Lower Extremity Soft Tissue Coverage: Best Choices

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Conceptual Framework

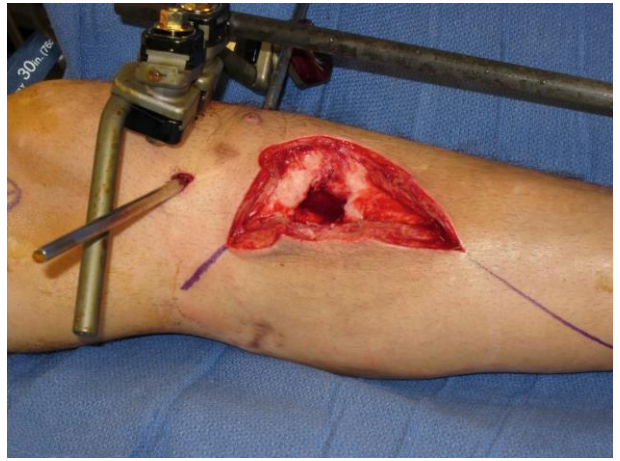
- Clean
- Stabilize
- Cover
- Reconstruct

Skin Grafting

- Clean wound with vascularized bed
- “Granulated”
- Infection *must* be controlled

Flap Coverage

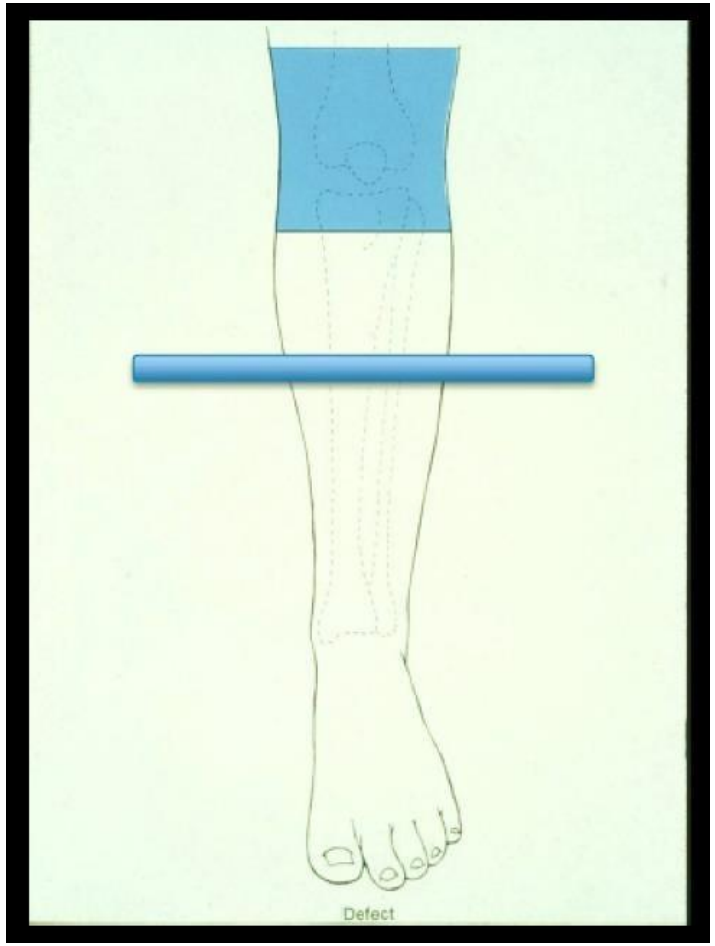
- Exposed:
  - Bone
  - Tendon
  - Hardware
  - Joint surfaces
  - Exposed nerves and blood vessels
  - Durability required
  - Dead space present



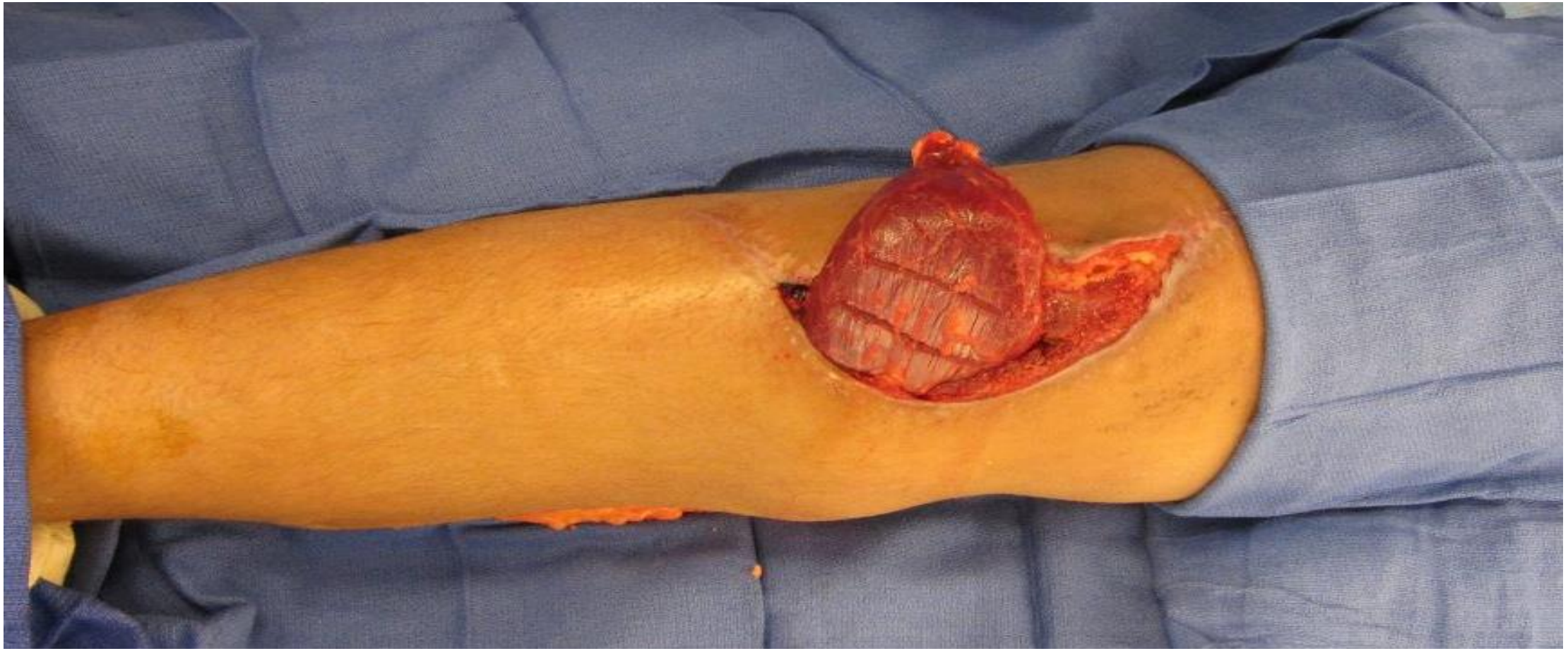
Proximal Third Coverage: Gastrocnemius Flap

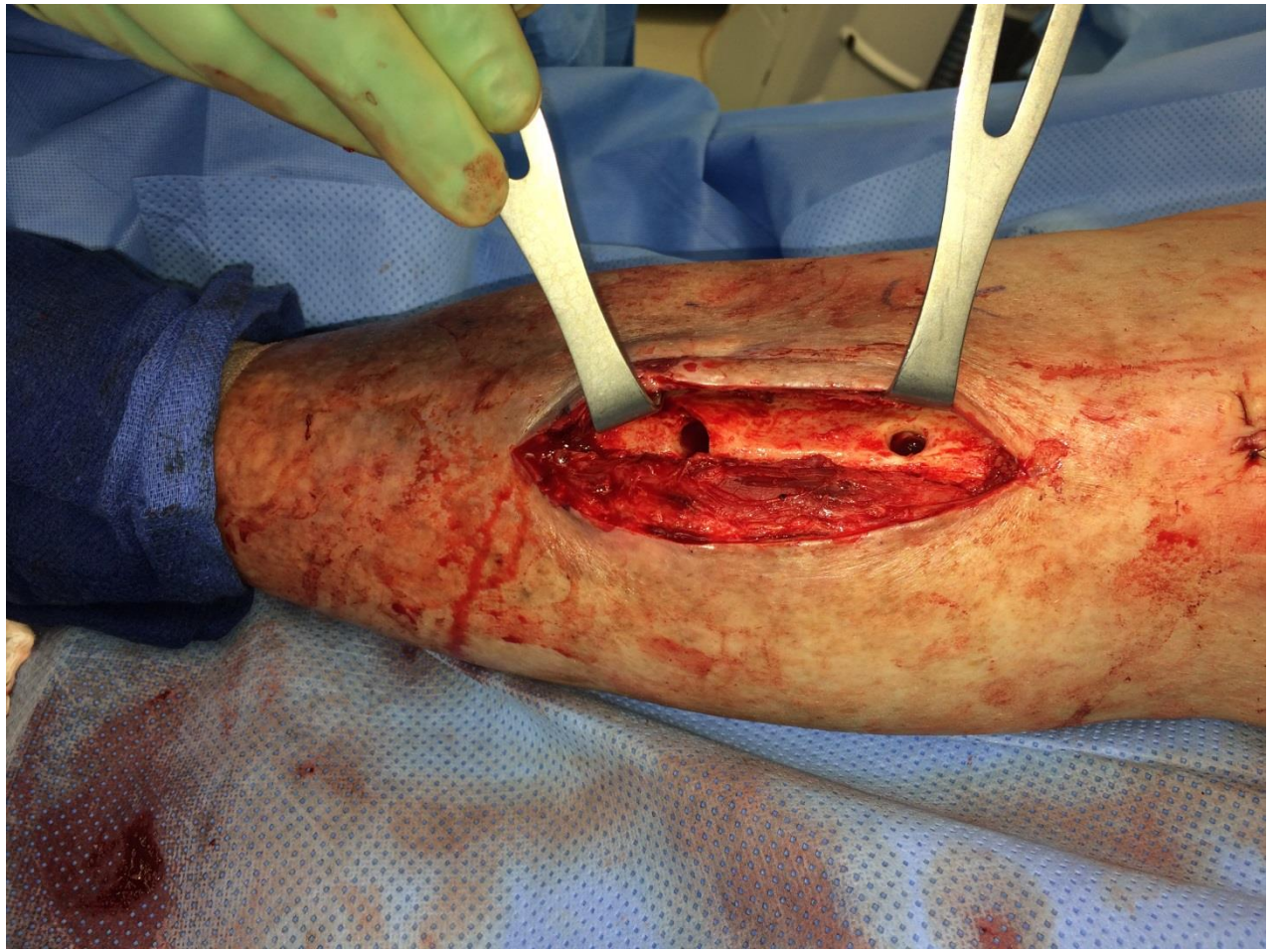
Indications/Application

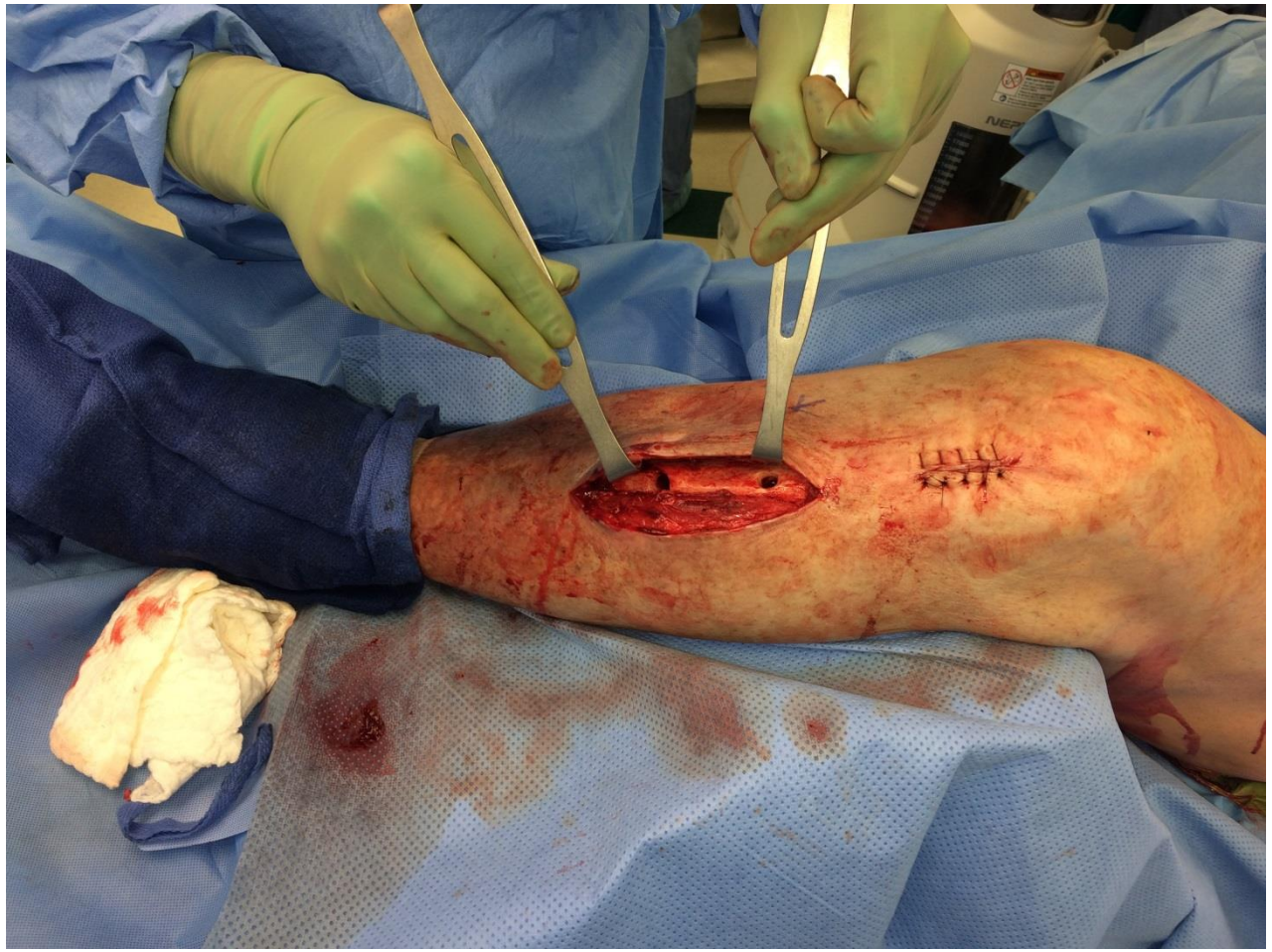
Coverage
-Knee
-Proximal 1/3



FLAP ROTATION





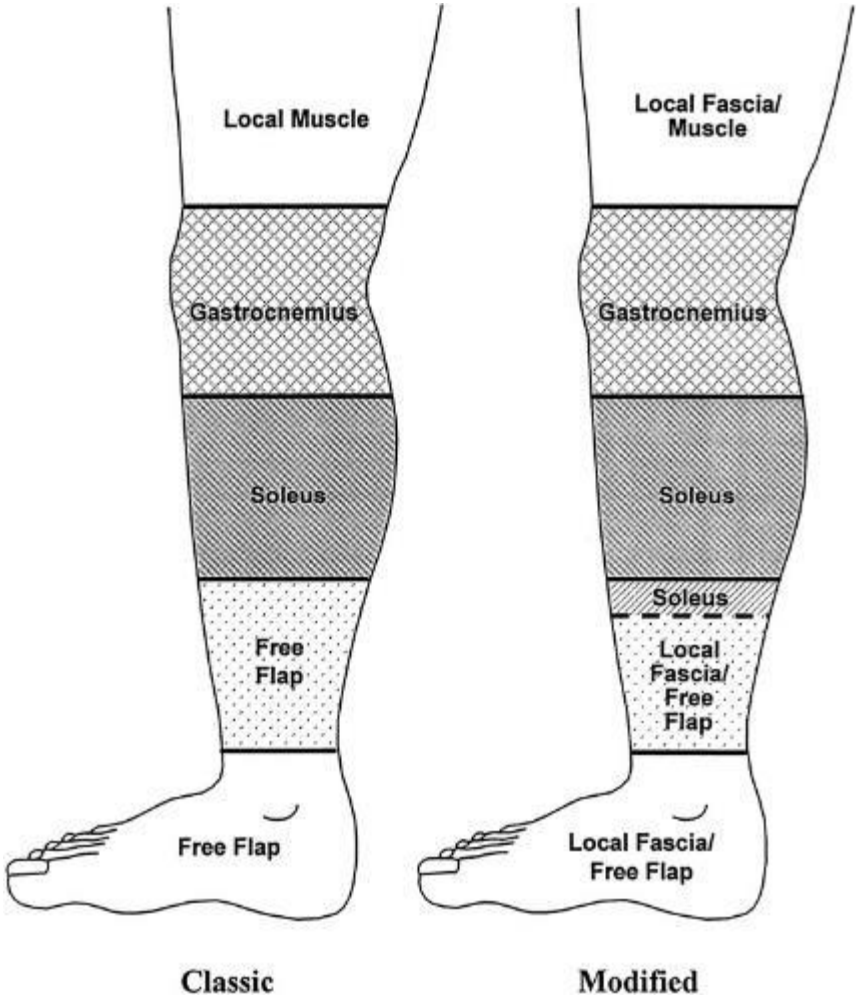


Soleus Muscle Flap: Indications

- Middle 1/3 of leg

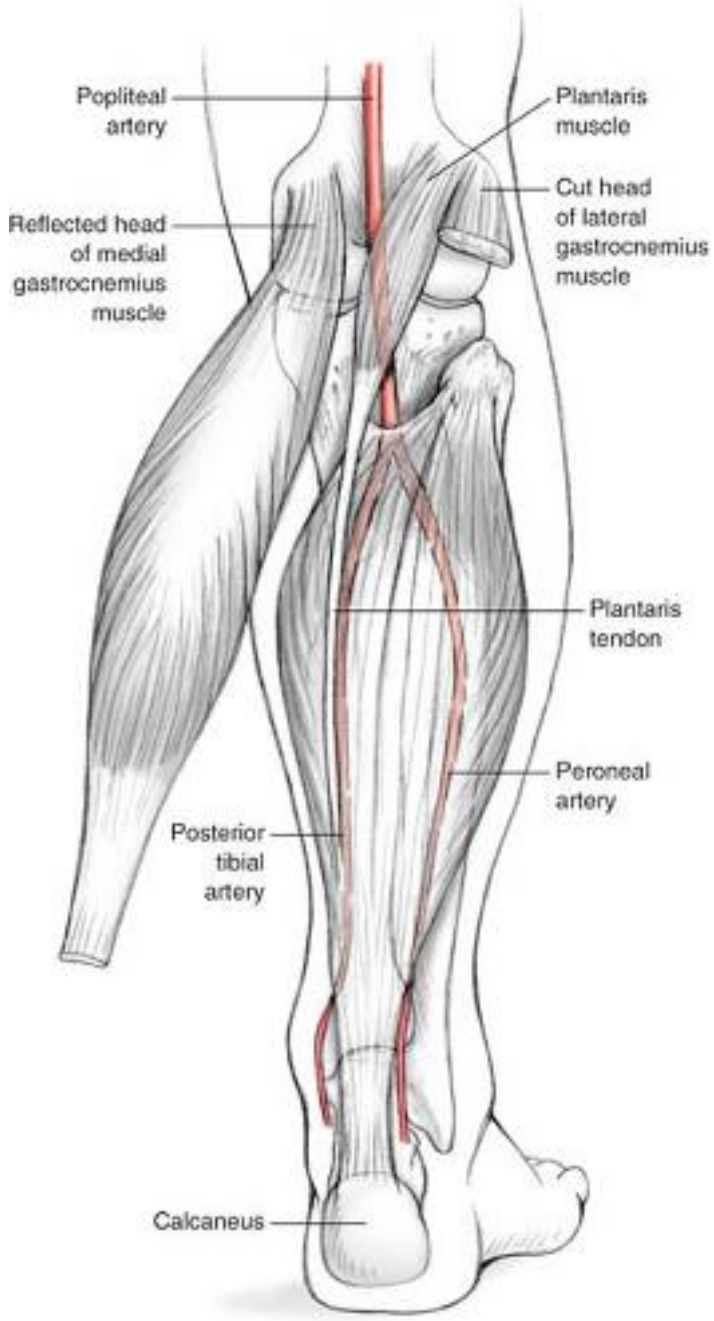
Also need:

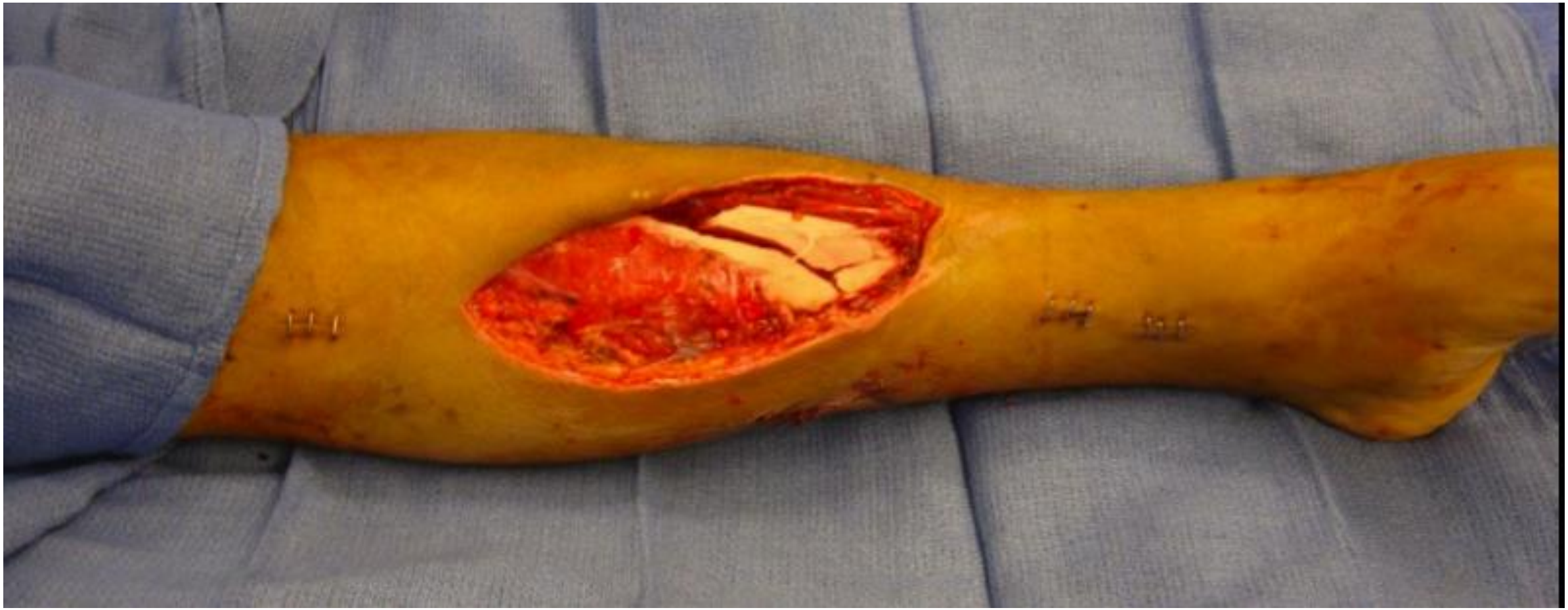
- Viable soleus muscle belly
- Clean healthy wound bed

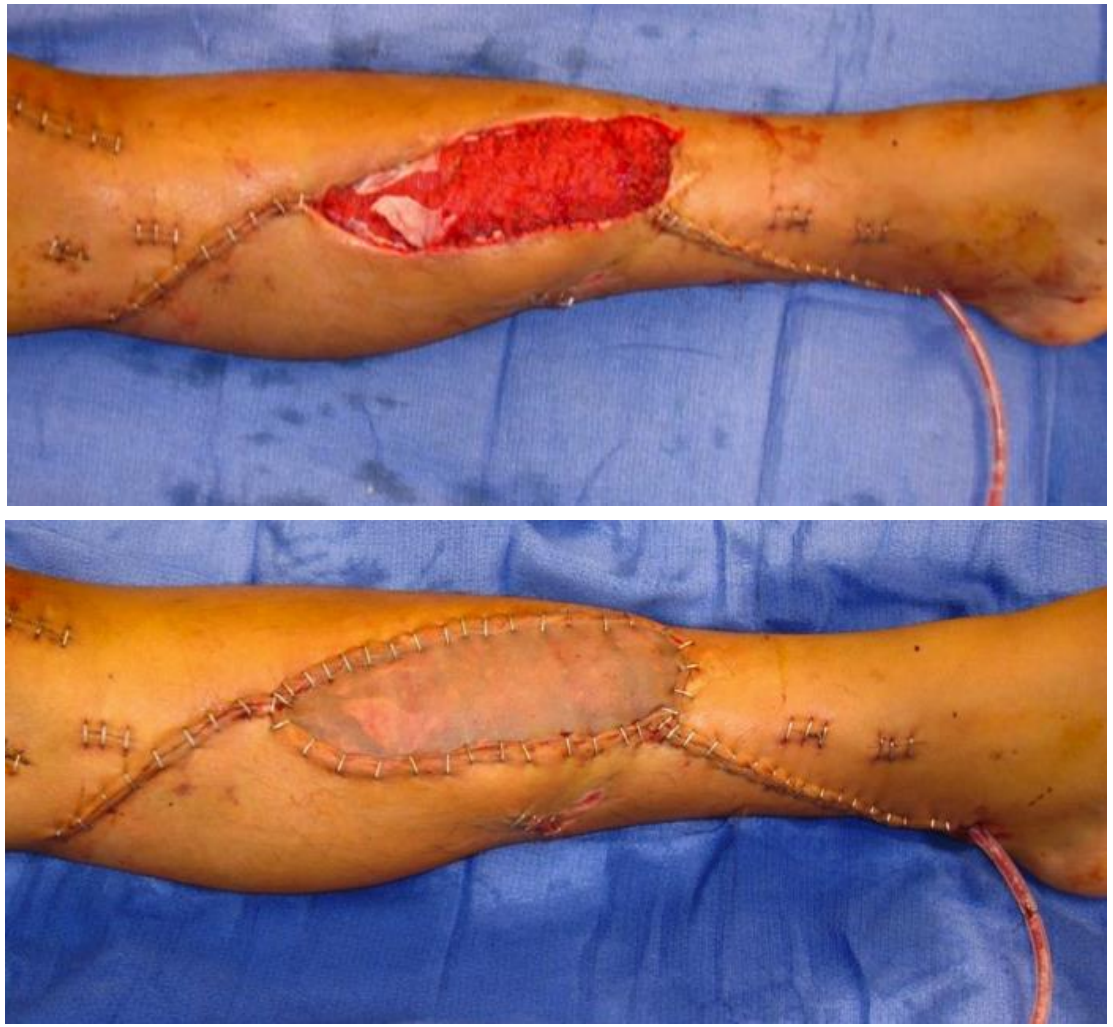


Middle Third Coverage: Soleus

- Vascular Anatomy
  - Supplied by popliteal, posterior tibial and peroneal







Distal Third COVERAGE

- Why is it so difficult…
  - simply - limited local options
  - need – vascularized soft tissue to cover bone and hardware
  - function – tolerate weight bearing on plantar surface

- *Free* vascularized tissue transfer
  - need a microscope and a microsurgery team

- *Local* vascularized tissue transfer
  - requires good knowledge of anatomy
  - good tissue handling
  - design principles

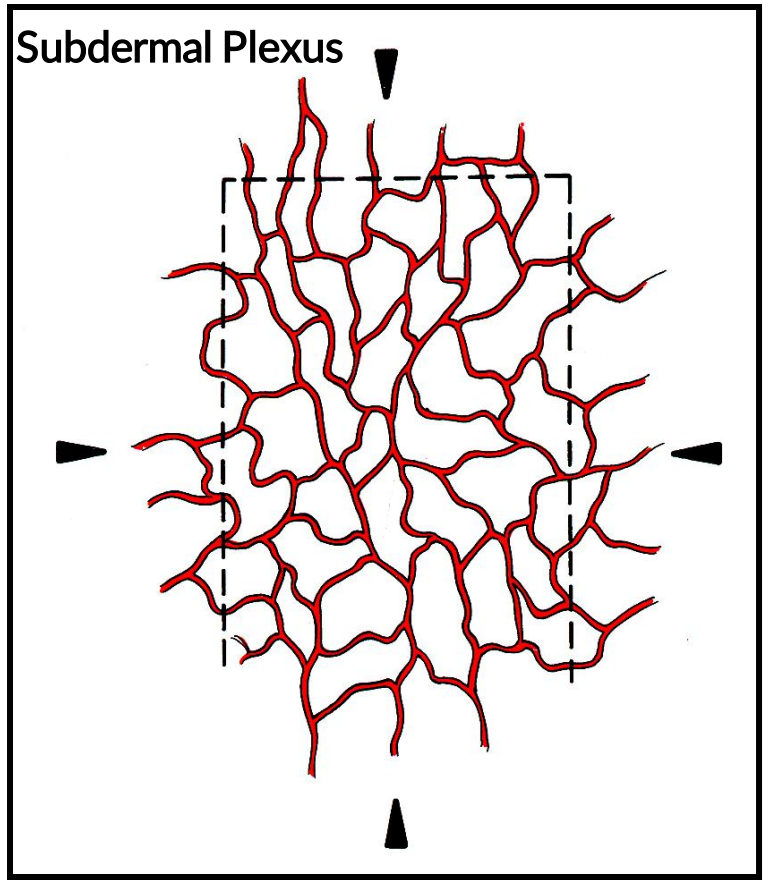
Distal Third Options

- Fasciocutaneous flaps
- Pedicled Perforator flaps / Reverse Sural Artery Flaps
- Microvascular Flaps
- Cross Leg Flaps

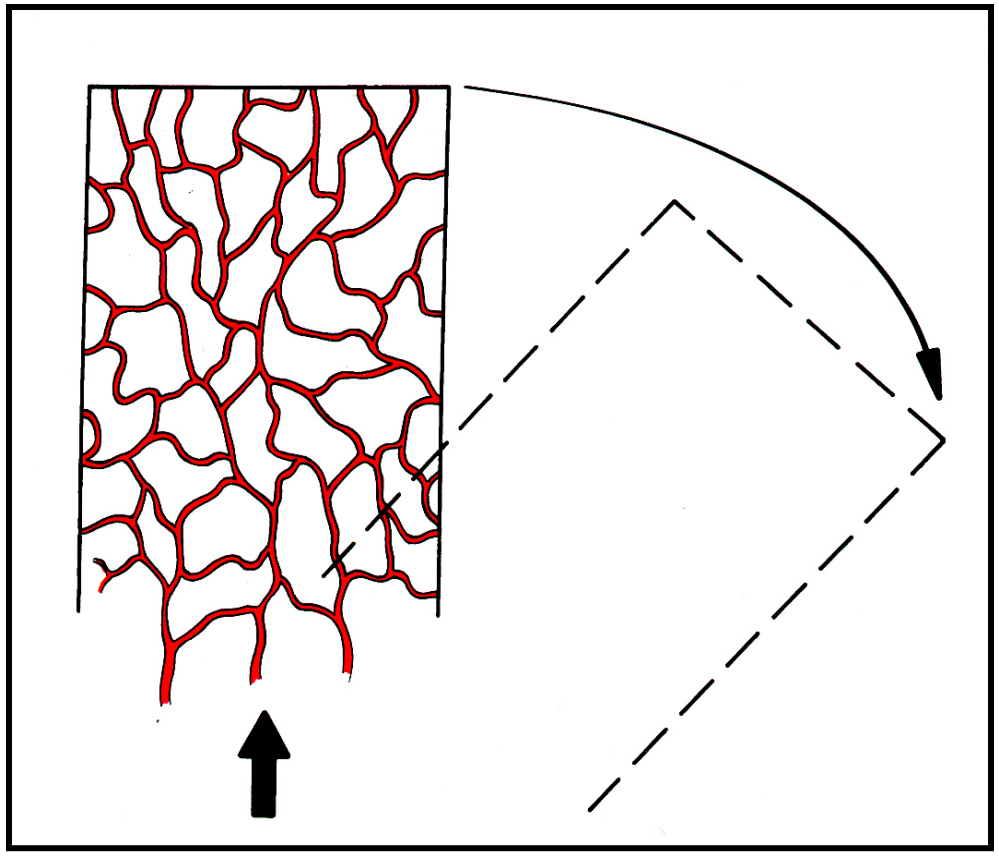
Case Example

- 50 y/o F s/p MVA
- RLE open tib-fib fracture, tx'd with R IMN
- 9 months later, presented with infected tibia, draining sinus
  - Multiple I&D
  - Removal of IMN, placement of abx spacer

Transposition flap

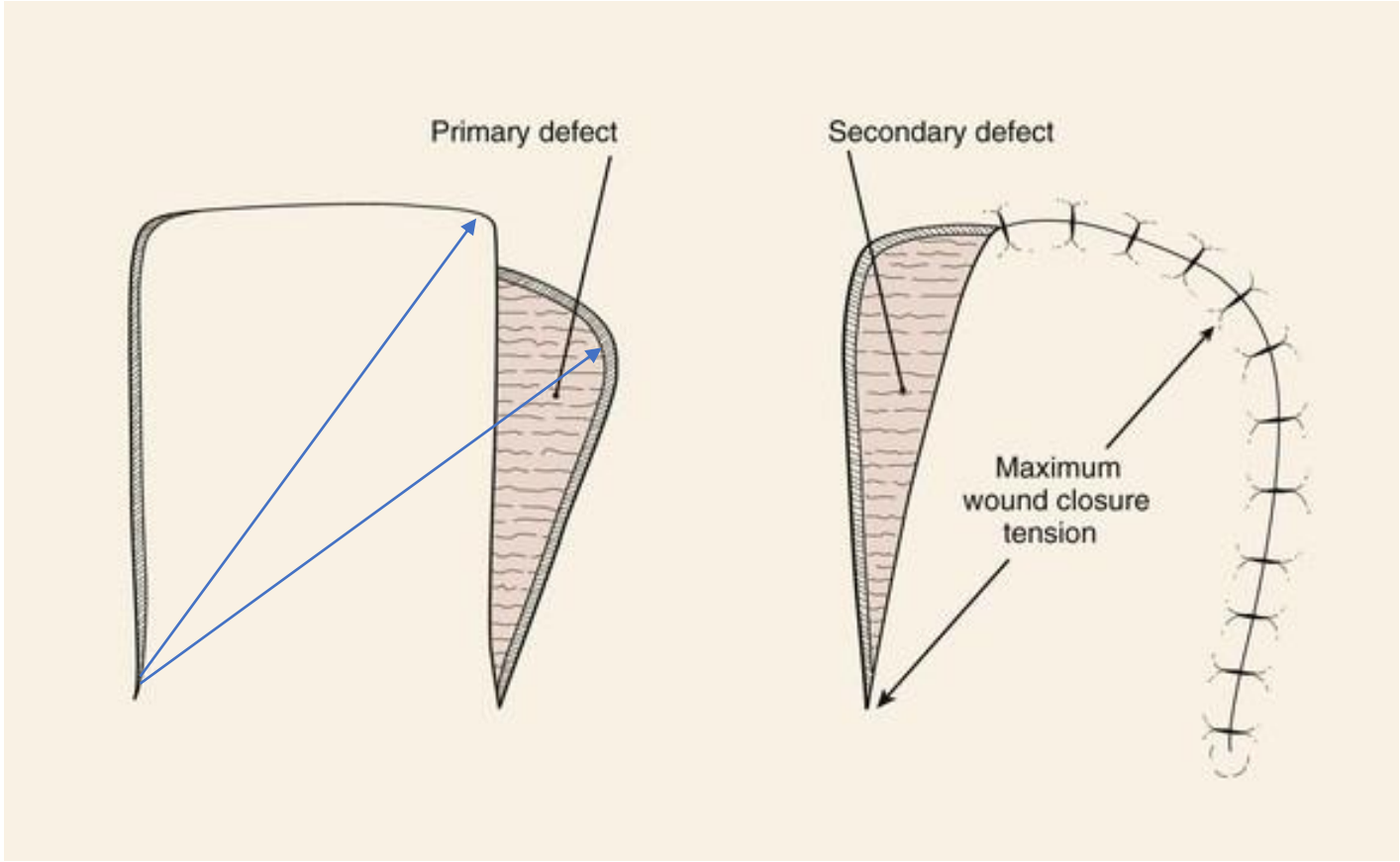


Flap design:
Length/Width ratio 2:1



Arc of Rotation

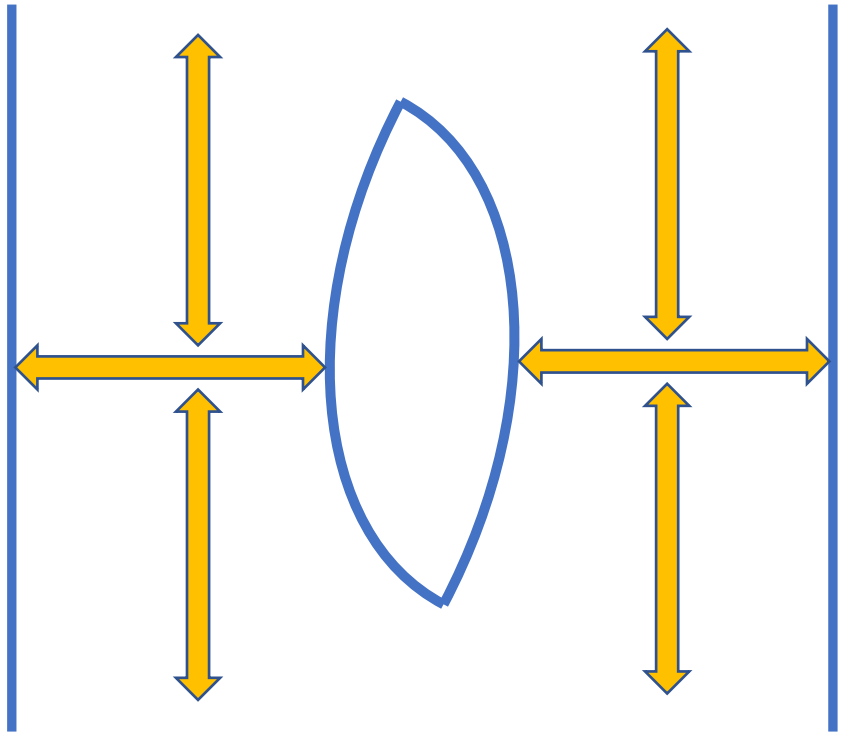
Transposition Flap




MEDLINE
CM
INCHES

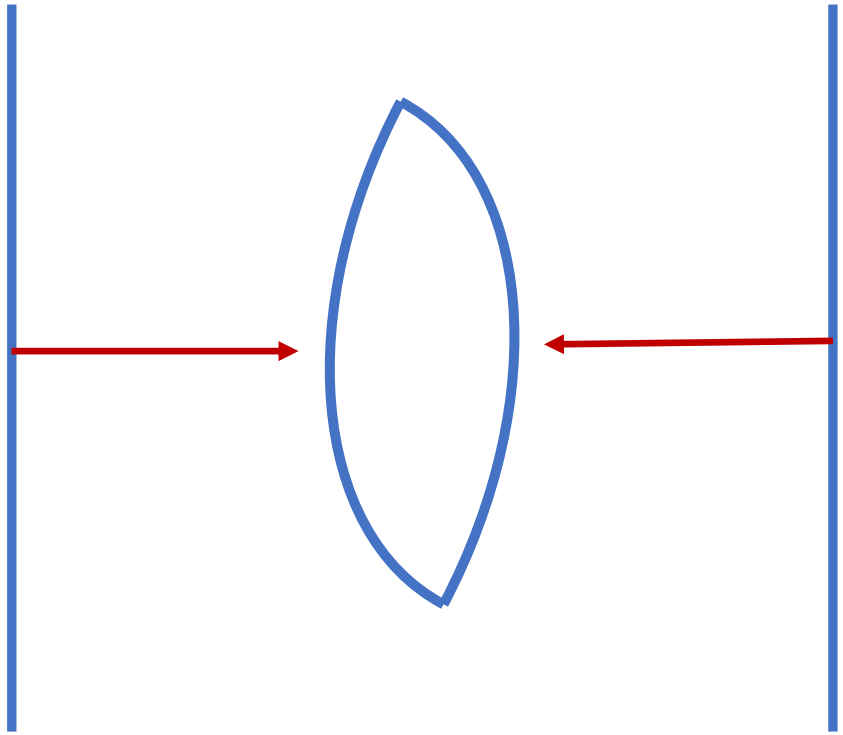
Case #2

Bipedicle Advancement Flaps



Each half is 1:1

Bipedicle Advancement Flaps



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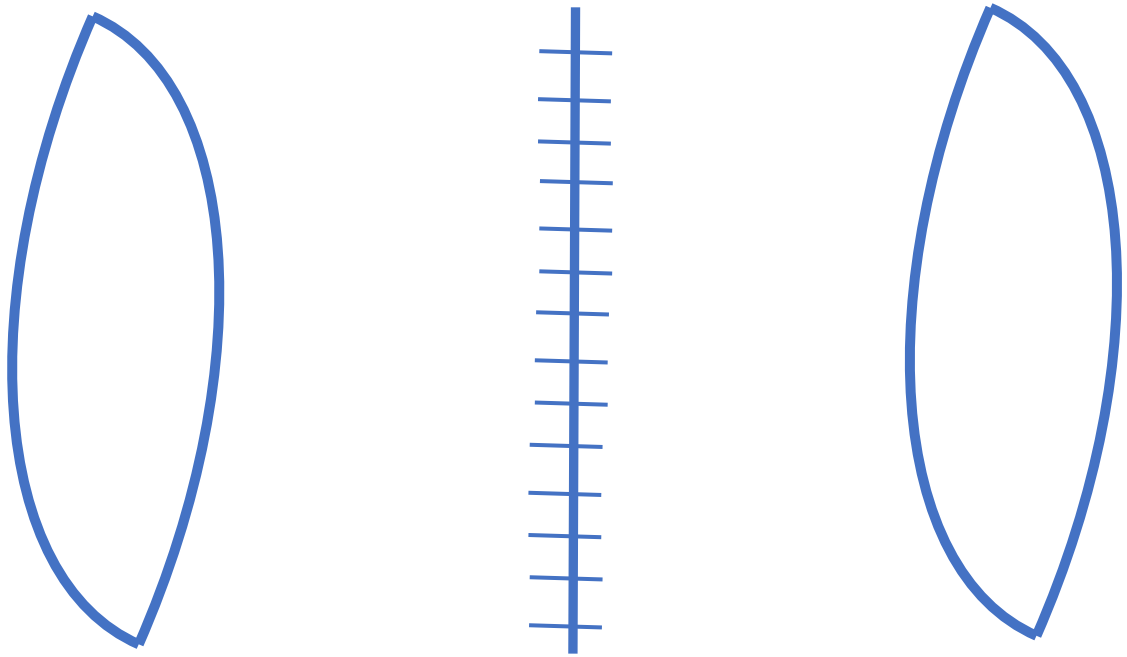
Bipedicle Advancement Flaps



Each half is 1:1

Case #3

- 36 y/o M
- 2 story fall, multiple bilateral LE injuries
- Developed pressure ulcer to heel

REVERSE SURAL ARTERY FLAP

FLAP DESIGN

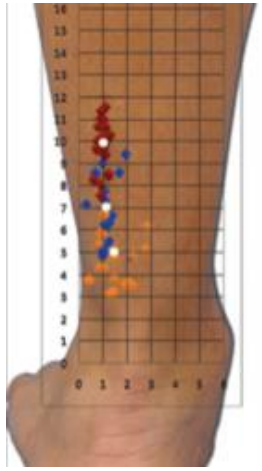
The AXIS of the flap:

Mid Popliteal Fossa

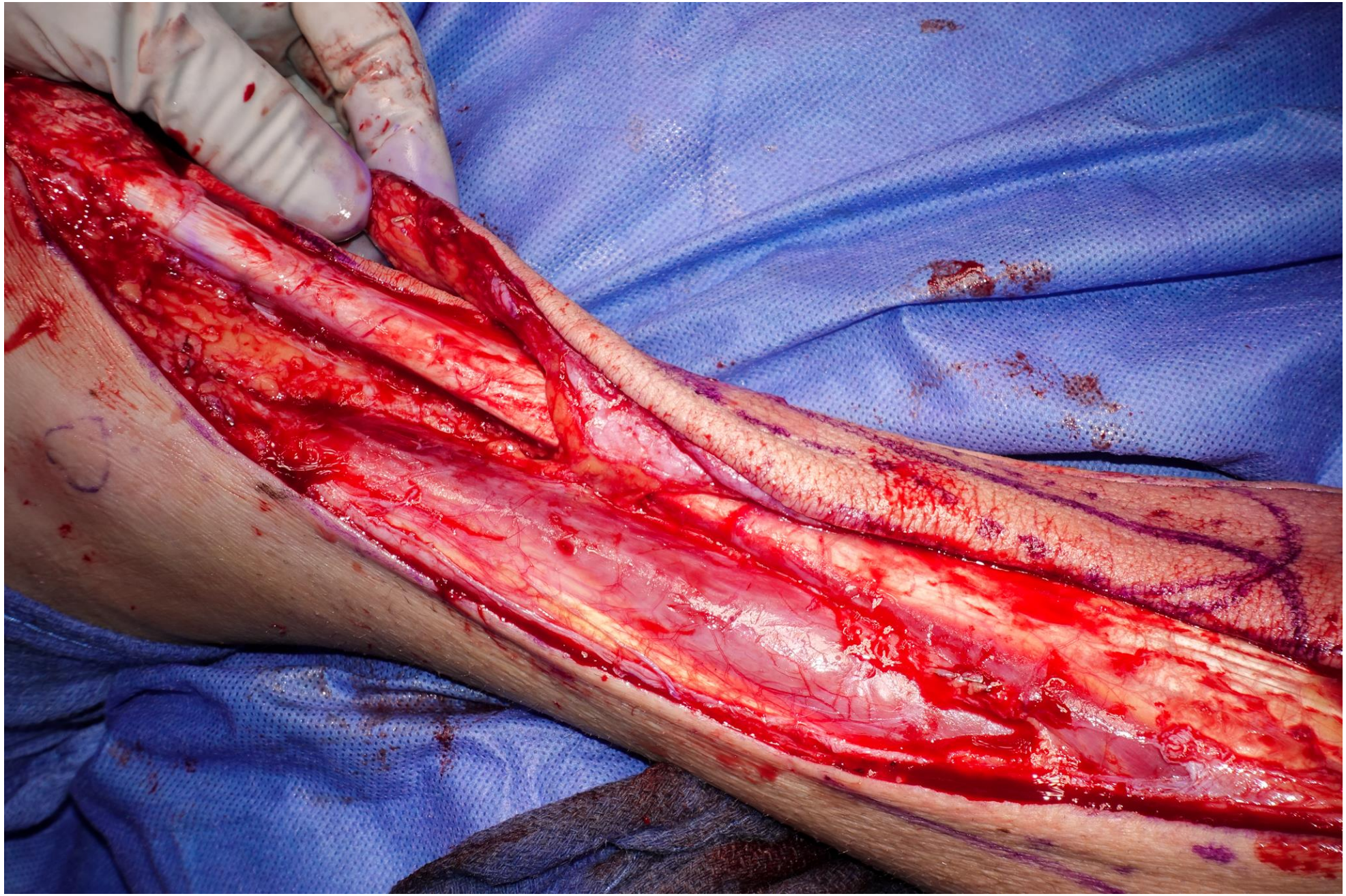
- Lesser saphenous vein
- Sural nerve

Lateral Malleolus

Remember the RETROGRADE blood flow comes from the peroneal perforators ~5-7cm proximal to Lateral Malleolus

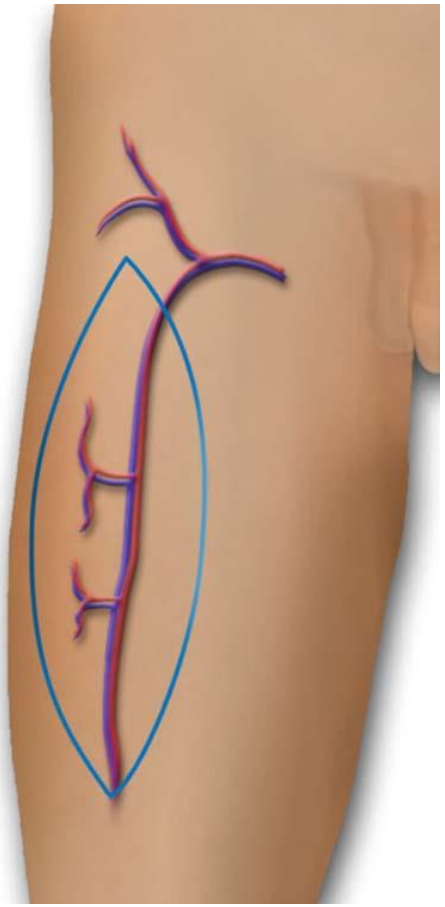


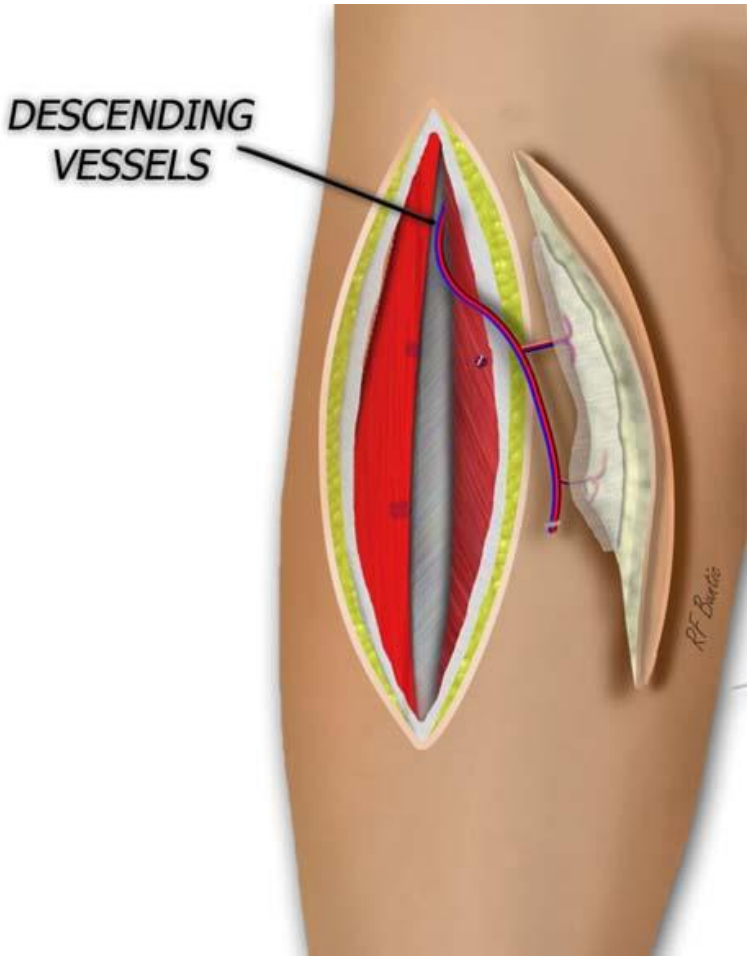
Medial



Microvascular Flaps

- ALT: The Anterolateral Thigh Flap





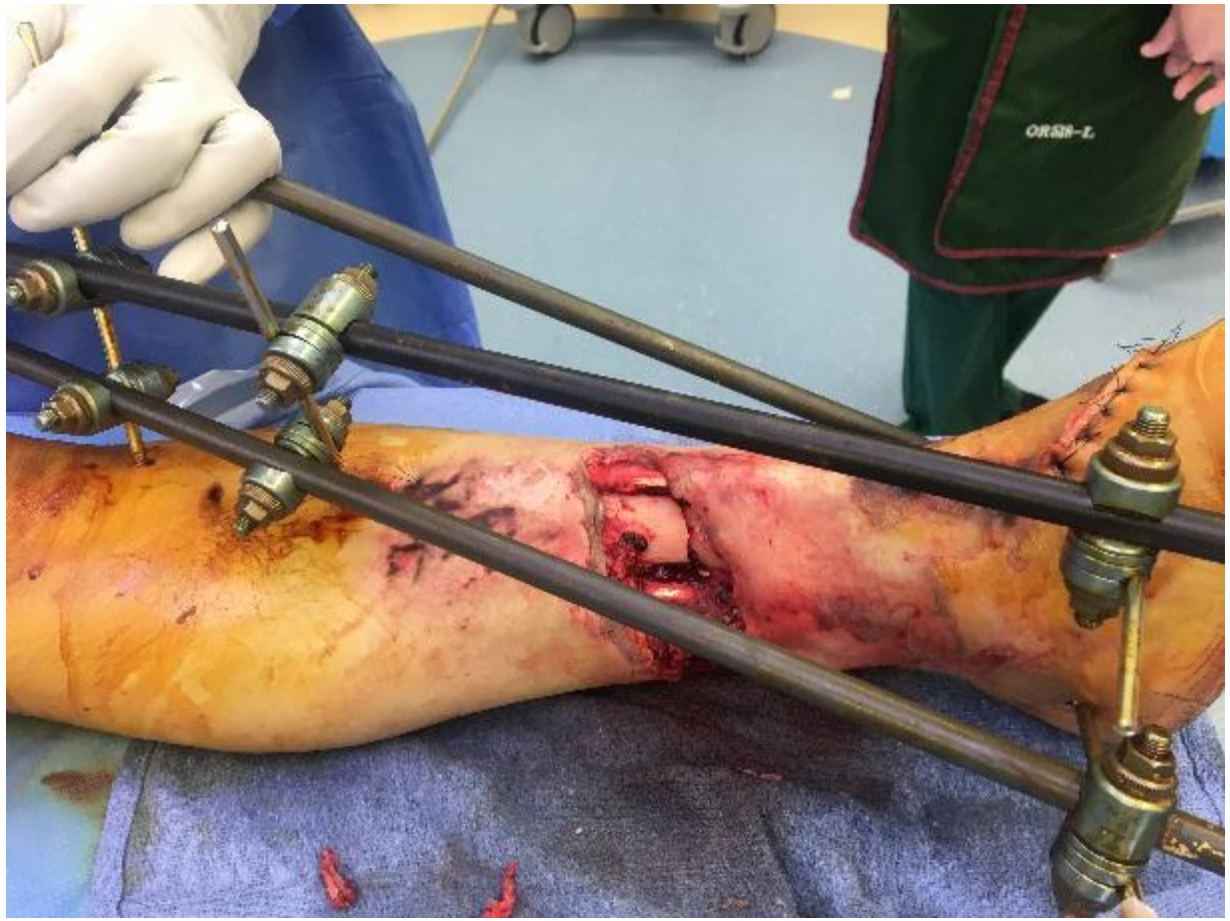

TO HOOK

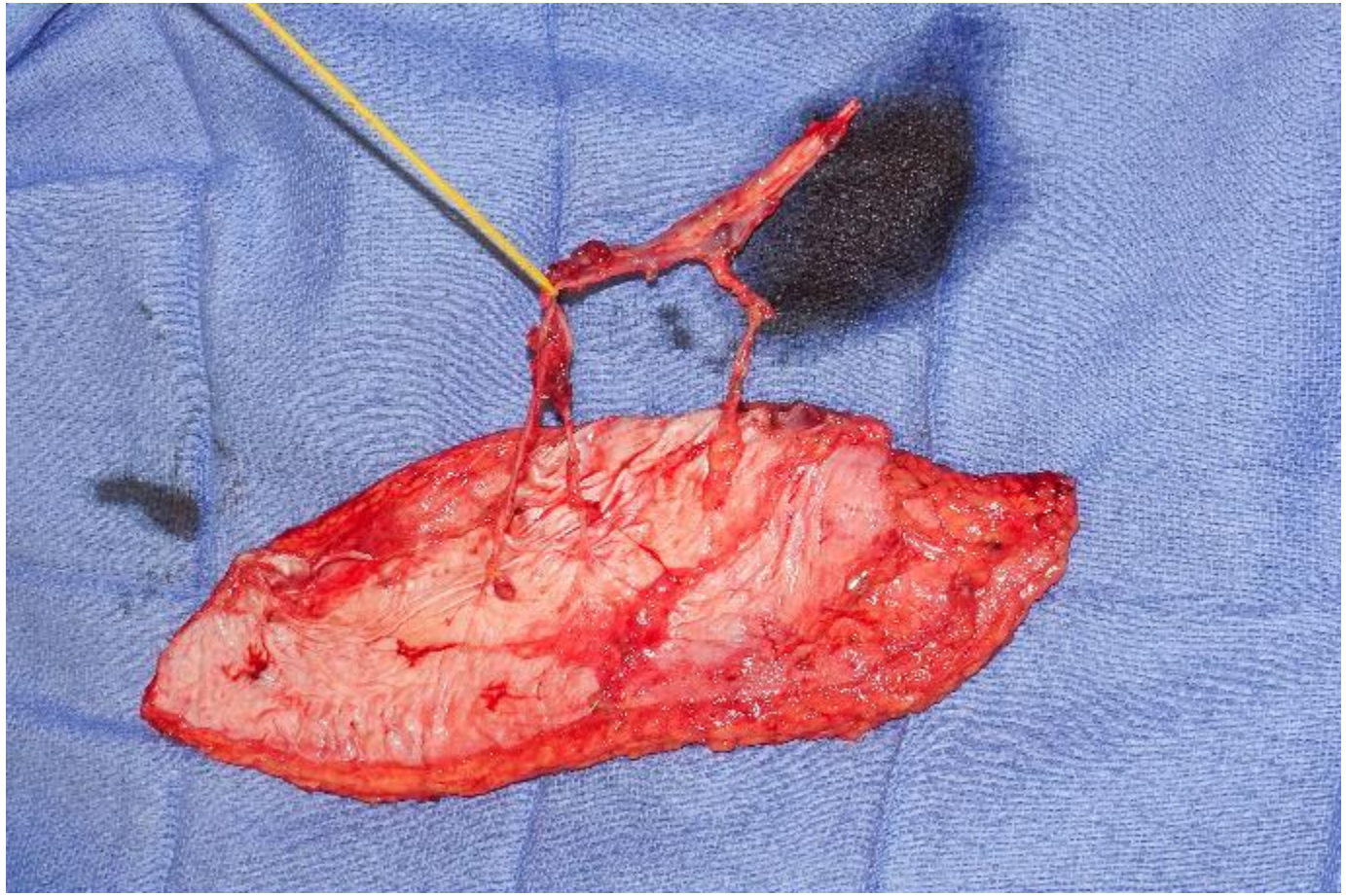

CM
MEDLINE
APPROX.
INCHES

10/28/2022

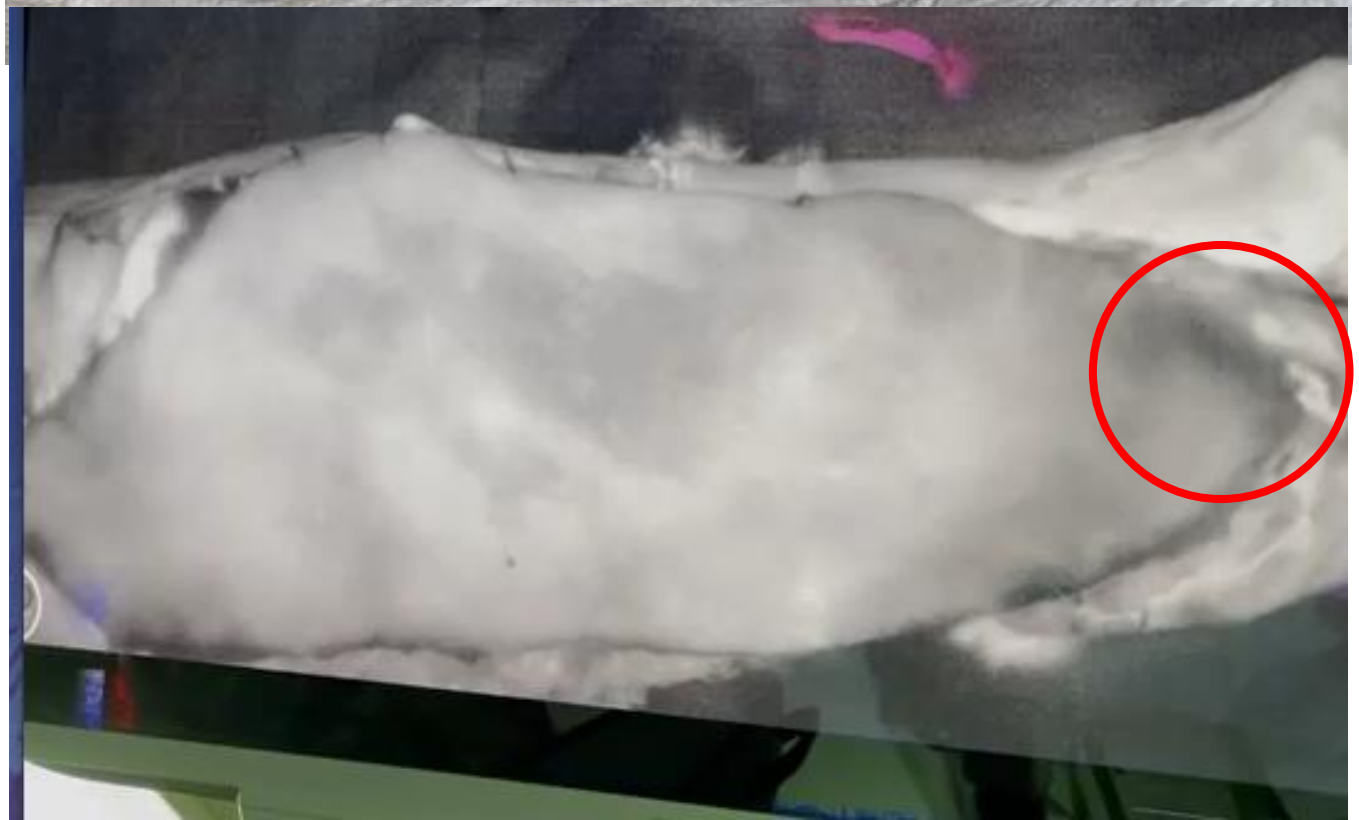
Muscle flaps

Case #5: 69 y/o M, bike vs auto

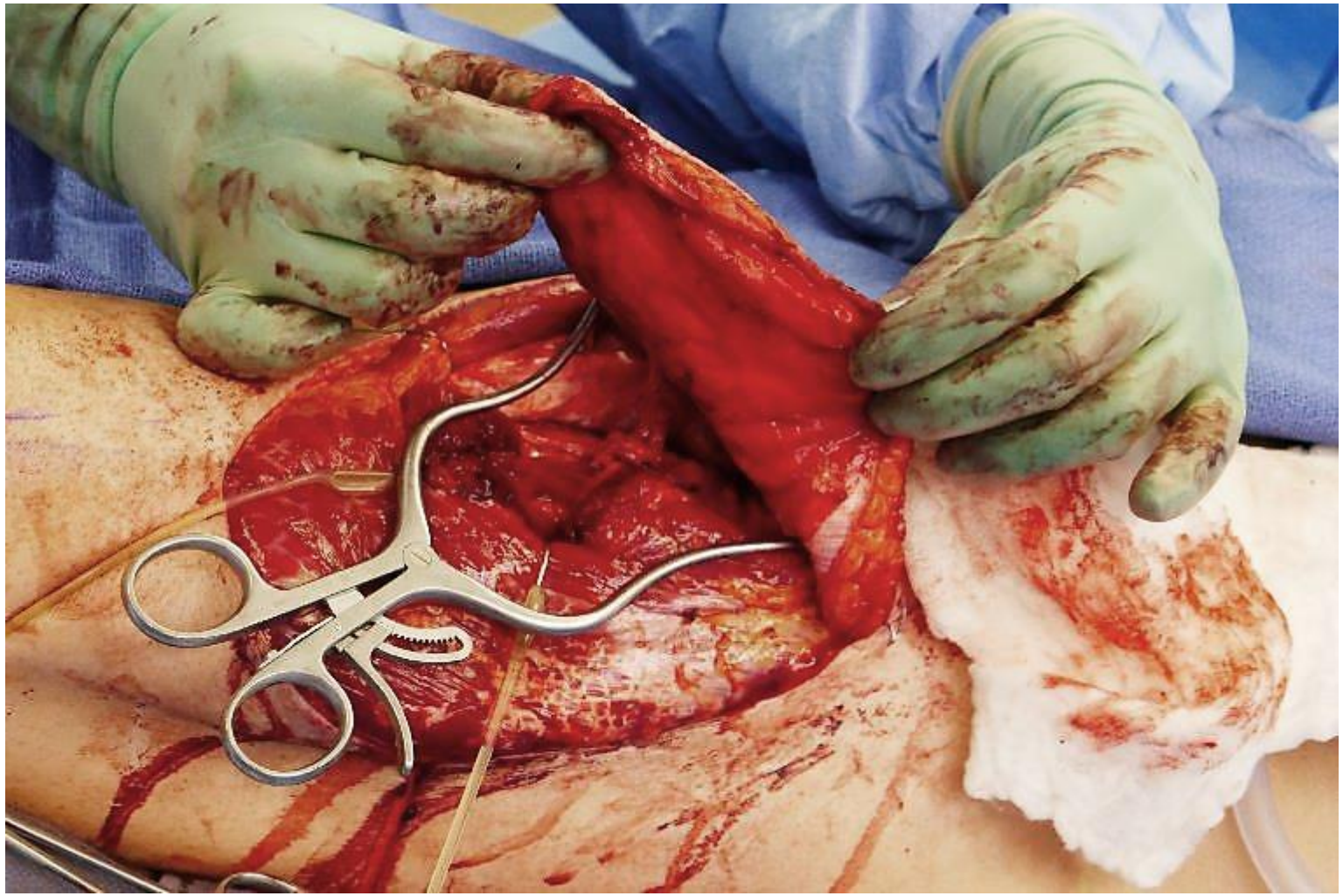


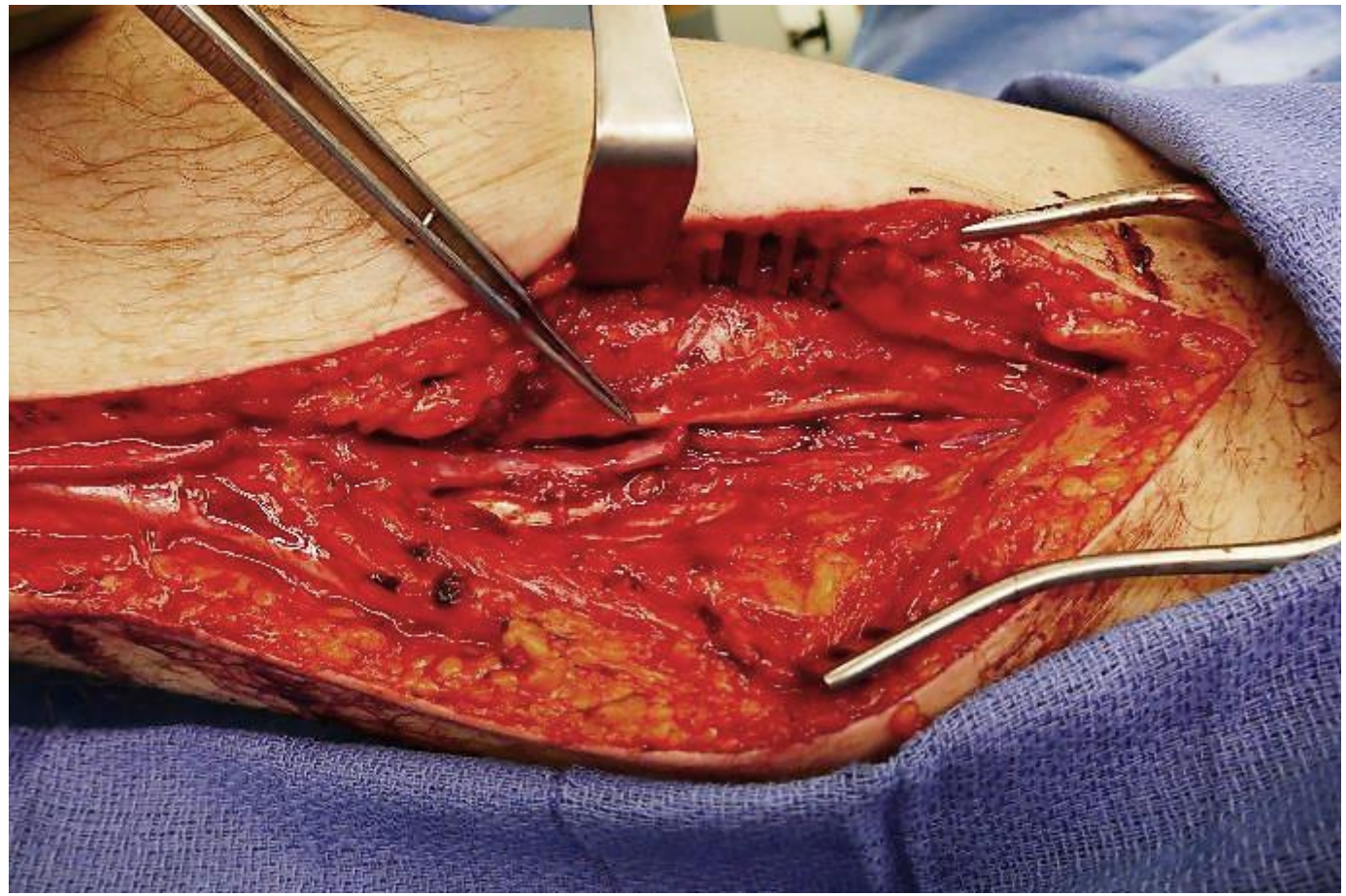


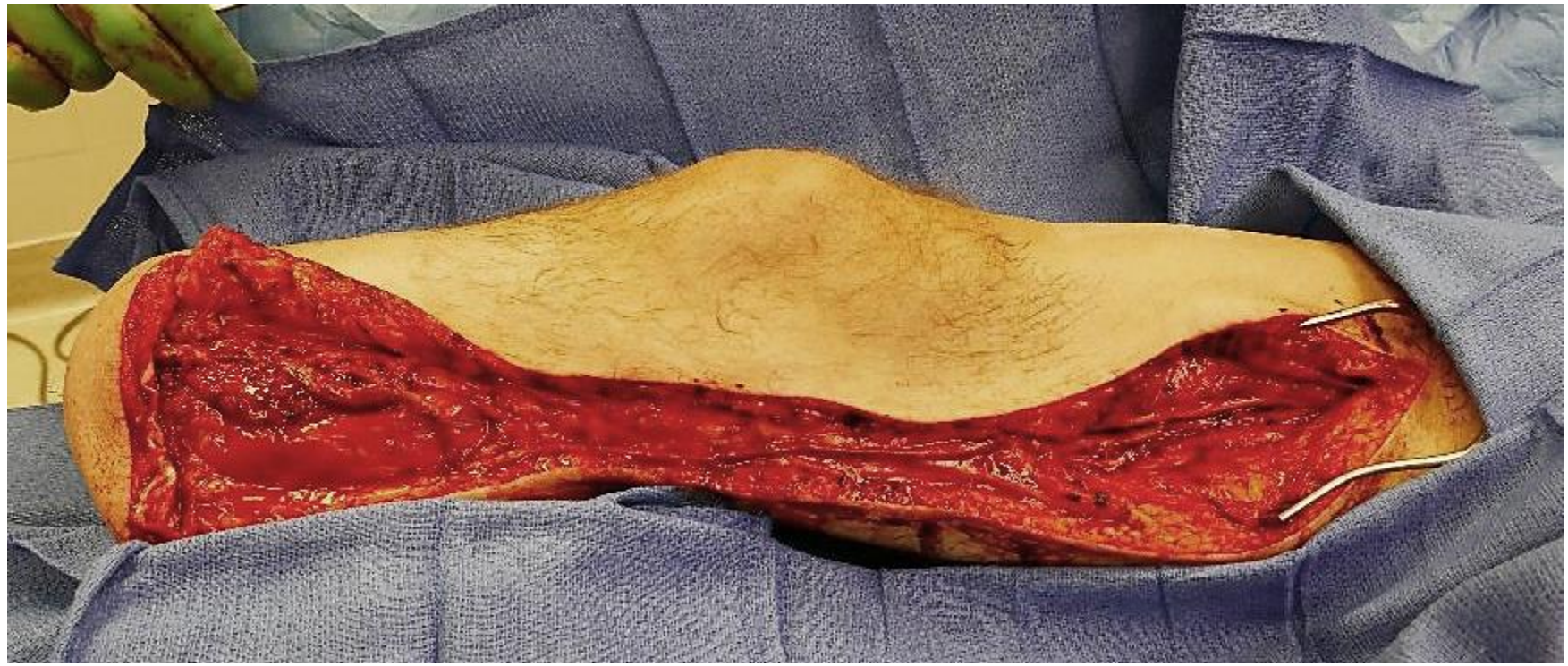

VISIONPRO LED DISPLAY

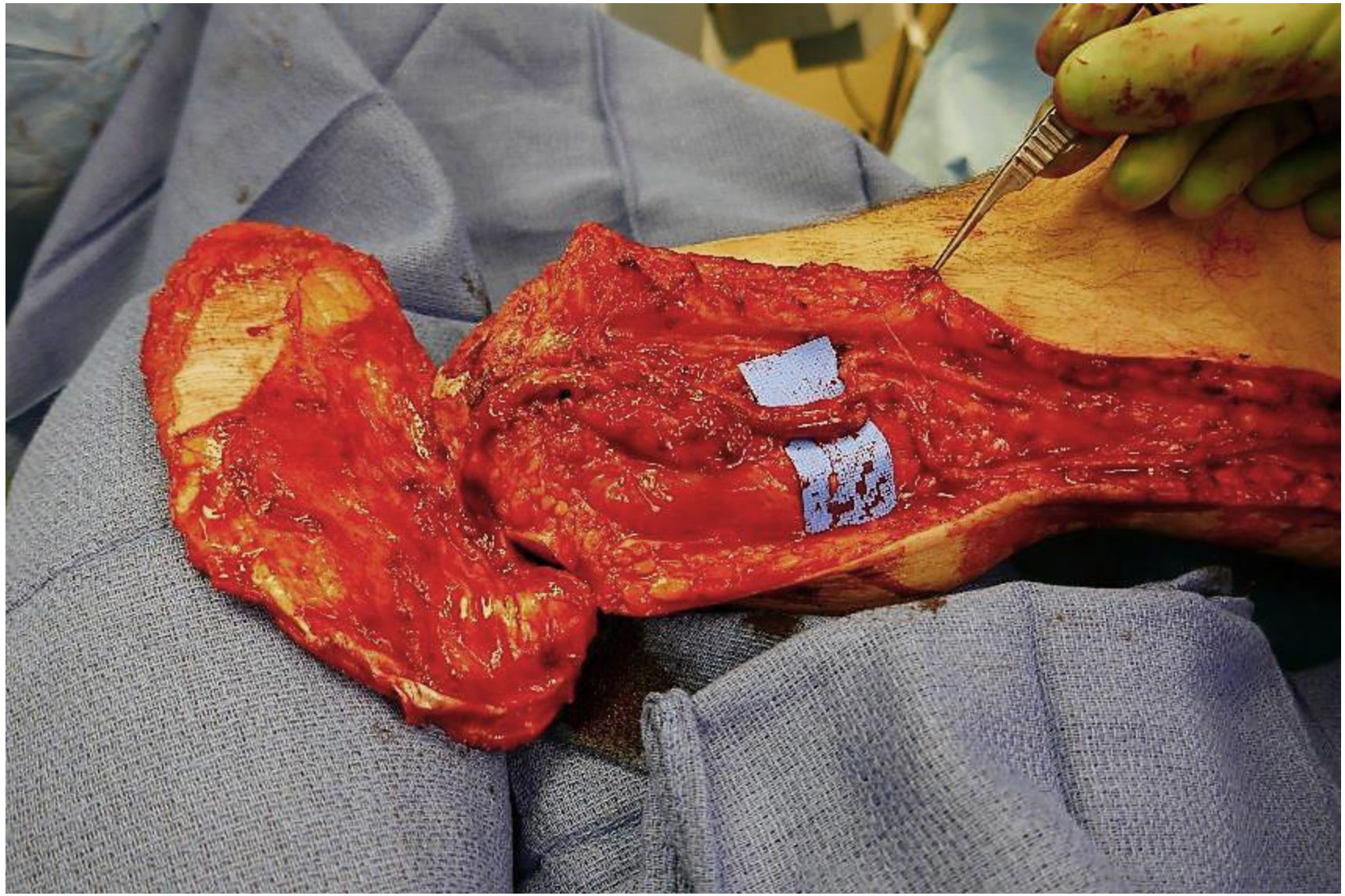


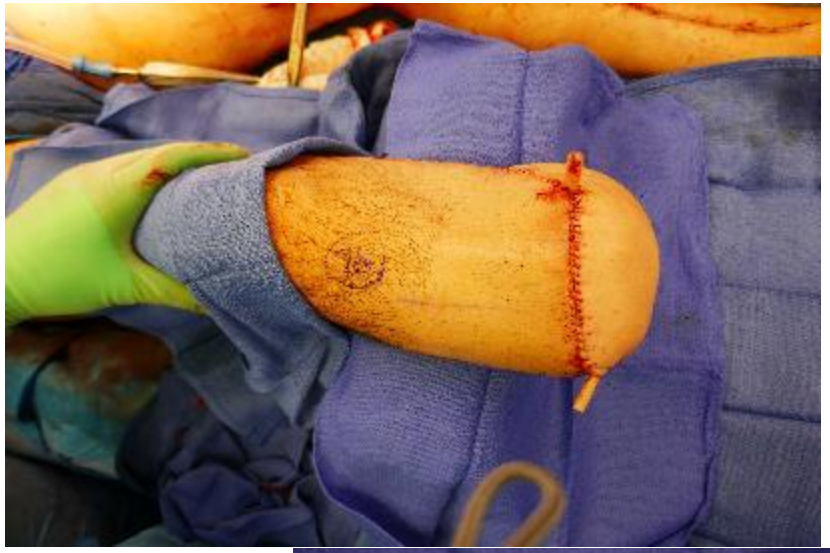
Case #6: Stump salavage







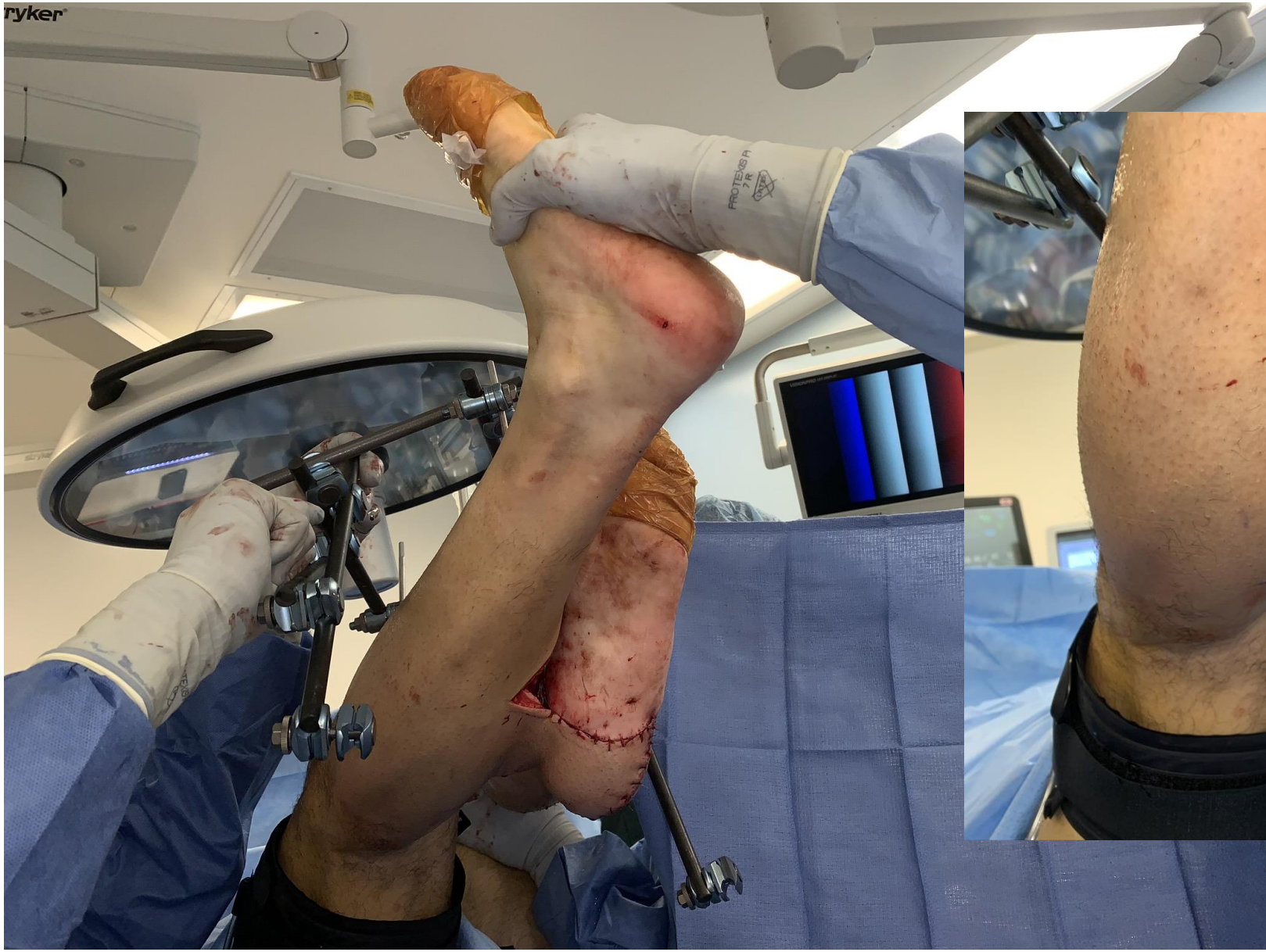




Bail out for failed free flap?

- 4 y/o M, motor vehicle rollover
- Degloving of right heel

- ALT to heel
- POD #6: flap with sudden increased congestion
- Returned to OR, attempted revision of microvascular anastomoses with vein graft, unsuccessful
- Hypercoag w/u: dx’d with DVT


ryker


Date
06/24/2021
Description
Click and drag to zoom.

Thank you