Biomechanical Considerations in Limb Salvage Surgery

APMA "The National" 2019

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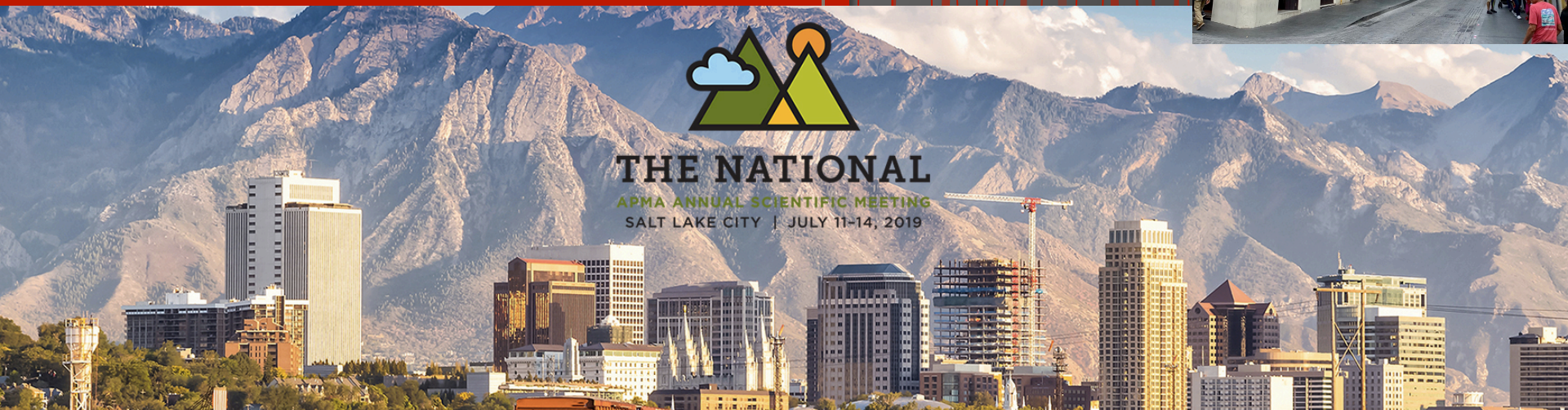
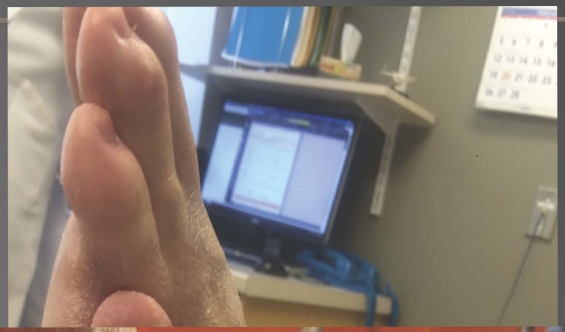


BARRY UNIVERSITY
PODIATRIC MEDICINE

VE RI TAS
HARVARD

"The diabetic foot is like a forest in a drought: stable to superficial inspection, but prone to rapid destruction if a spark occurs…"

-M. Sykes



Iceberg, right ahead!

Key Topics

- Gait cycle
- Offloading Principles
  - Felted Foam | Crest Pads | DME (shoes, orthotics, boots) | CROW | TCC
- Equinus
  - Gastroc vs TAL
- Flexor Tenotomies
- Tendon Procedures & Transfers
- Soft Tissue Balancing
- Osseous Procedures
  - Fusions |Amputation Principles | Osteoclasis

- Diabetes
- Neuropathy
- Vascular Assessment
- Infection Management

Deformities & Musculoskeletal Exam

- Hammertoes
- Bunions
- Valgus/Varus
- Cavus
- Bony Prominences
- Equinus
- Contractures
- Planes
- Limb Length Discrepancy
- Muscle grade

Ulcer Management

- Infection control
- Adequate vascular perfusion
- Adequate nutrition
- Elimination of pressure
  - Appropriate debridement
  - Offloading
  - Weight-bearing

Digital Amputations

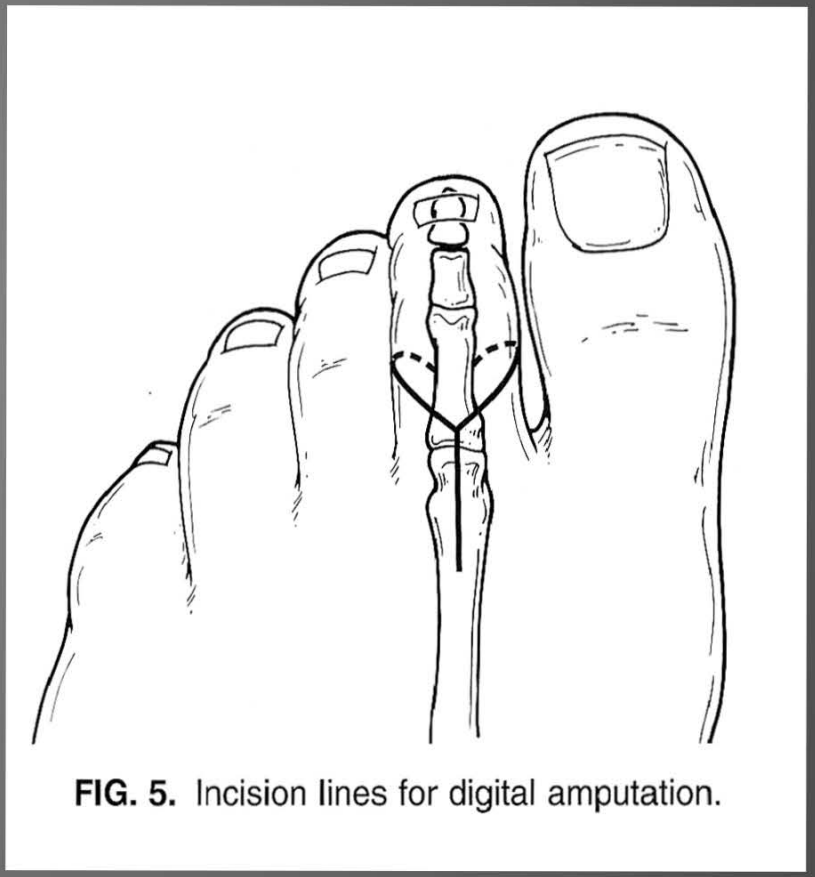
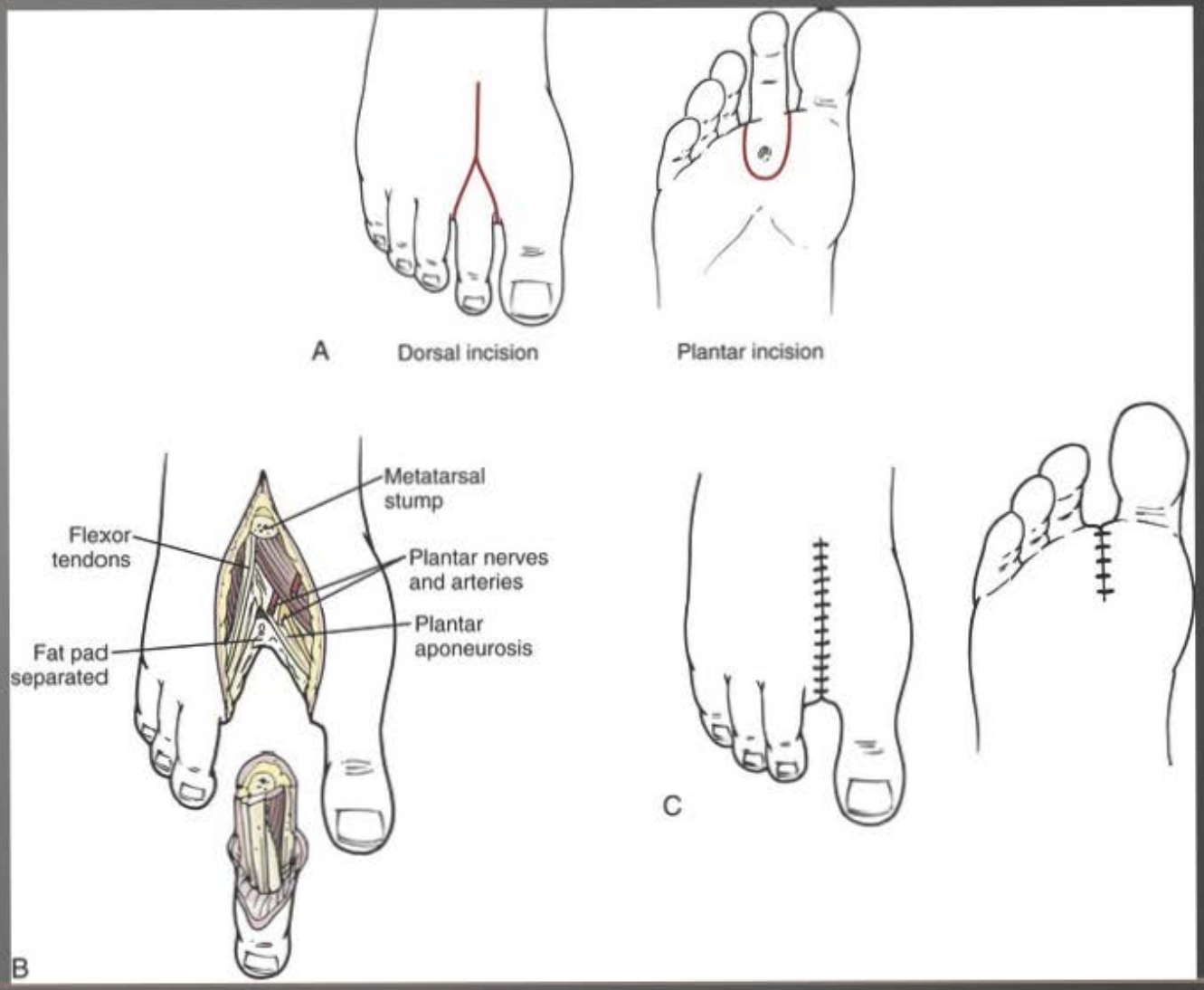


FIG. 5. Incision lines for digital amputation.

Ray Resections



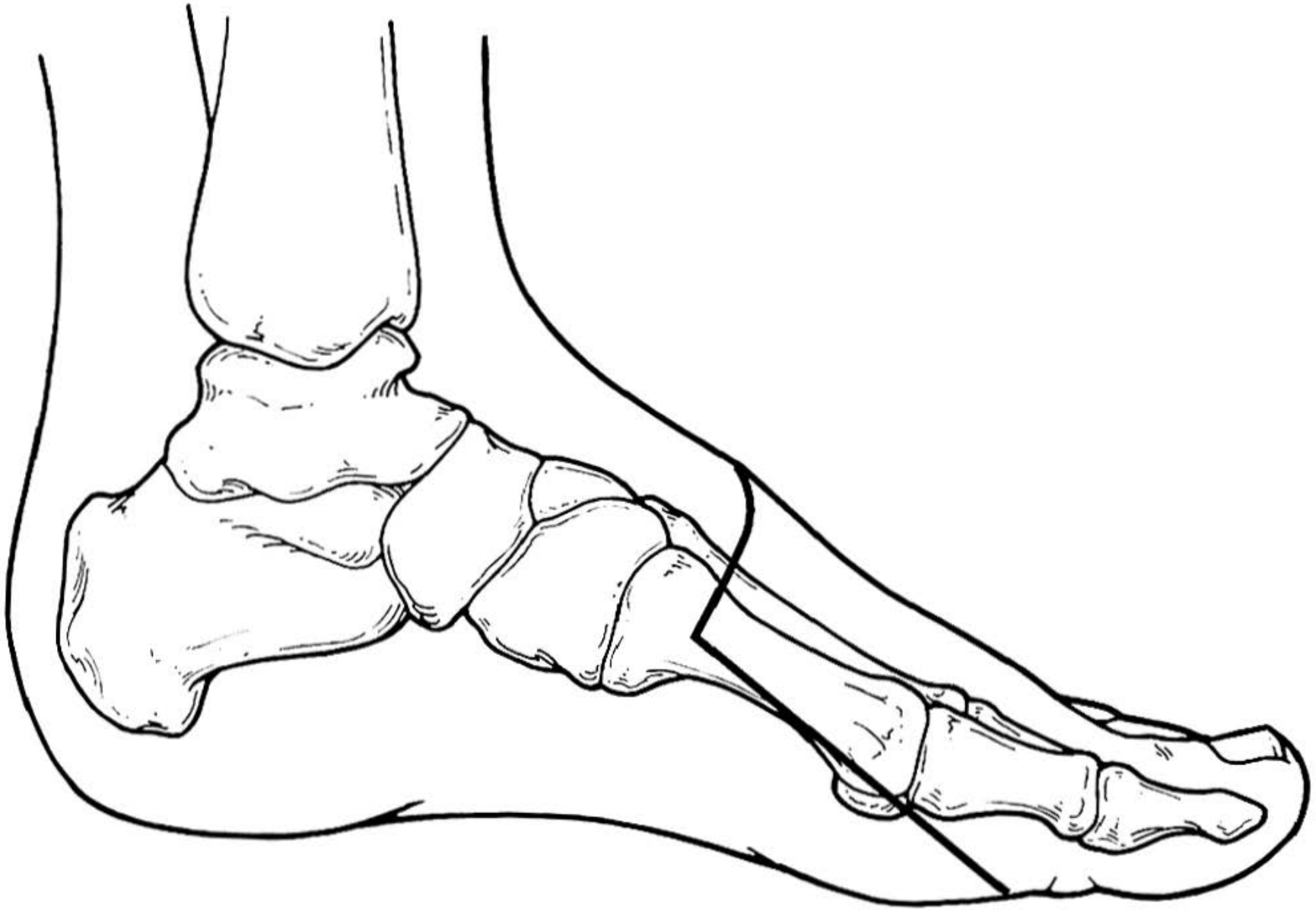


FIG. 7. Incisions for transmetatarsal amputation.

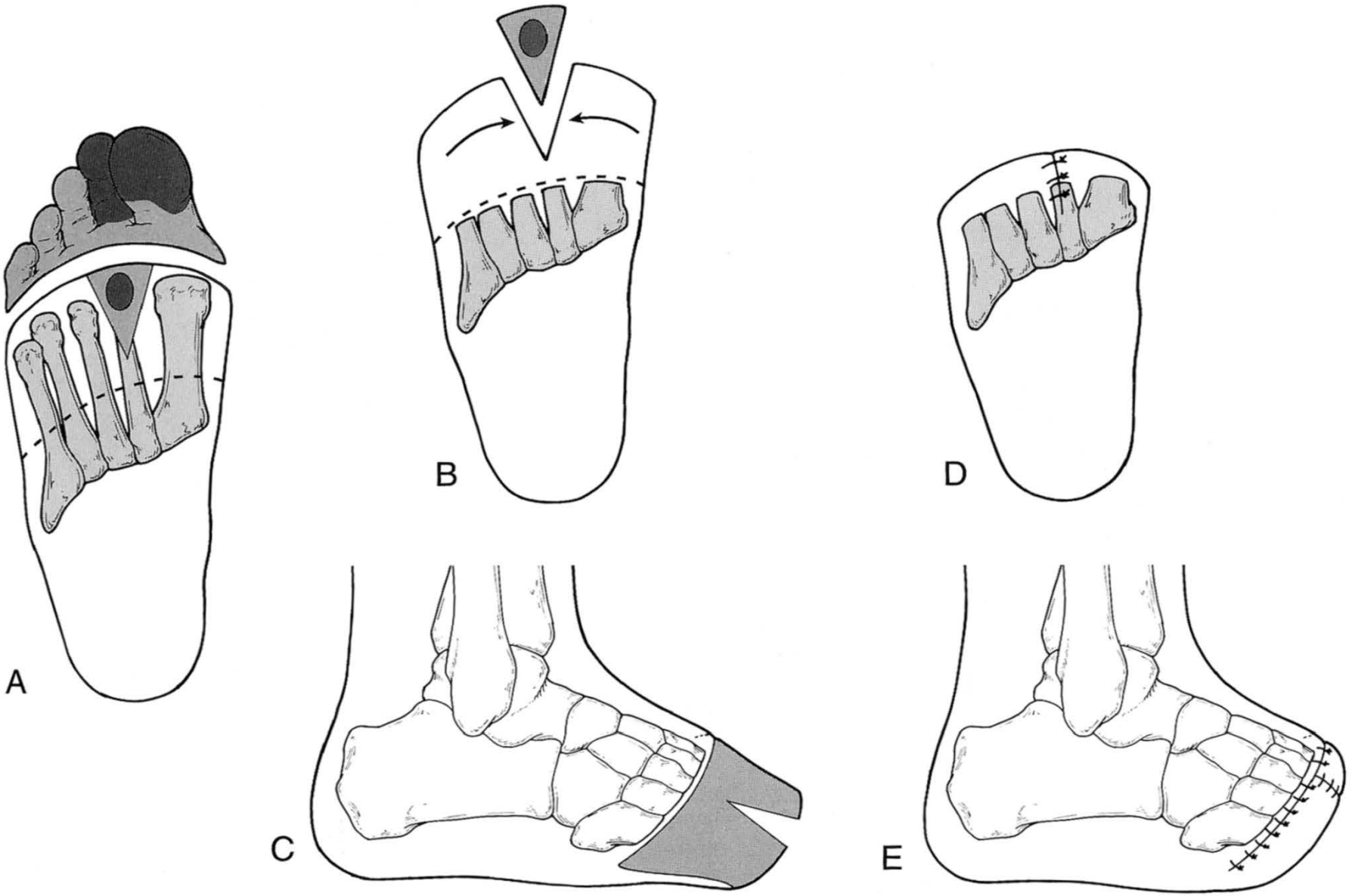


FIG. 8. A–E: Sanders method for preservation of the transmetatarsal flap in the presence of plantar ulceration. (Redrawn from Sanders LJ. Transmetatarsal and midfoot amputations. *Clin Podiatr Med Surg* 1997;14:741–762, with permission.)

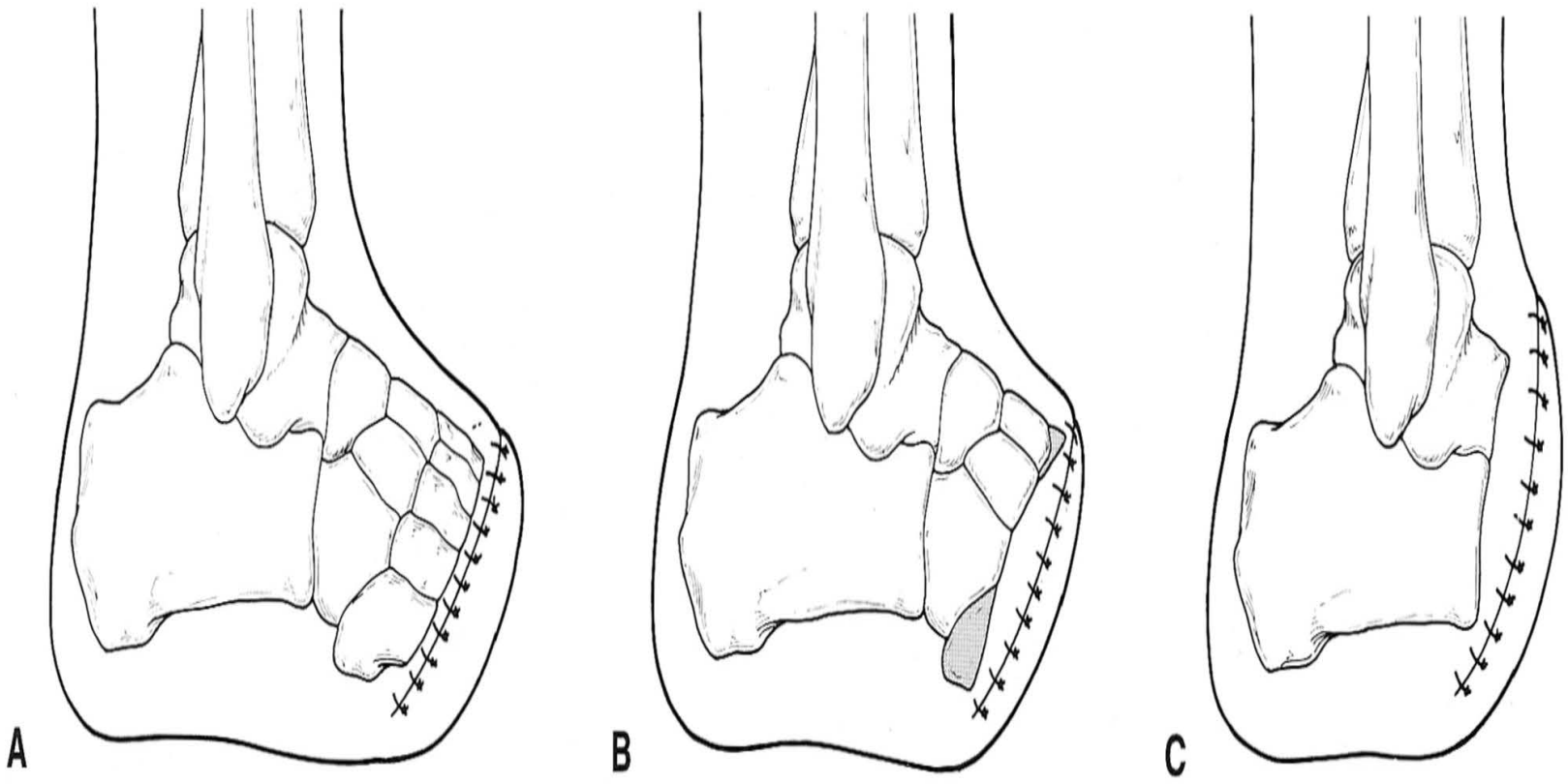
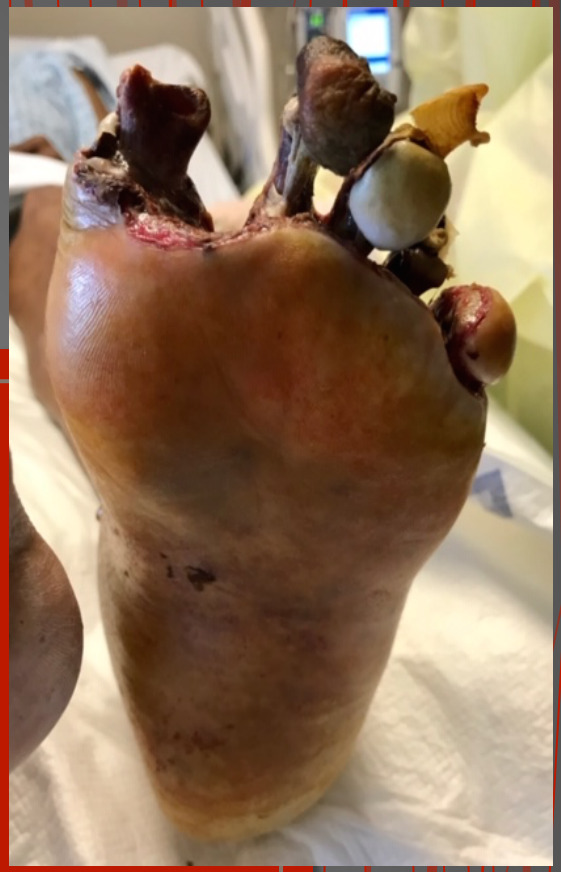
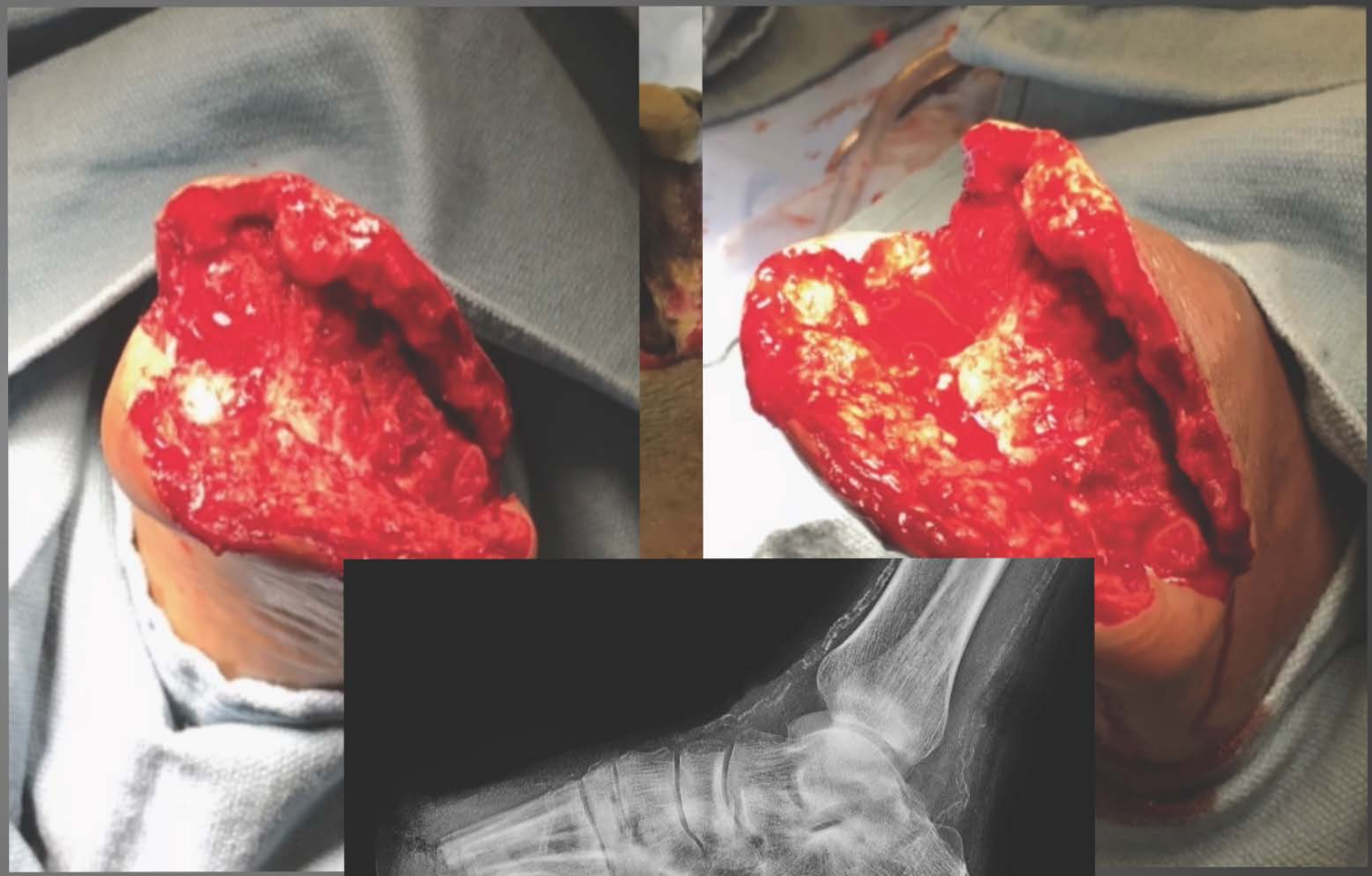


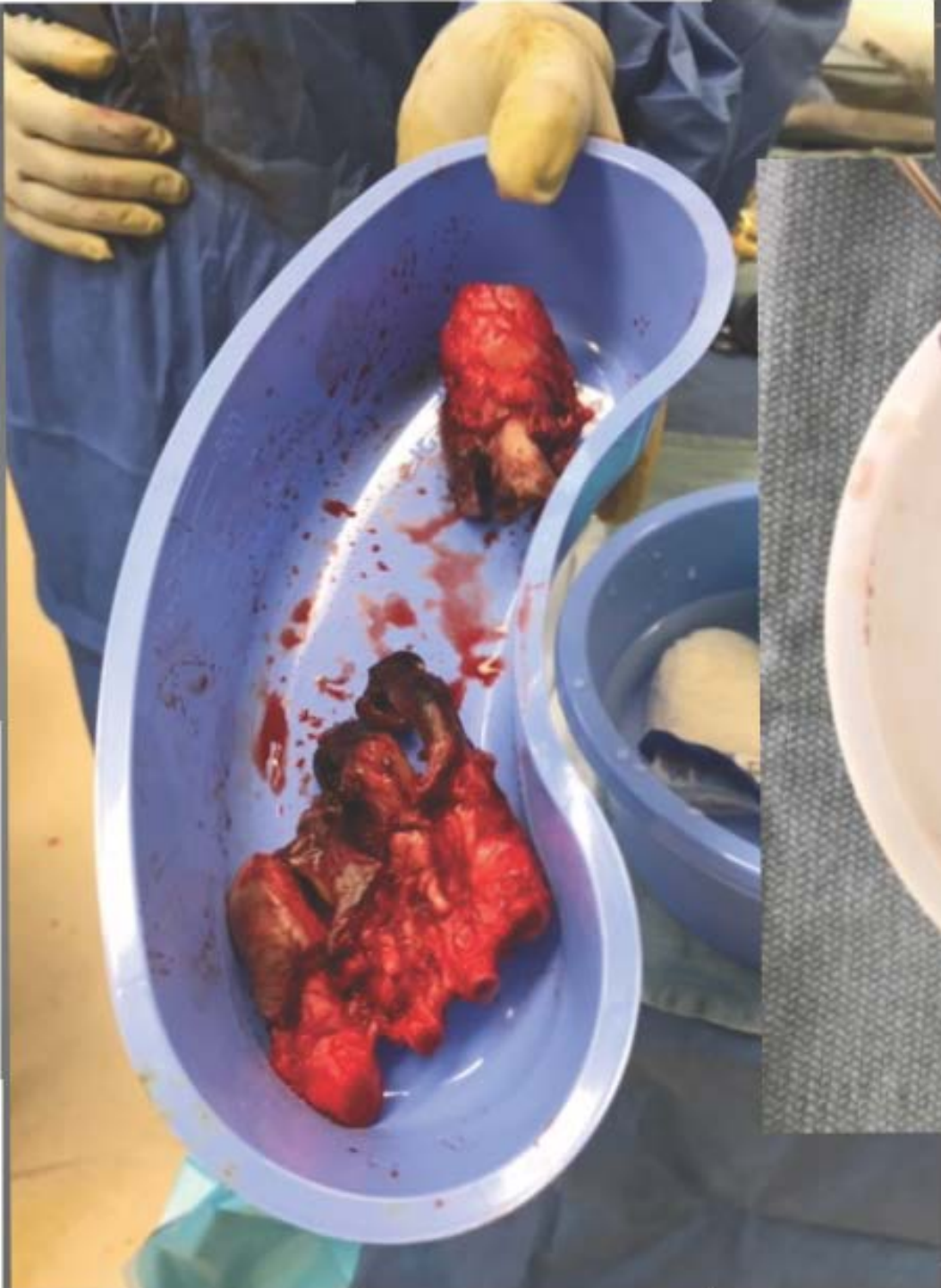
FIG. 9. A: Transmetatarsal amputation. **B:** Lisfranc's amputation. **C:** Chopart amputation.

J.L.

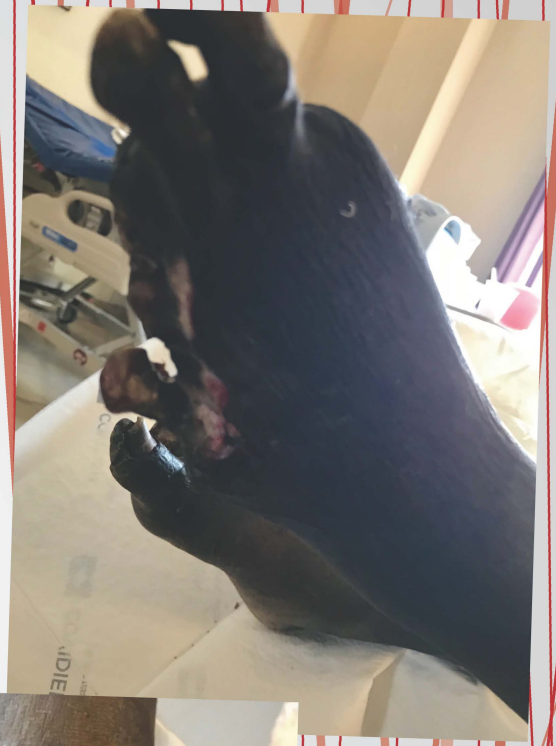
Open Transmetatarsal Amputation

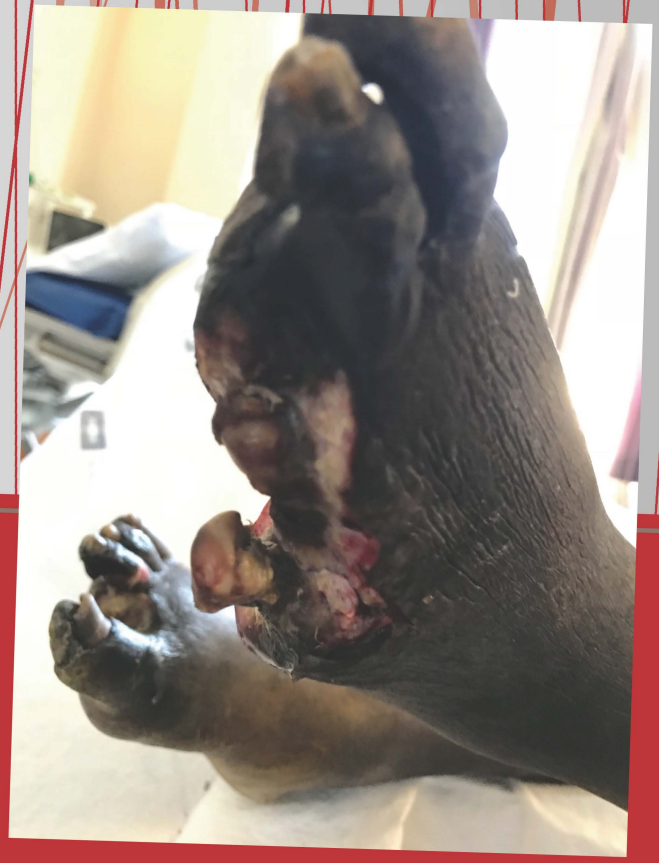




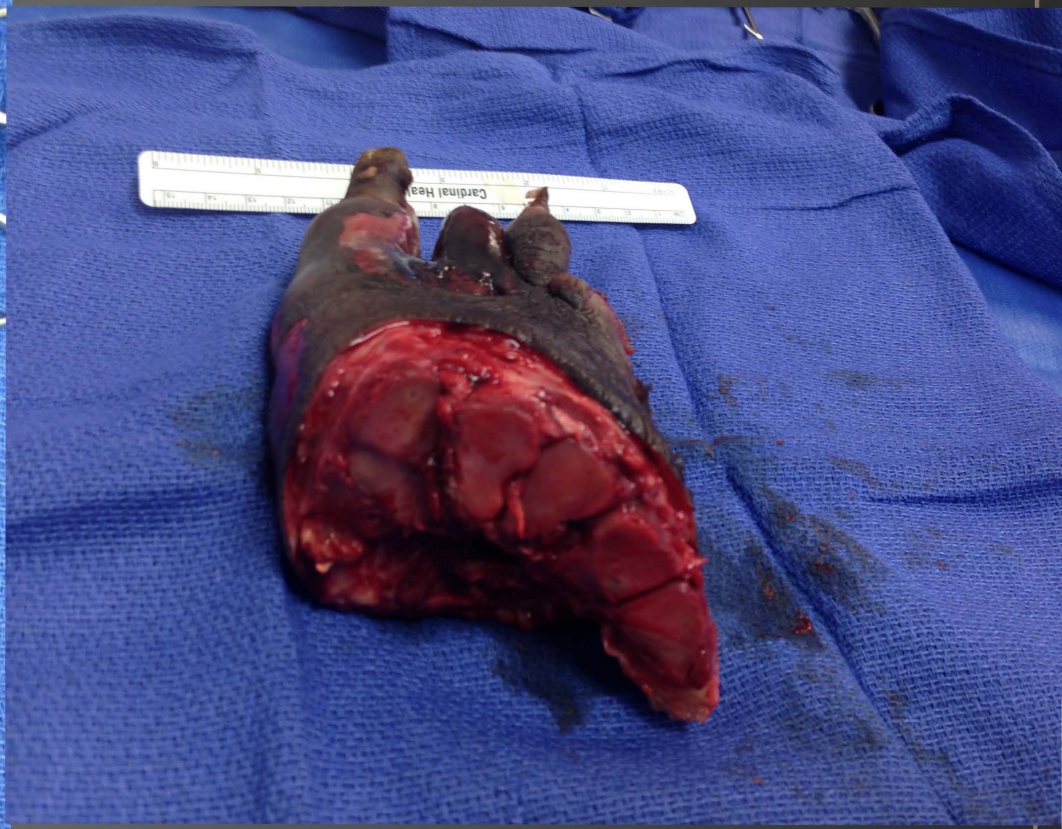


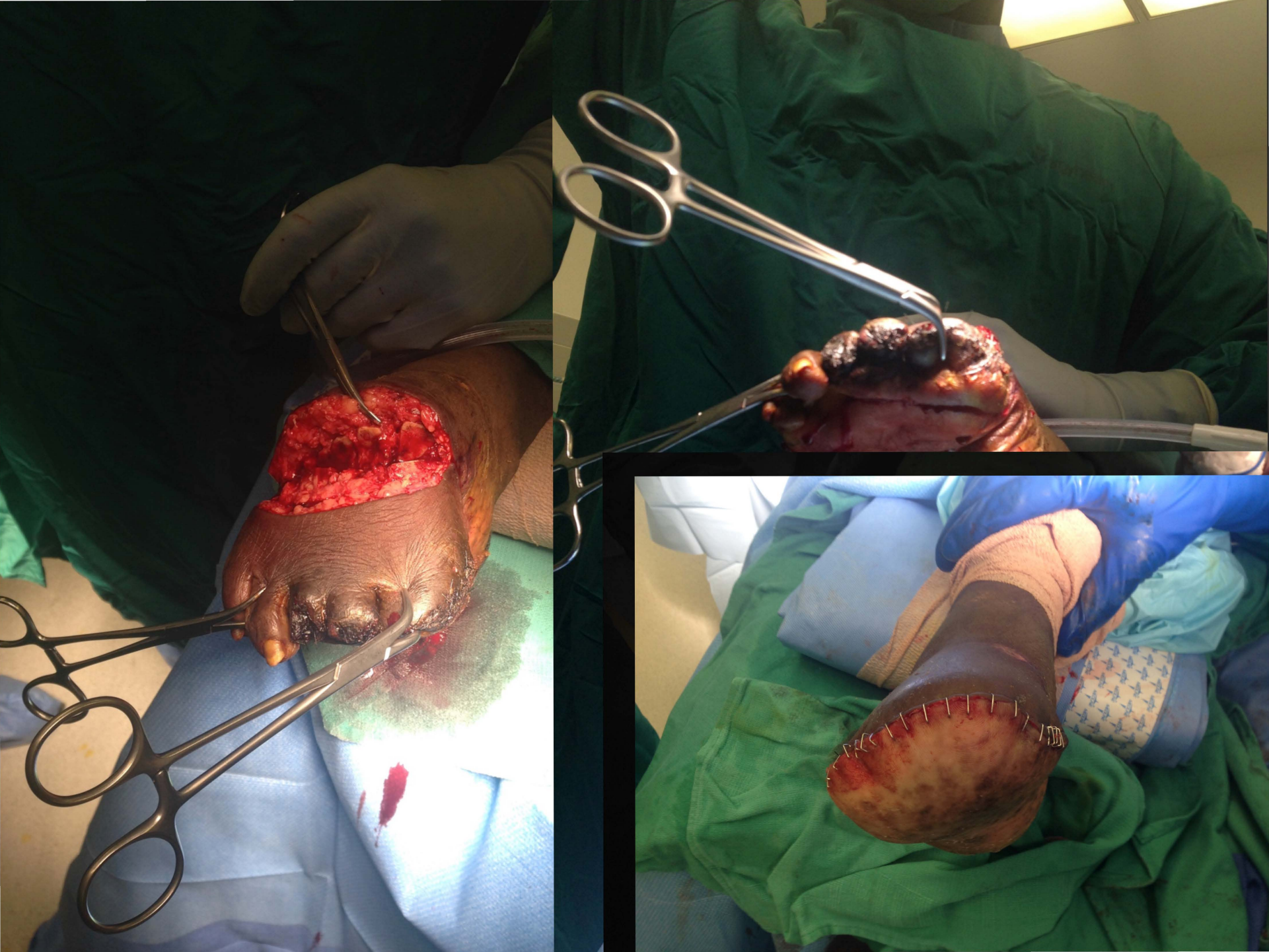
N5
N6

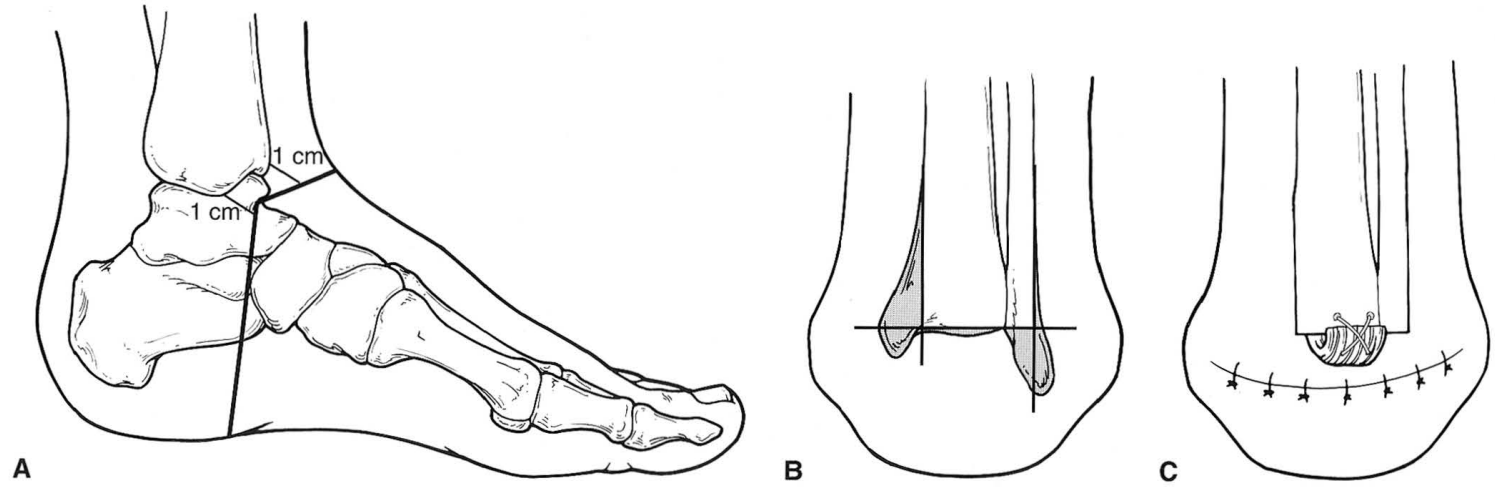




RIGHT







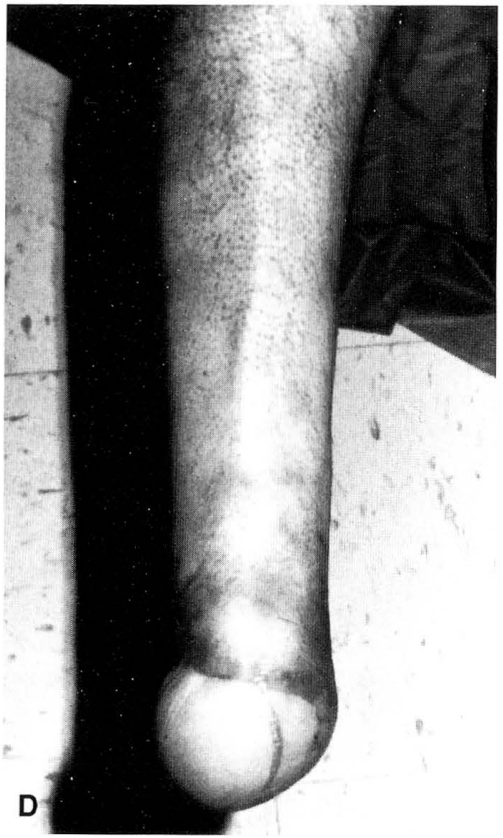


FIG. 10. A: Incision for Syme's amputation. **B,C:** Pinzur-Smith technique for one-stage Syme's amputation, with the Achilles tendon secured to tibia after remodeling of distal tibia and fibula. **D:** Healed Syme's amputation.

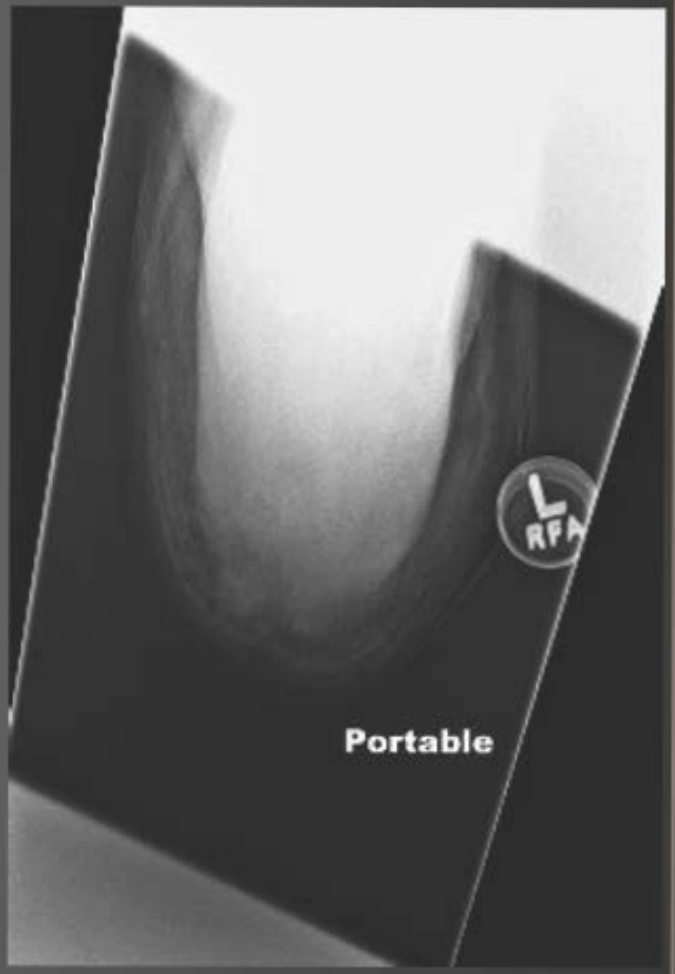
COVID

R.G.

Family

Bedside IGD

Partial Calcanectomy


Portable

Ulcers 2nd met with equinus – 2nd met osteoclasis, perc TAL, and flexor tenotomies 2,3,4,5

VAYNE
VPo
FOV: 34.87
MAG:

s/p hallux amputation -> ulcer sub 1st met head

Tx: met head resection, sesamoid apparatus resection, TAL, peroneus longus tendon tenotomy

Open evaluation of the Hoke's triple hemisection demonstrates that overlengthening and rupture can easily occur during the procedure

SUMMARY

- Preventive Care | Early Treatment & Detection
- LIMB THREATENING| LIFE THREATENING
- Anatomy | Dissection |Respect Tissue Planes | Be Aggressive
- Infection Control | Wound Care | Proper Offloading & Devices
- Multidisciplinary approach and team work
  - Seek help if needed!
- Medical management and emergencies
- Communication | Goals | Expectations | PATIENT EDUCATION
- Healed and maintenance

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