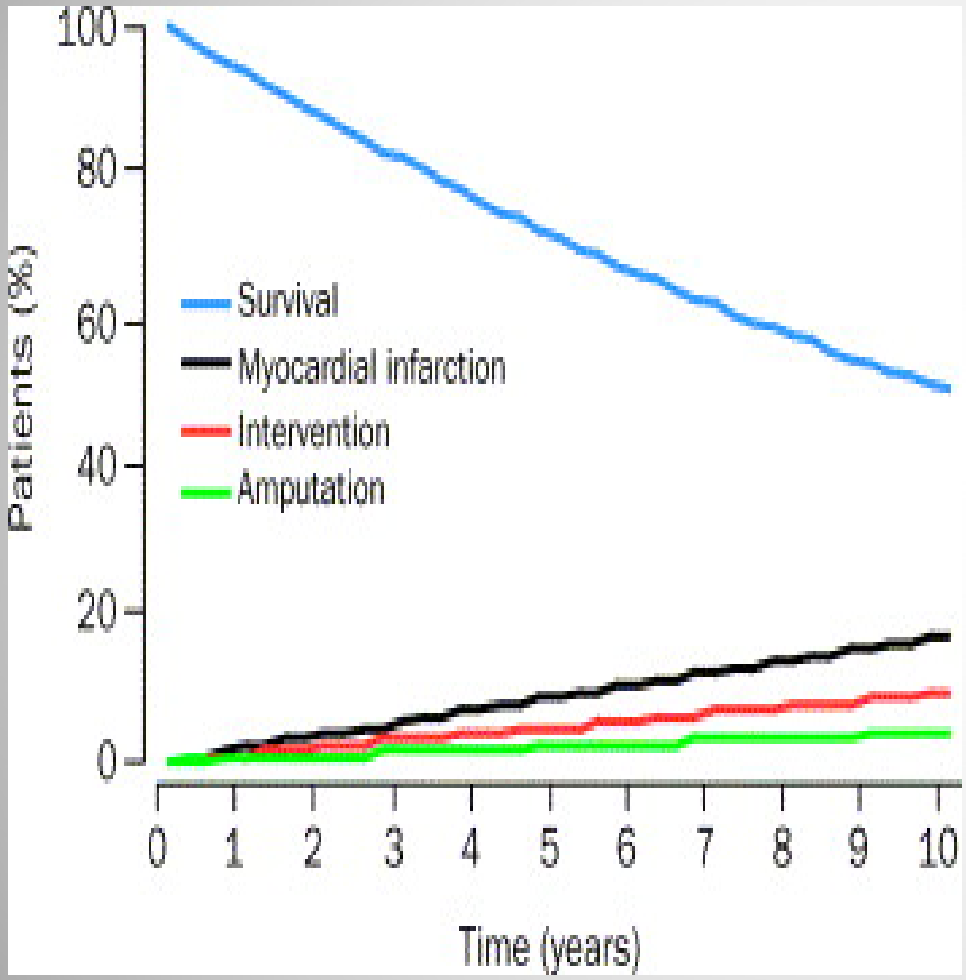
NORMAL > 1.0

ABNORMAL < 0.9

- **CLAUDICATION 0.5 – 0.9**
- **CRITICAL < 0.5**

Watch for DM pts – higher readings due to vessel calcification

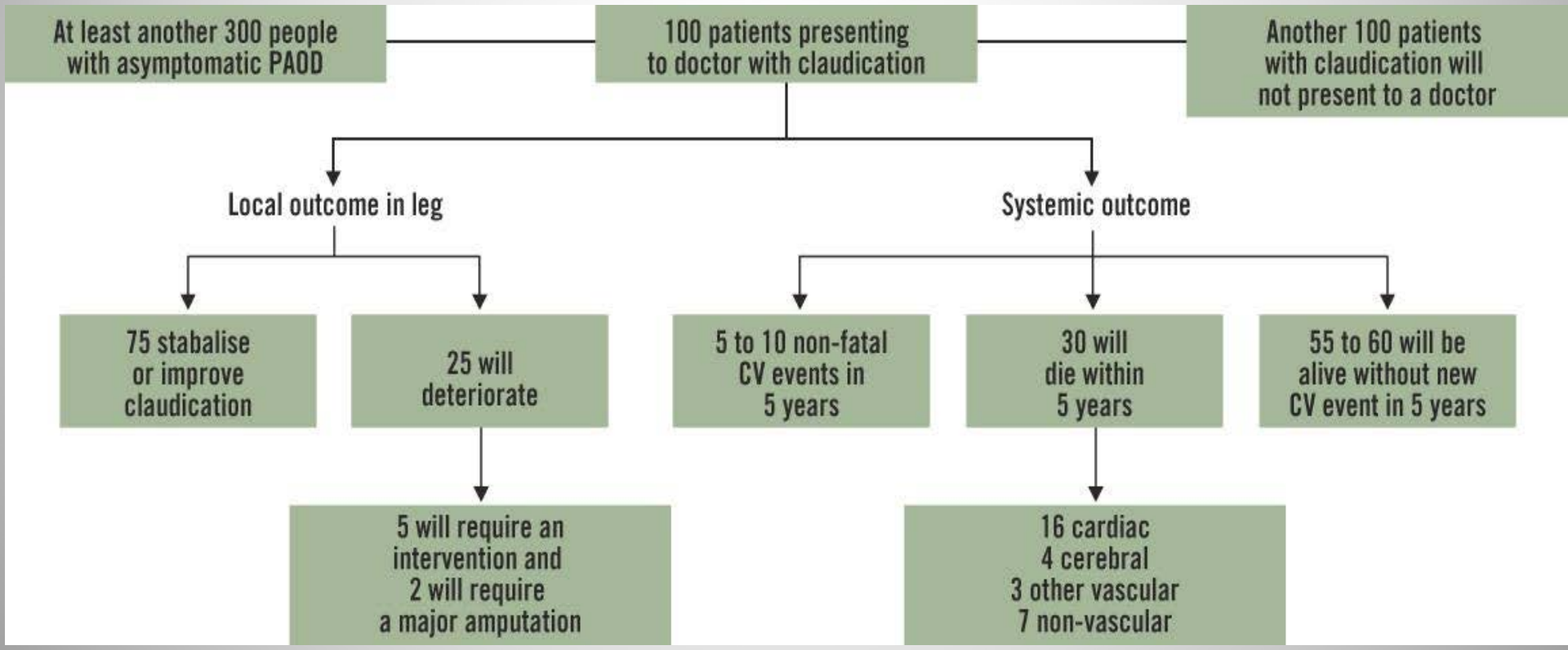
NATURAL HX OF PVD PTS



- **Annual risk :**
  - **Mortality 6.8%**
  - **MI 2.0%**
  - **Intervention 1.0%**
  - **Amputation 0.4%**

Ouriel K, Lancet 2001; 358: 1257-64.

FATE OF PAD PTS PRESENTING WITH CLAUDICATUION



Gupta A, et al. *Can J Cardiol* 2005;21(12):997-1006.

BEST MEDICAL THERAPY

- ✔ Risk factor modification
  - -Smoking cessation
  - -Diet, Exercise
  - -Treatment of diabetes
  - -Antihypertensive therapy
- ✔ Statins
- ✔ Antiplatelet therapy
- ✔ Peri-operative Beta blockade

ACURE LIMB ISCHAEMIA

What are the 6 P's of Diagnosis?

P allor

P ulseless

P ain

P araesthesia

P aralysis

P erishing Cold

NORMAL PULSES ON THE OTHER LEG

CRITICAL ACUTE ISCHEMIA

Threatened Leg

- **Partial weakness**
- **Partial sensory loss**
- **Intact but slow capillary refill**
- **Arterial doppler signal absent**
- **Venous signal present**

MANAGEMENT

General Measures

5000 iu heparin IV STAT

-Prevent propagation of proximal and distal thrombus

-Decrease risk of associated venous thrombosis

Pressure care

Bed position-leg down

Do not heat or cool limb

IV Fluids

Analgesia

Oxygen Therapy

Lab work (Blood): Renal profile, Coagulation, CBC

Diagnostics: CXR, ECG

CHRONIC LIMB ISCHAEMIA

-Prev. HX Months/years of claudication

-Prev. HX of bypass

-Night/Rest pain

-Dependent rubour / Pale elevation

-Tissue loss/Gangrene

ABNORMAL PULSES ON ASYMPTOMATIC OTHER LEG

SUBCRITICAL ACUTE ISCHAEMIA

Viable Leg

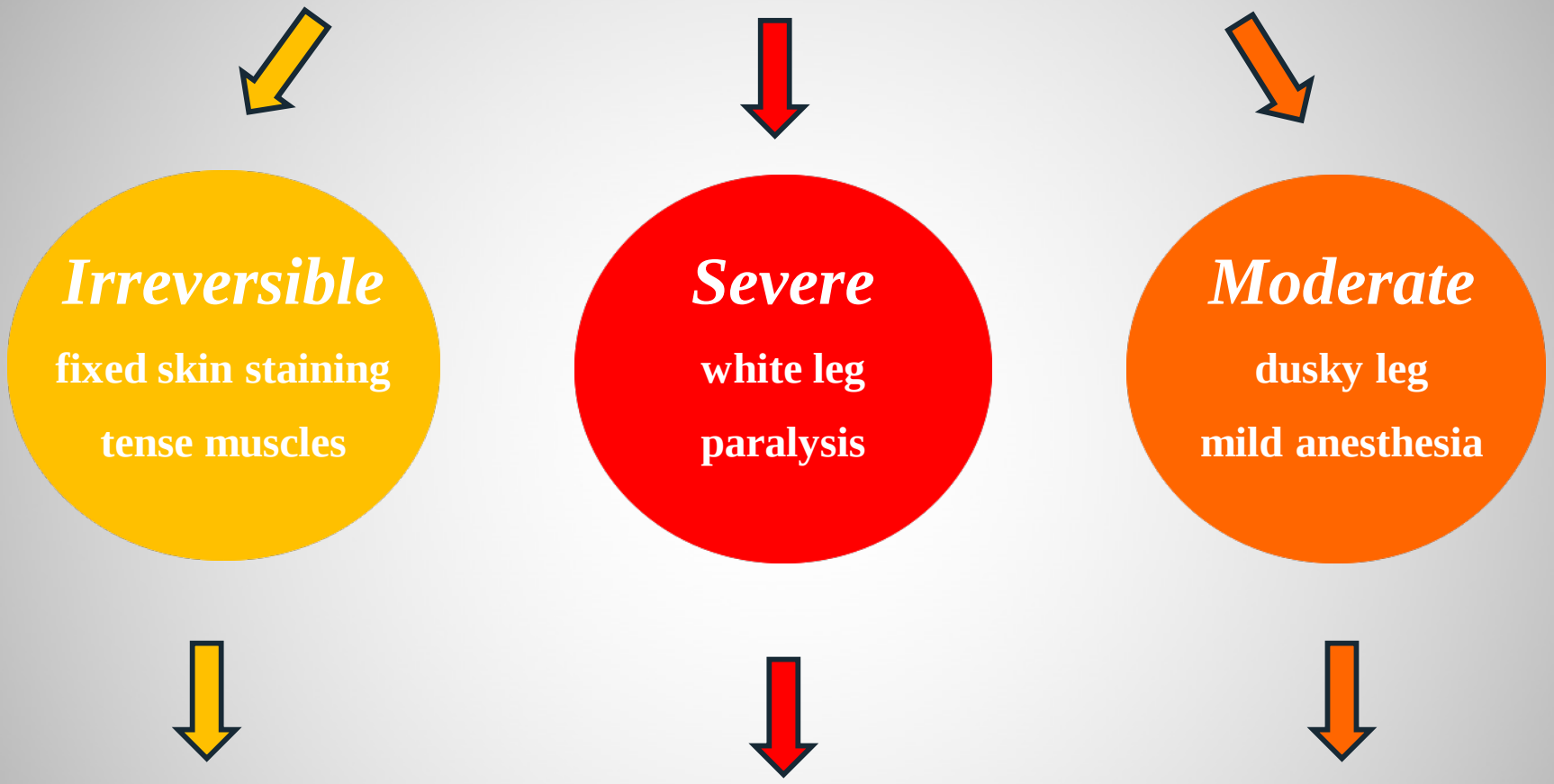
- **Normal movement**
- **Normal Sensation**
- **Capillary refill intact**
- **Audible arterial doppler signal**

ACUTE ISCHAEMIA

Irreversible

- **Profound paralysis**
- **Tense muscles**
- **No sensation**
- **Absent capillary return**
- **Fixed skin staining**
- **Guttering of veins**
- **No Arterial Or Venous doppler signal**

Acutely Ischemic Limb

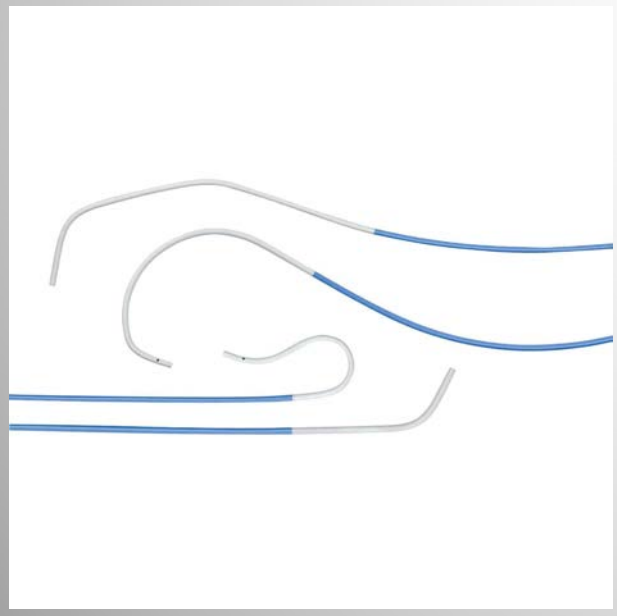


Amputation or Palliative Care

Surgery

Angiography CTA

Esp with ENDOVASCULAR TECHNIQUES



PATHWAY FOR ISCHAEMIC ULCER OR OSTEOMYELITIS

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REVASCULARIZE ➢ **DEBRIDE/AMPUTATE** ➢ **GOAL TO HEAL**

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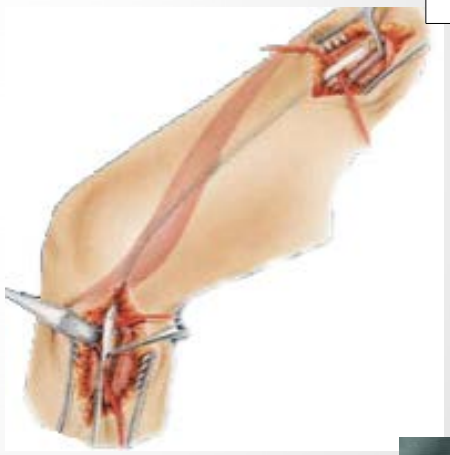
PVD- POST OP BYPASS CARE

- **Wound issues - incisions and ulcers**

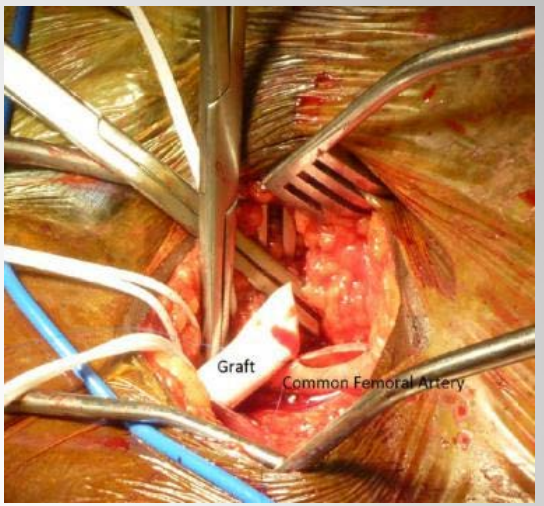
- **Perfusion- refill or pulses**



- **Graft pulse palpable- vein not gortex**

PVD POST OP ISSUES

- **Wounds/ulcers**
- **Concerns with graft or patch underneath**
  - **Aggressive Abx**



- **Pulsatile groins- false aneurysms**

- **Do not drain the "pulsatile abscess'**

NO LOCAL IN ISCHAEMIC FEET!

- **Will result in local necrosis and non healing… risk of limb loss**
- **Assess vasculature before any minor procedure on feet**

PRESSURE- DM PTS

PRESSURE

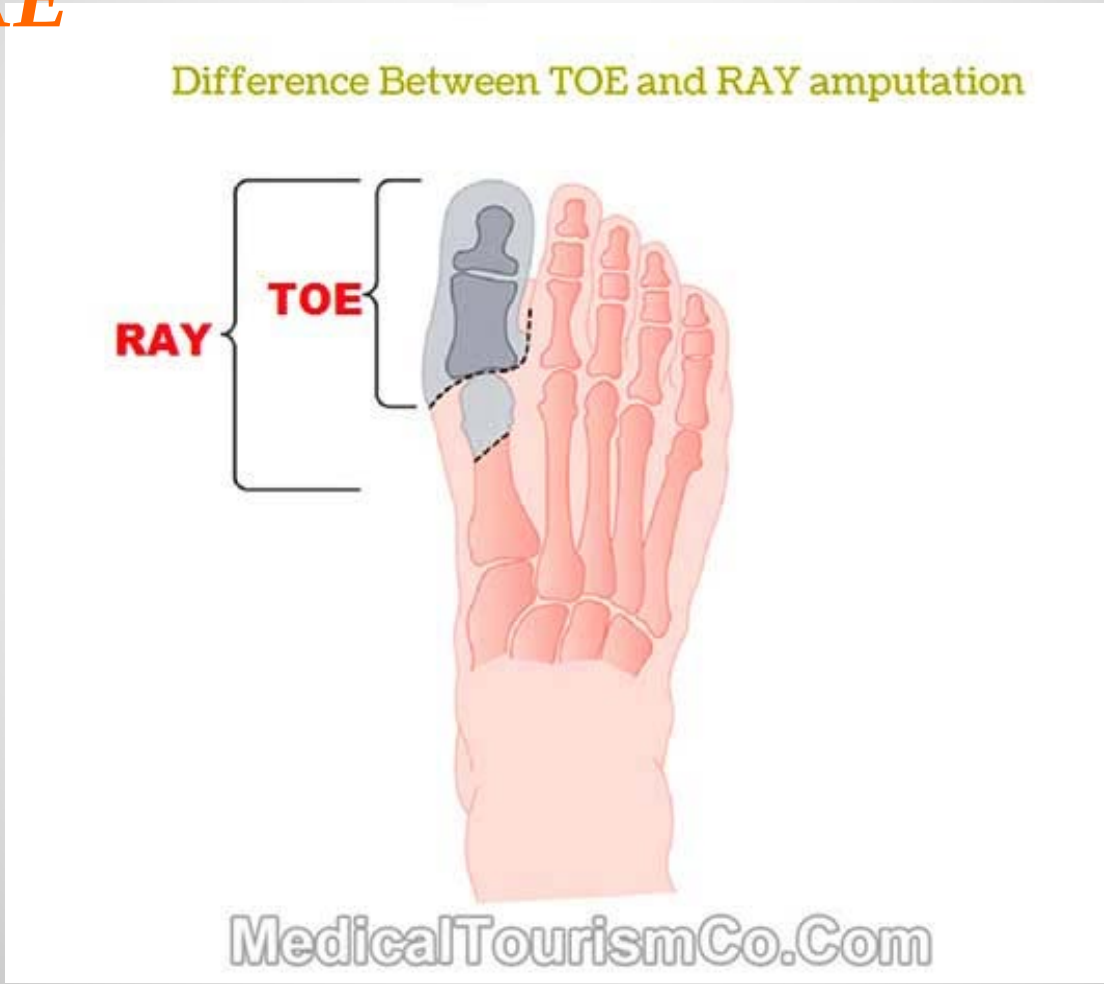
WATCH OTHER LEG

BLUE TOE SYNDROME

-ASA/Plavix/Statin
-Find Source of Embolus
-Treat to ensure Healing

AMPUTATIONS

PART OF TREATMENT AND NOT A FAILURE



TRANSMETATARSAL AMPUTATION

BELOW KNEE AMPUTATION

PRESERVE THE KNEE JOINT


Above-Knee Amputation

VASCULAR KGH TEAM THAT HELPS THE PATIENTS

- Nurse Clinicians
- ET Nurses
- Our ward Nurses
- PT/OT/Rehab/Prosthetist
- Vascular Surgeon

PT & FAMILY JOURNEY TO HEAL

The SWOLLEN LEG

- Depends on the hx and px…
- ACUTE vs CHRONIC

- What is the DDx?
  - DVT- *ACUTE*
  - Cellulitis
  - Deep venous insufficiency
  - Chronic ischaemia
  - lymphedema

WHEN IS ELEVATION OF LEG *CRUCIAL?*

- Cellulitis
- Reperfusion edema
- Lymphaedema
- Post-Op lymph leak
- Deep venous insufficiency
- DVT
- Venous ulcer

SWELLING

SWELLING AND ULCER

COBAN/COBAN LITE WRAPS

WHEN DOES ONE NOT ELEVATE?

- **Acute ischemic limb**
- **Acute on chronic ischemic limb**
- **Arterial ulcer**

DIFFERENCES BETWEEN

ARTERIAL VS VENOUS ULCERS?

- ***ARTERIAL***
  - **'PUNCHED OUT'**
  - **PALE, DRY**
  - **COOL LIMB/FOOT**
  - **PAINFUL WITH ELEVATION**

- ***VENOUS***
  - **SHALLOW, MOIST**
  - **GAITER AREA**
  - **EDEMA**
  - **VARICOSE VEINS**
  - **LIPODERMATOSCLEROSIS**
  - **PAINFUL WITH DEPENDENCY**

Can compression therapy be used in the patient with edema and cellulitis?

YES

Treadwell TA, Fowler E, Bates-Jensen BB. Management of Edema in Wound Care: A Collaborative Practice Manual for Health Professionals, 4th Edition, Ed. BB Bates-Jensen, 2012

EDEMA & COMPRESSION THERAPY IN CELLULITIS

1. **Normal anti-Streptococcal properties of skin are inactivated by edema fluid**

2. **Compression therapy:**

- **Removes protein-containing fluid from the subcutaneous tissues**
- **Increases blood flow to tissues**
- **Increases antibiotic concentration in tissues**

CELLULITIS OF LEG

Healed after 10 days of antibiotics and 5 weeks of compression therapy

VENOUS DISEASE

Leo - 56 male

- Leg aches esp end of day
- Number of years
- Prev injections- recurred
- Stockings help

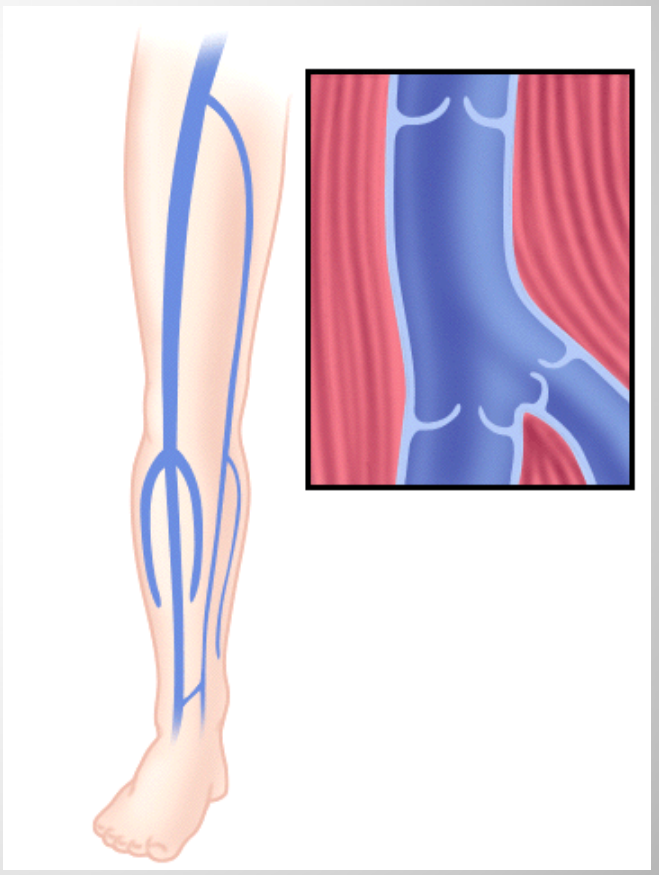
- + FHx varicose veins
- No DVT
- No #

- Normal distal pulses

- Venous Duplex- GSV reflux; normal deep system

WHAT IS THE PROBLEM?

Saphenous Incompetence



SAPHENOUS INCOMPETENCE

What are the treatment options?

- Conservative
- Surgical Stripping
- High ligation & distal foam sclerotherapy
- Thermal Ablation
  - Radiofrequency
  - Laser
- Foam Sclerotherapy
- VenaSeal

CONSERVATIVE

- **Compression stockings *worn regularly* prevents long term adverse outcomes**
  - **swelling**
  - **ulceration**
  - **phlebitis**

- **Small spider/reticular veins → sclerotherapy**

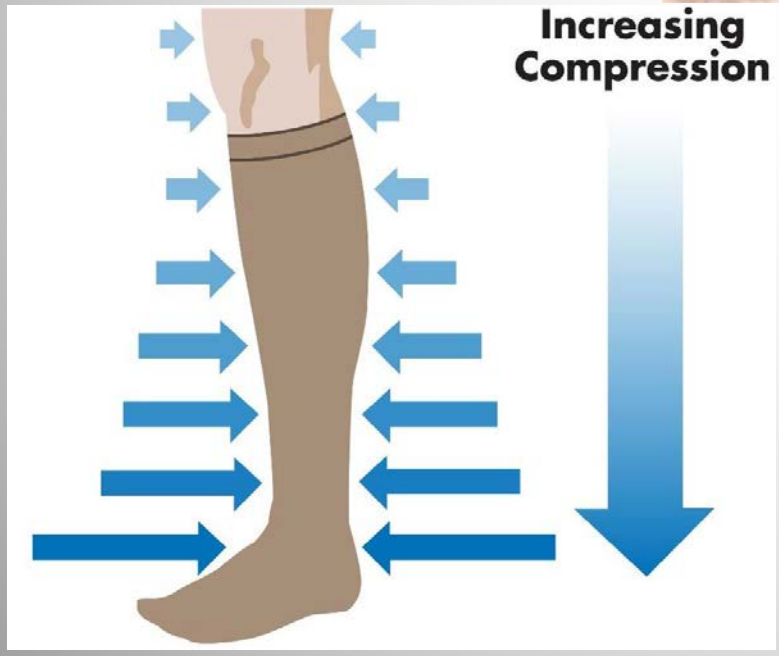
TREATMENT FOR THROMBOPHLEBITIS

Not an infection

- **NSAIDS**
- **Elevate**
- **Compression**
- **Compress**
- **Takes 6-8 weeks**

DVT

Anticoagulation



Mechanical

-Elevate

-Compression stocking

-*prevent post phlebitic limb*

NO NEED FOR SERIAL U/S

COMPRESSION THERARY & ACUTE DEEP VENOUS THROMBOPHLEBITIS

- **Increases venous flow**
- **Prevents further clotting**
- **Occludes superficial veins that could clot**
- **Does not cause an increase in pulmonary embolism**

Dale AW. The Swollen Limb. Current Problems in Surgery, Year Book Medical Publishers, Inc., USA. 1973 (September), p 18

Treadwell TA, Fowler E, Bates-Jensen BB. Management of Edema in Wound Care: A Collaborative Practice Manual for Health Professionals, 4th Edition, Ed. BB Bates-Jensen, 2012

WHAT IS THE POST PHLEBITIC LIMB?

-Chronic but preventable condition that leads to

-limb pain
-swelling
-skin discolouration
-rash

-Seen at 10yrs f/u in 56% of DVT s

BRENDA - 63 FEMALE

DIABETES POORLY CONTROLLED

- **Severe diabetic foot infection**
- **Fevers despite IV ABx**
- **Purulent drainage**
- **Pain in plantar space**
- **Perfusion to foot adequate**

  - ***NEEDS OPERATIVE DRAINAGE AND DEBRIDEMENT***

PATIENT EDUCATION

What are the "Do's"?

- Wash feet daily, dry well, inspect
- Check hidden areas carefully
- Anti-fungal powder
- Careful nail hygiene
- Early treatment of wounds
- Wear comfortable, well fitted shoes
- Natural fibre socks are best

PATIENT EDUCATION

What are the "Don'ts"?

- Walk barefoot EVER
- Wear new shoes without "breaking in"
- Leave wounds untreated
- Burn their feet
- Cut nails too short
- Ignore discomfort
- SOAKING

INDICATIONS FOR REFERRAL

- Callus formation
- Ulceration
- Ischaemic change
- Acute local sepsis
  - *NEED TO DRAIN PUS*
  - *DEBRIDE NECROTIC TISSUE*
- Non-healing trauma

Hope this session has helped in what to do with vascular patients…