

WHY STAGE YOUR LIMB PRESERVATION SURGERIES?

Mario Ponticello DPM FACFAS FAPWCA
Chief, Limb Preservation Service
Madigan Army Medical Center
Tacoma WA
PNEC
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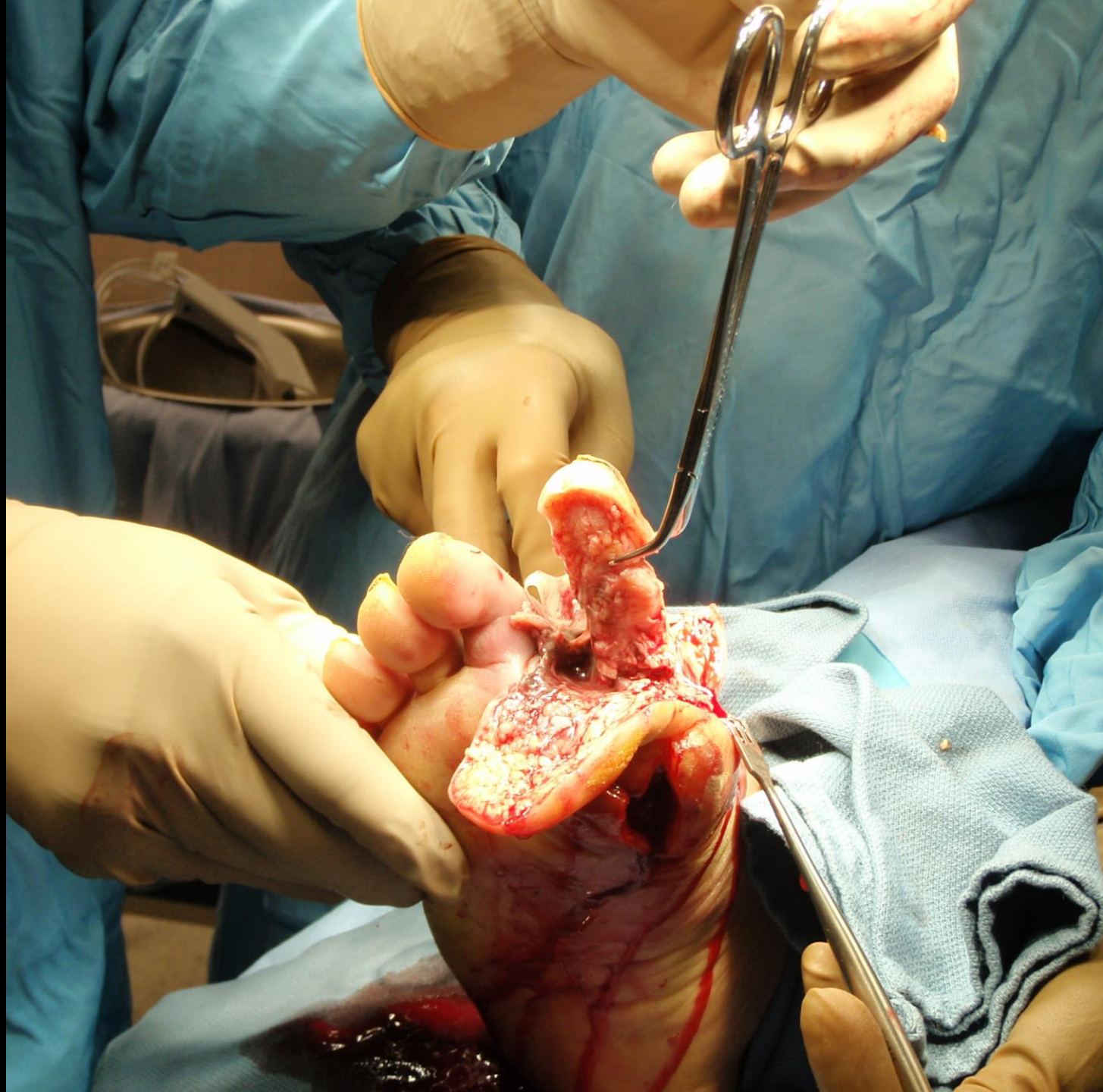


DISCLOSURES

- No financial disclosures
- The views expressed herein are my views and do not reflect the official policy of the Department of the Army, the Department of Defense or the U.S. Government

OBJECTIVES

- What does staged surgery entail?
- Discuss literature support for a staged surgical approach



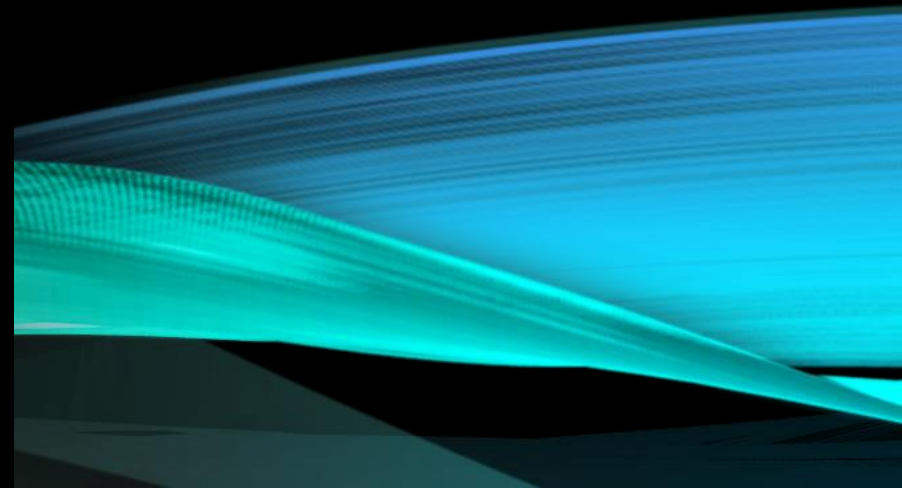


CAPOBIANCO, STAPLETON AND
ZGONIS. OCT 2010

“Limb salvage among the diabetic population, when feasible, can improve function with fewer inotropic cardiac effects than a major limb amputation.”



DO
WHAT
YOU
KNOW?



STAGED SURGERY

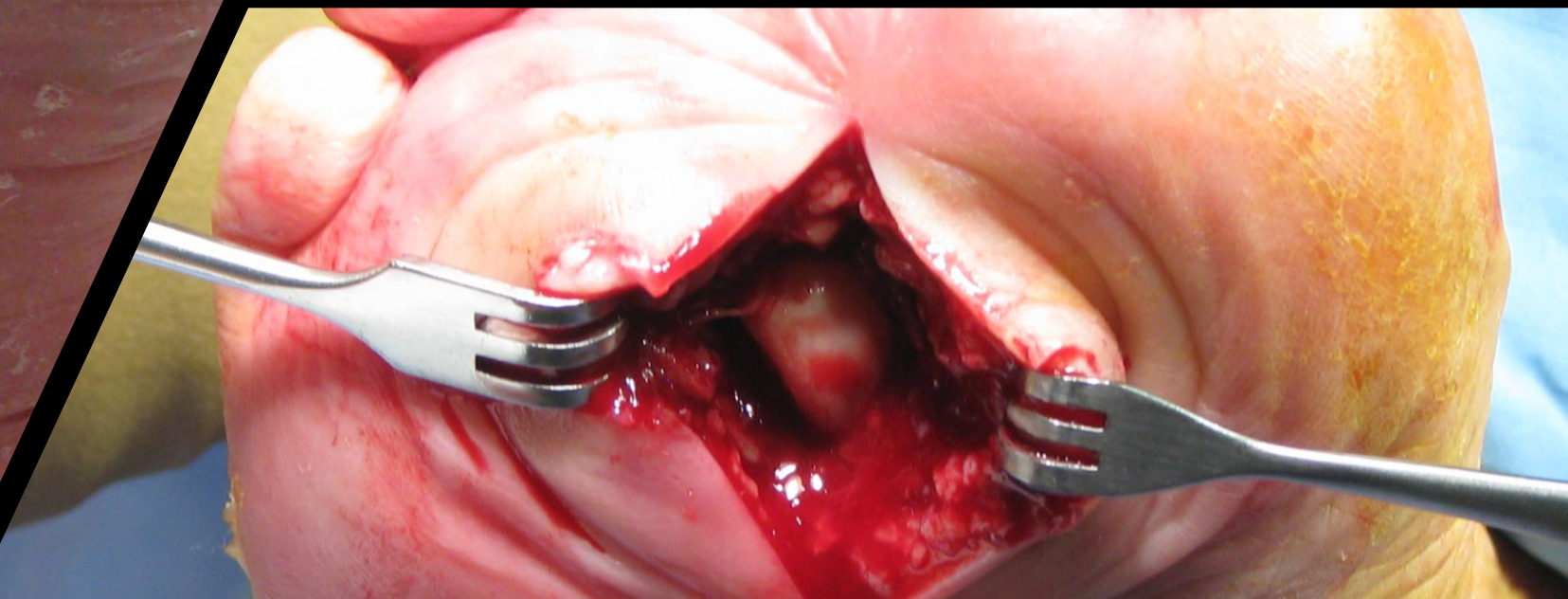
- Infection control
- Vascular assessment
- Reconstructive surgery

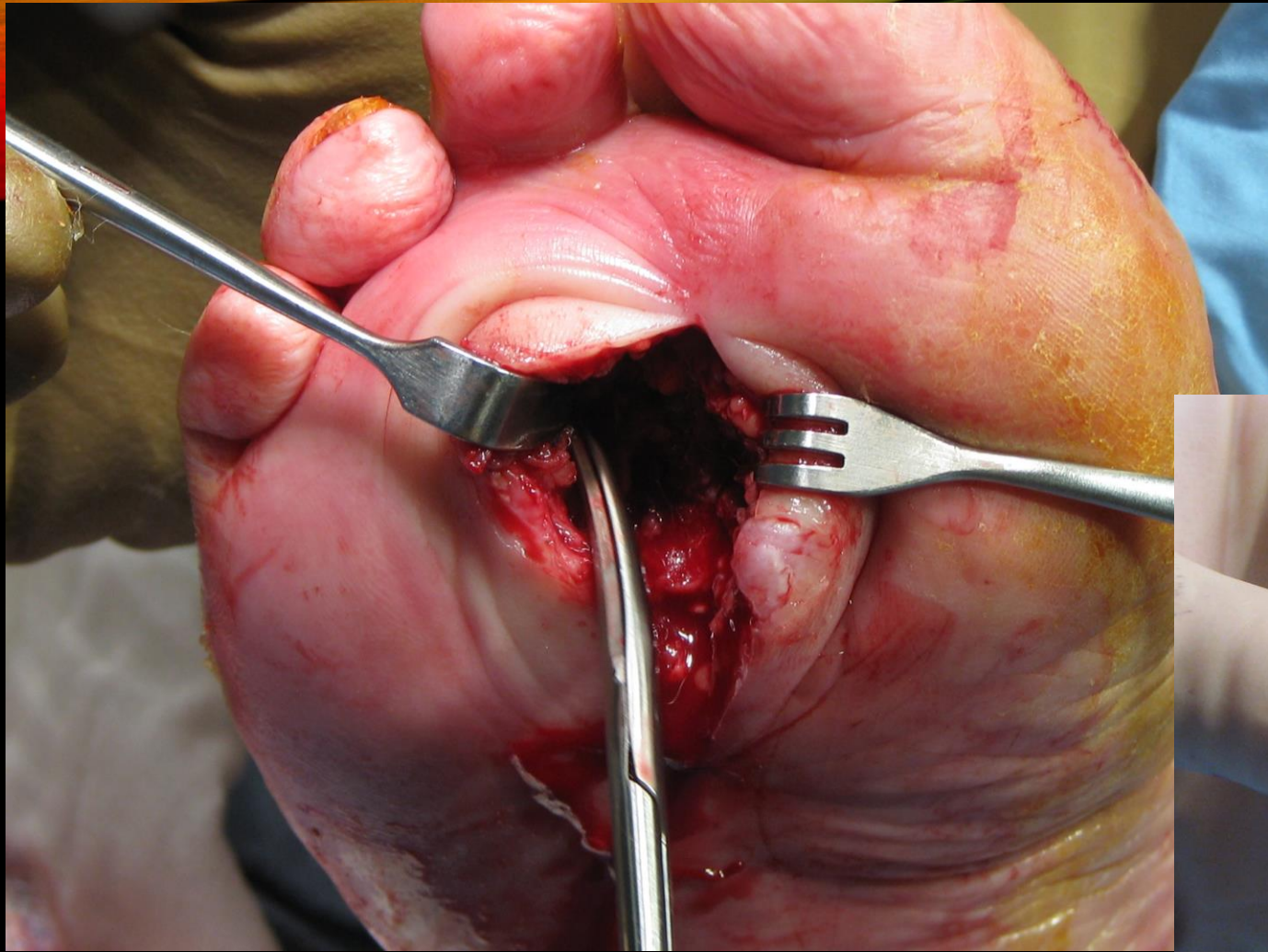


INFECTION CONTROL

- Infection control aids in medical stabilization
- Focus on the **Here and Now**, not the **What will Be**
 - Thorough examination of all involved tissues
 - Resection of **ALL** infected soft tissue and bone



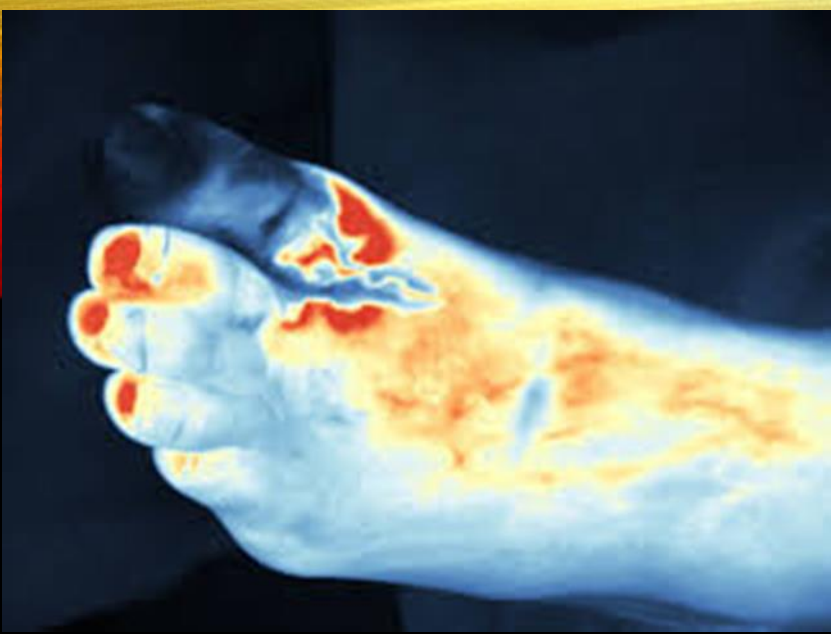




Debridement Completion

After 3 days of packing





VASCULAR ASSESSMENT

- Preoperative assessment
 - Palpation of pulses
 - Bedside doppler exam
- Intraoperative assessment
 - Gross tissue bleeding
 - Fluorescent angiography
- Postoperative assessment
 - ABI/TBI

**Vascular
Surgeon Consult**

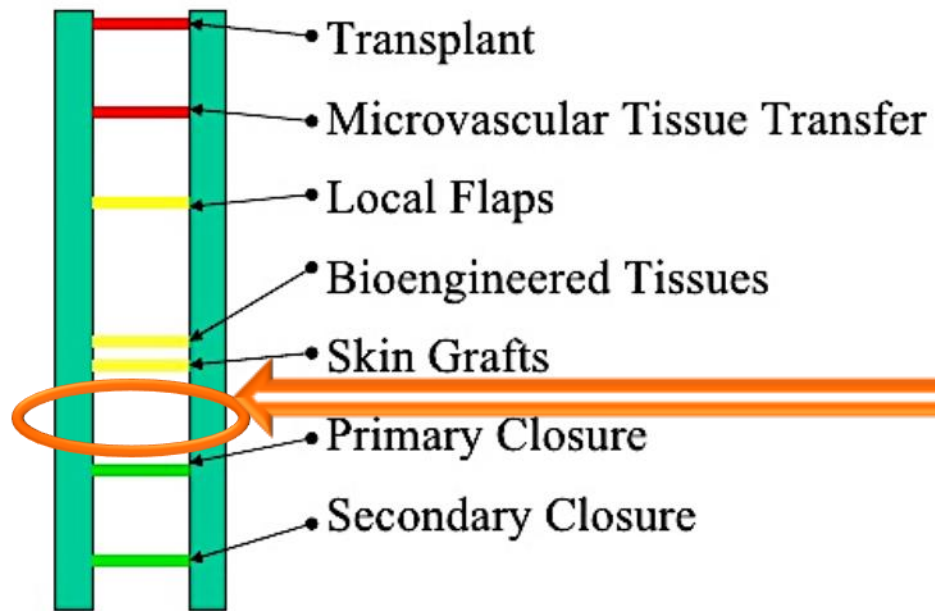
WHAT ELSE?

- Medical
 - Glucose control/Comorbidity management
 - Antibiotic administration
 - Discharge planning
- Surgical
 - Serial debridements
 - Bandage changes
 - Edema management
 - Immobilization
 - Offloading



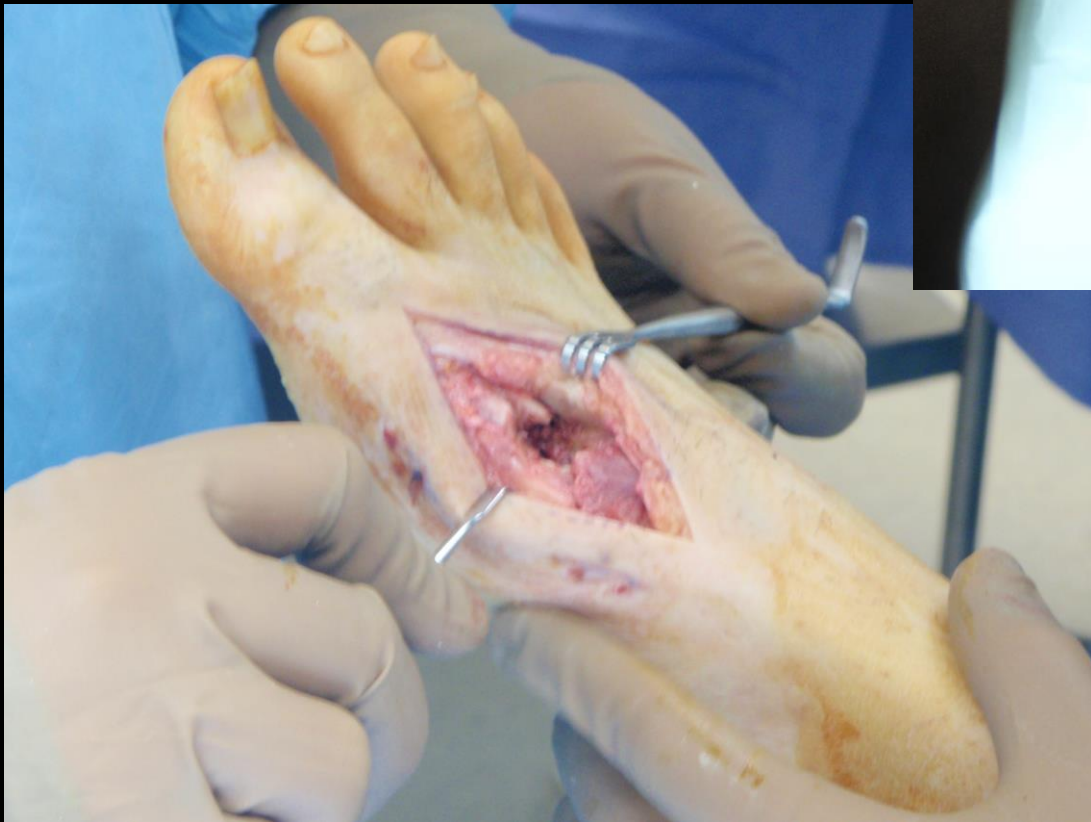
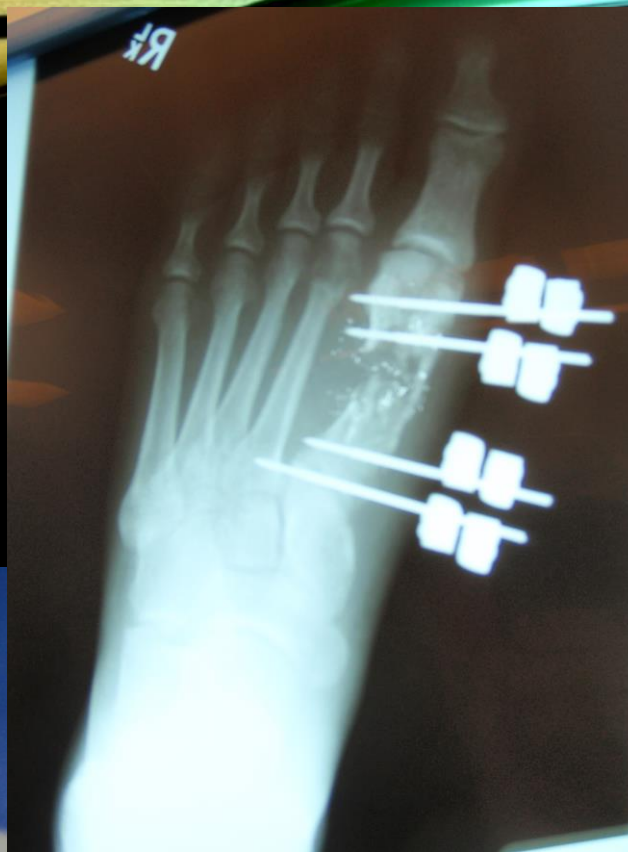
SOFT TISSUE RECONSTRUCTION

Reconstructive Ladder

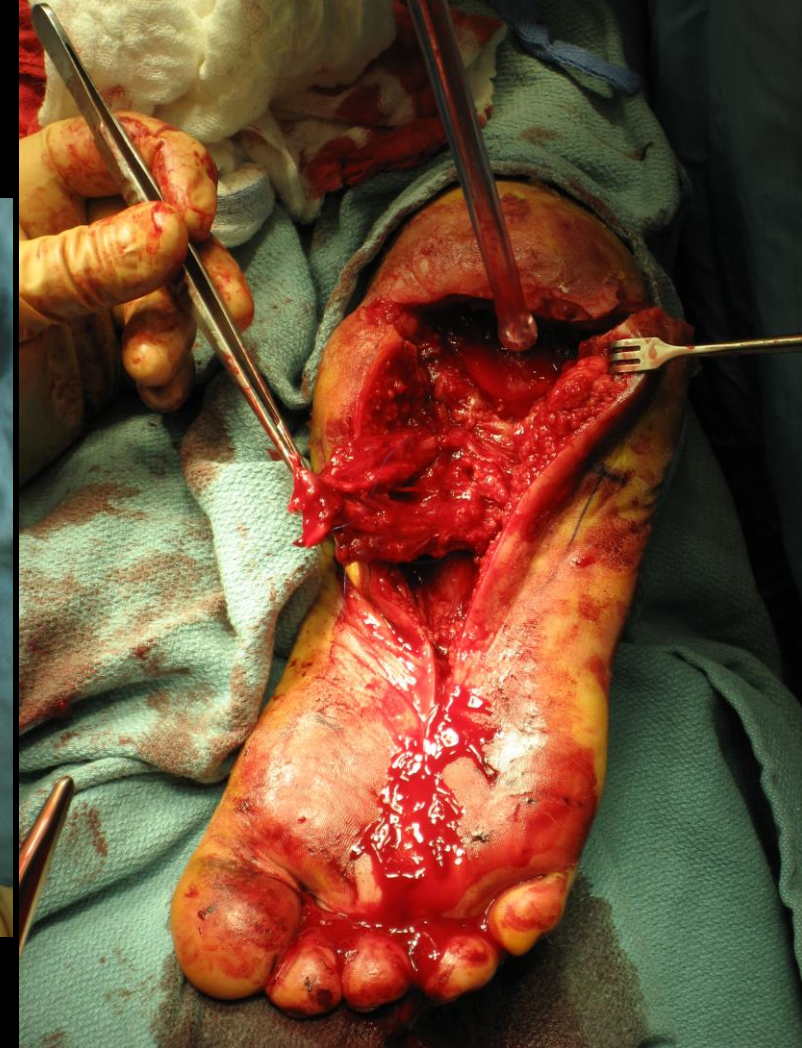


**Negative Pressure
Wound Therapy**

OSSEOUS RECONSTRUCTION



COMBINED RECONSTRUCTION



LITERATURE SUPPORT FOR STAGED SURGERY

- Silva et al., Annals of Vascular Surgery (2018)
 - One-stage amputations vs staged amputations
 - Retrospective
 - N=185 pts with critical limb ischemia (207 amputations)
 - 106 one-stage
 - 101 staged
- **Staged amputations had higher success rate, lower perioperative mortality rate, lower 30 day mortality rate**
- **The level of amputation was higher using the one-stage method**

LITERATURE SUPPORT FOR STAGED SURGERY

Berceli et al.(2006)

- Open amputations vs Staged amputations vs One-staged closed amputations
- Staged closure healed faster without negatively impacting the risk of major limb amputation

Fisher et al.(1988)

- One-stage vs Two-stage amputations
- One-stage amputations had more wound complications

Altindas et al.(2011)

- Staged transtibial amputations
- Risk of unnecessary tissue sacrifice and failure rate of the secondary transtibial amputation was reduced

OSTEOMYELITIS TREATMENT FAILURE

- Treatment failure of 20%-35%
- **Barshes et al.(2016)**
 - 184 cases of foot osteomyelitis with 23.4% were repeat offenders
 - 339 organisms were identified in total = 2.4 organisms per bone culture
 - E coli and Pseudomonus aeruginosa had increased treatment failures
 - MRSA was not associated with higher rates of treatment failure
 - Staged closure had lower rate of failure (p=0.01)
 - Severe PAD,PAD that was incompletely assessed, or occluded bypass grafts had higher rates of treatment failure

CONCLUSIONS

- Staged surgery for the infected diabetic foot has been shown to be a safe option that reduces risk for further return to the OR
- Vascular evaluation is key
- Proper source control is vital to the success of the process



LITERATURE CITED

1. Capobianco CM, Stapleton JJ, and T Zgonis. Surgical Management of Diabetic Foot and Ankle Infections. 2010. *Foot and Ankle Specialist*; 3(5):223-230.
2. Silva LR et al. Results of One-Stage or Staged Amputations of Lower Limbs Consequent to Critical Limb Ischemia and Infection. 2018. *Annals of Vasc Surg*; 46:218-225.
3. Barshes NR et al. Treatment Failure and Leg Amputation among Patients with Foot Osteomyelitis. 2016. *Int J Lower Extremity Wounds*; 15(4):303-312.