OSTEOMYELITIS

Current treatments and Case Review

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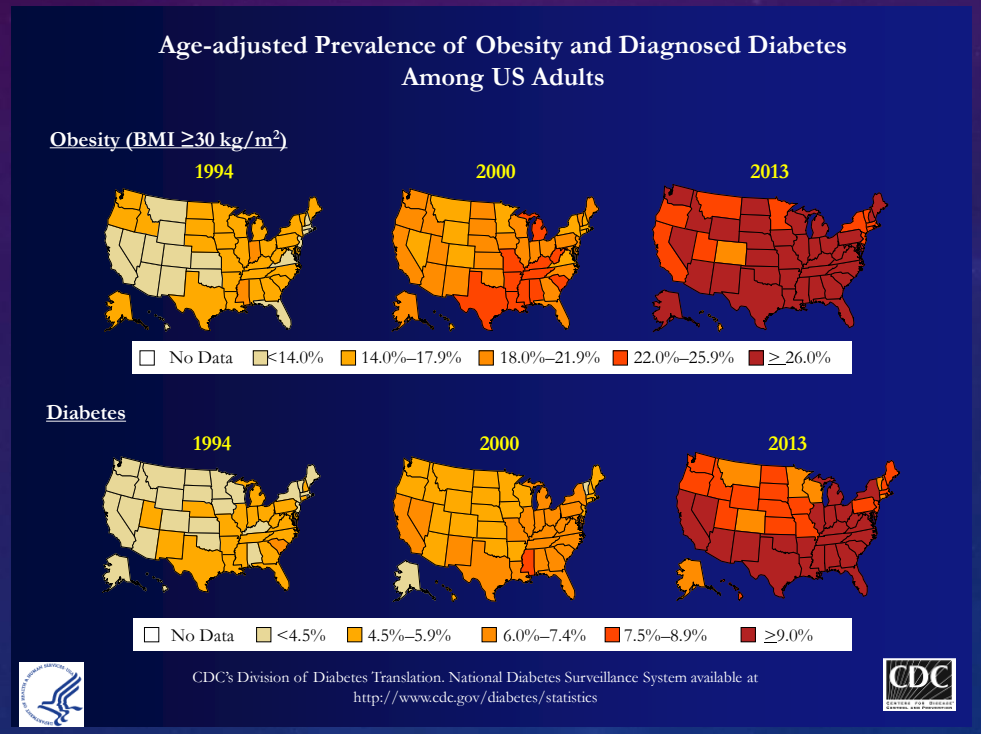
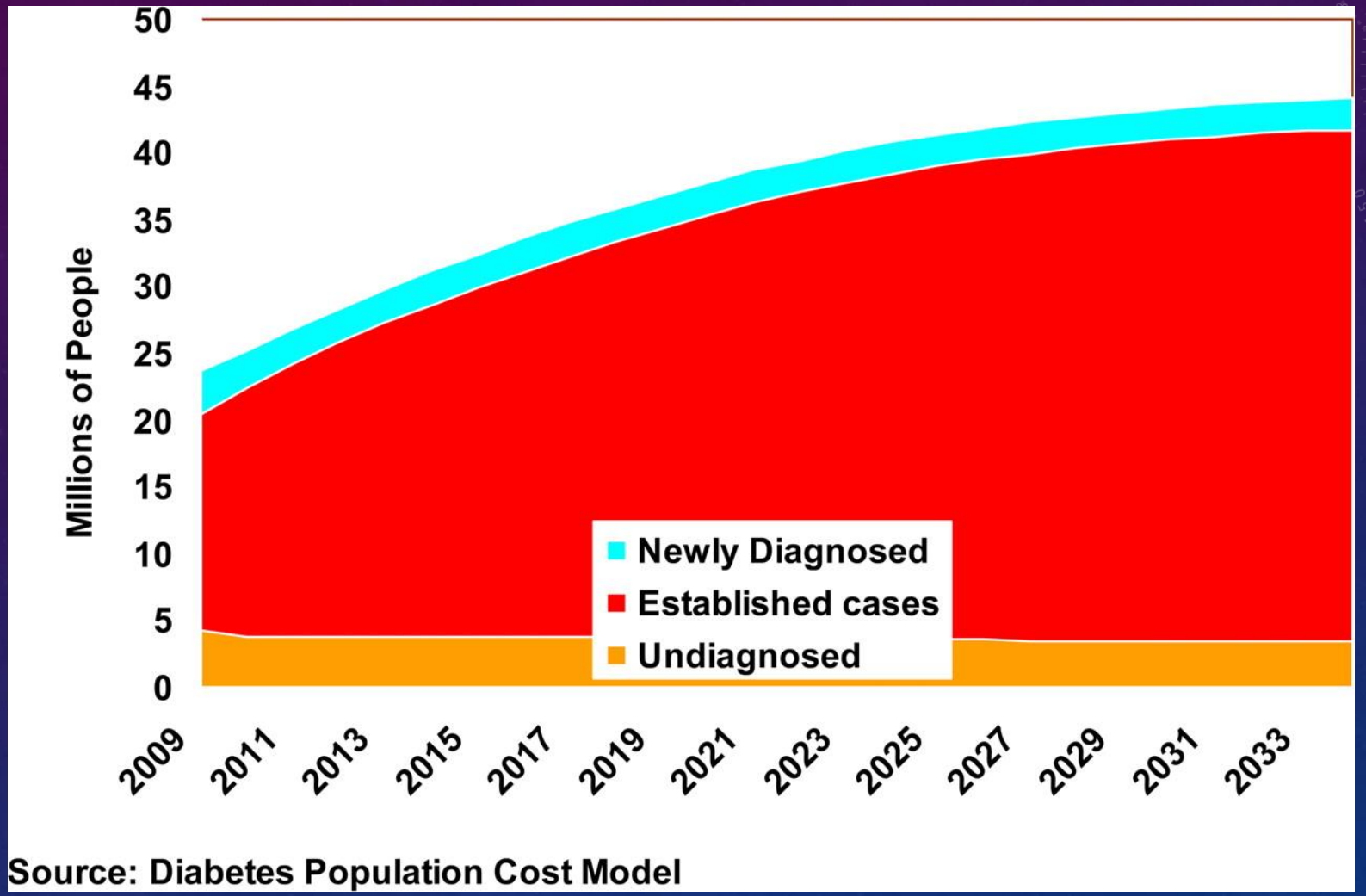
DISCLOSURES

ELLIS MEDICINE

OBESITY AND DIABETES TRENDS



Projected distribution of newly diagnosed, undiagnosed, and established cases of diabetes, 2009–2034.



Source: Diabetes Population Cost Model

Elbert S. Huang et al. Dia Care 2009;32:2225-2229

American Diabetes Association.

ACUTE OSTEOMYELITIS

- Pus from Aspiration
- Positive Cultures from Bone or Blood
- Presence of Classic Signs or Symptoms
  - Redness, warmth, swelling, pain, tenderness
- Radiological signs consistent with Osteomyelitis(2)

OSTEOMYELITIS

Subacute

- Brodie's Abscess
- Lack of constitutional Symptoms
- Likely to respond to Antibiotics

OSTEOMYELITIS

Chronic

- Bone Sequestrum
- May or may not have pus
- Likely surrounding infected soft tissues
- Likely x-ray findings

WORK UP

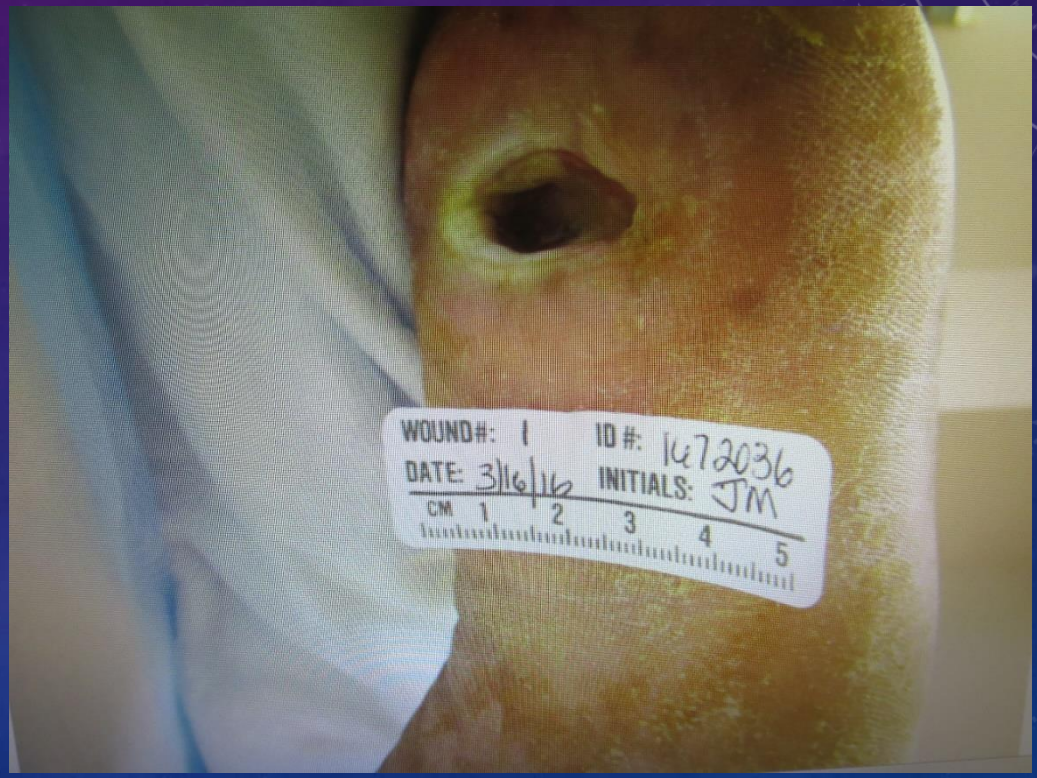
- CBC with Diff – Left shift
- CMP
- ESR, CRP
- Lactic Acid
- Procalcitonin
- Culture and Sensitivity
- Pulse Volume Recordings
- Probe to Bone Test

RADIOGRAPHY

- X-ray 43%-75% sensitivity; 75%-83% specificity Bone changes in 1-2 weeks
- MRI 82%-100% sensitivity; 75%-96% specificity Bone changes in 3-5 days
- CT scan when MRI is contraindicated
- Nuclear Medicine good sensitivity; mixed specificity
- Probe to Bone test

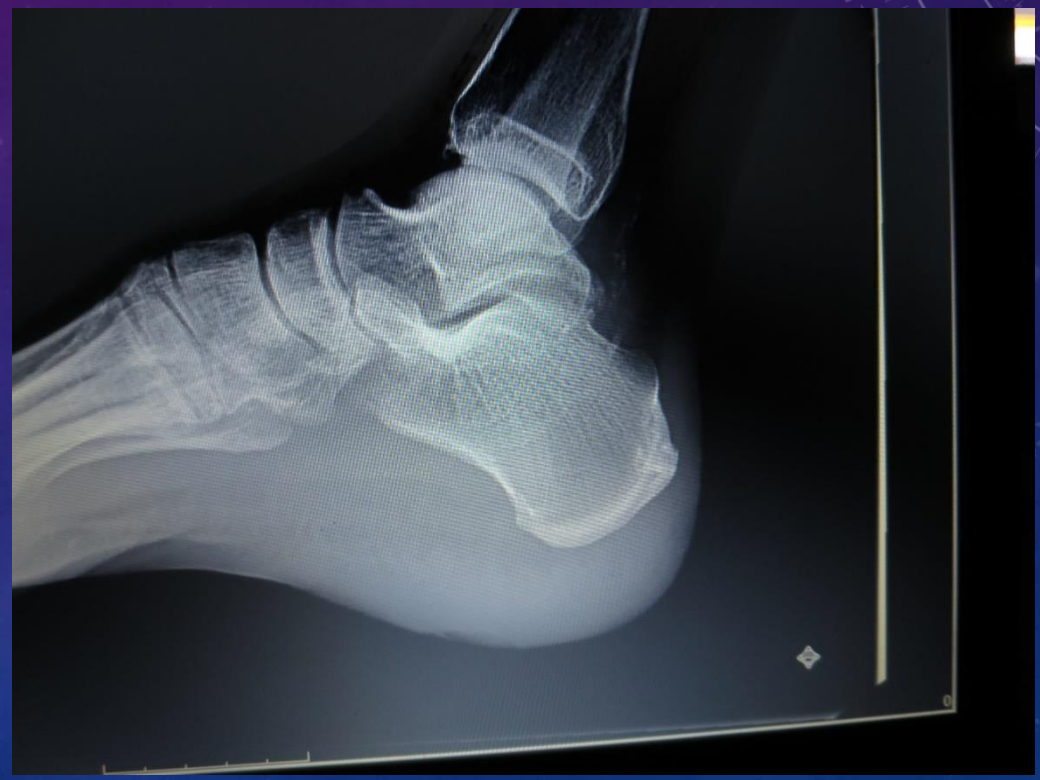
CASE STUDIES

- J.M. DOB 9/27/55
- 12/15/15 60 y/o Guyanese male admitted for infected Right heel S/P puncture wound to Right heel 17 days prior. Treated with parenteral antibiotics in native country
- PMH: IDDM, HTN
- MEDS: Insulin
- NKDA
- Social: Non smoker



J.M. DOB 9/27/55

- WBC 10,300
- H/H 11.7/36.4
- ESR 80 (0-20)
- CRP 7.4 (<0.29)
- Lactate Venous 1.6
- Cr 1.33/GFR 55
- CT w/o Contrast: No Osteo

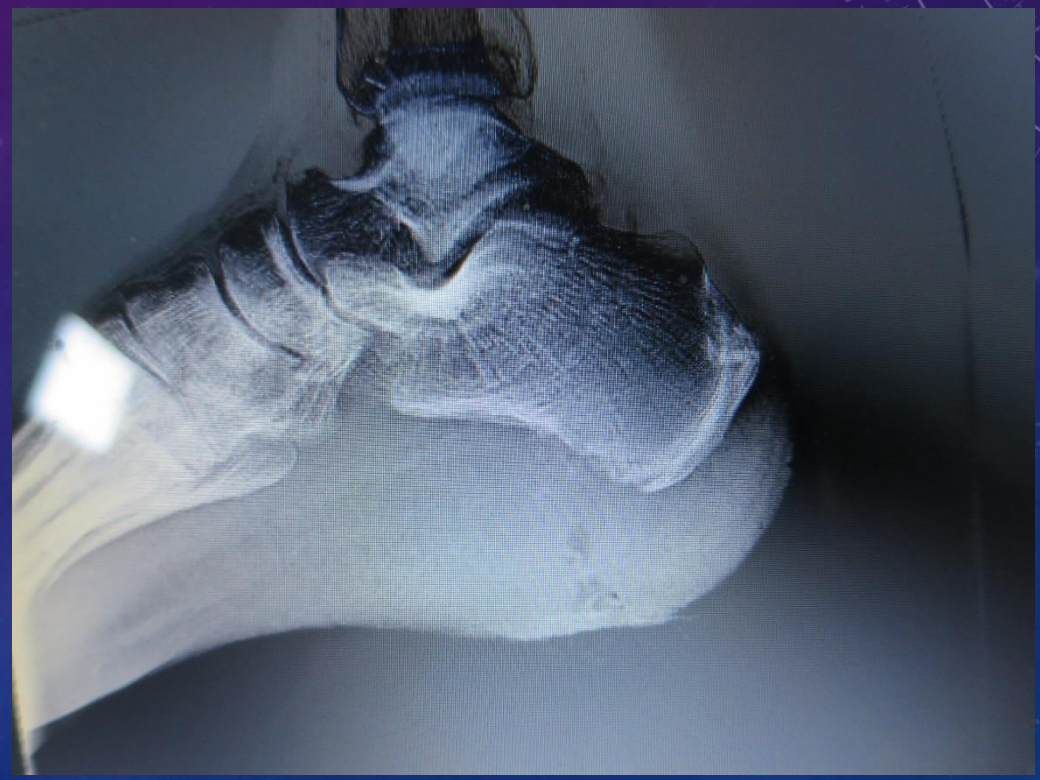


J.M. DOB 9/27/55

- 12/17 UNDERWENT I&D, BONE BIOPSY IN OR
  - C&S GREW MRSA, E.COLI, KLEBSIELLA PNEUMONIAE
  - PATH: BENIGN BONE WITH NO ACUTE OSTEOMYELITIS AND FEATURES CONSISTENT WITH CHRONIC OSTEOMYELITIS
  - IV DAPTOMYCIN, INVANZ X 42 DAYS VIA PICC LINE IN INFUSION CENTER
  - LOCAL WOUND CARE EVERY 2 WEEKS

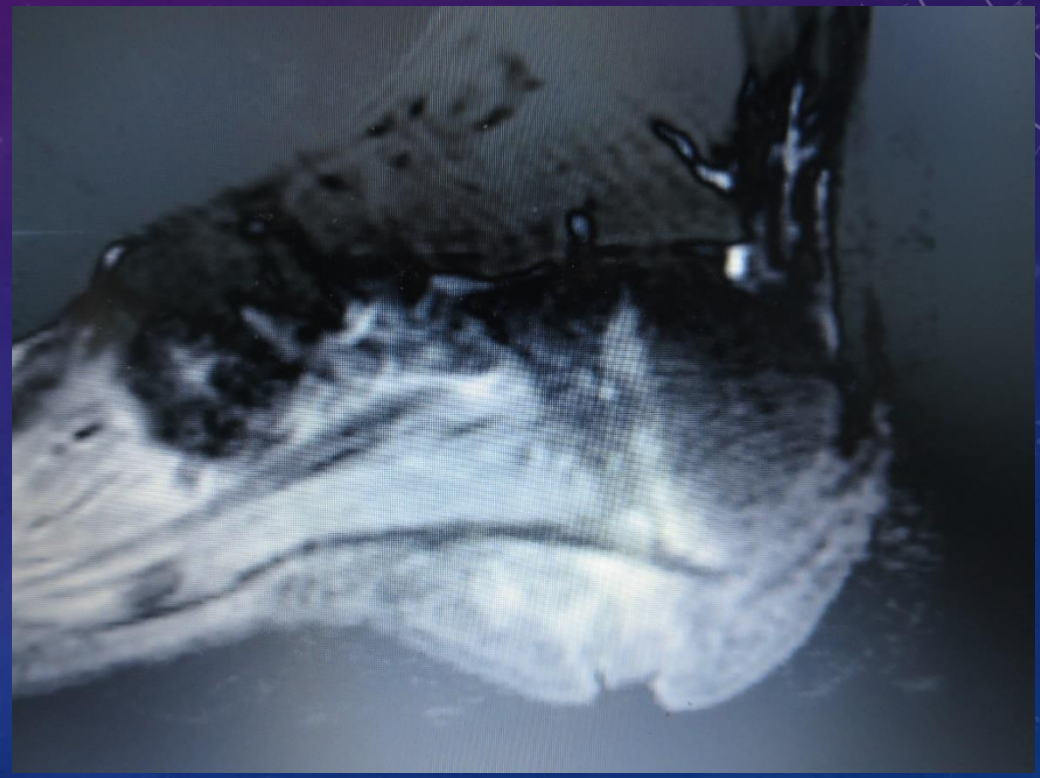
J.M. DOB 9/27/55

- Admitted 2/6/16 for increased pain Right heel and Hyperglycemia
- WBC 6,300
- ESR 71
- CRP <0.29
- Glucose over previous week 157-474
- Temp 98.4/Non toxic
- Cardiology, Podiatry, I.D., Vascular Surgery



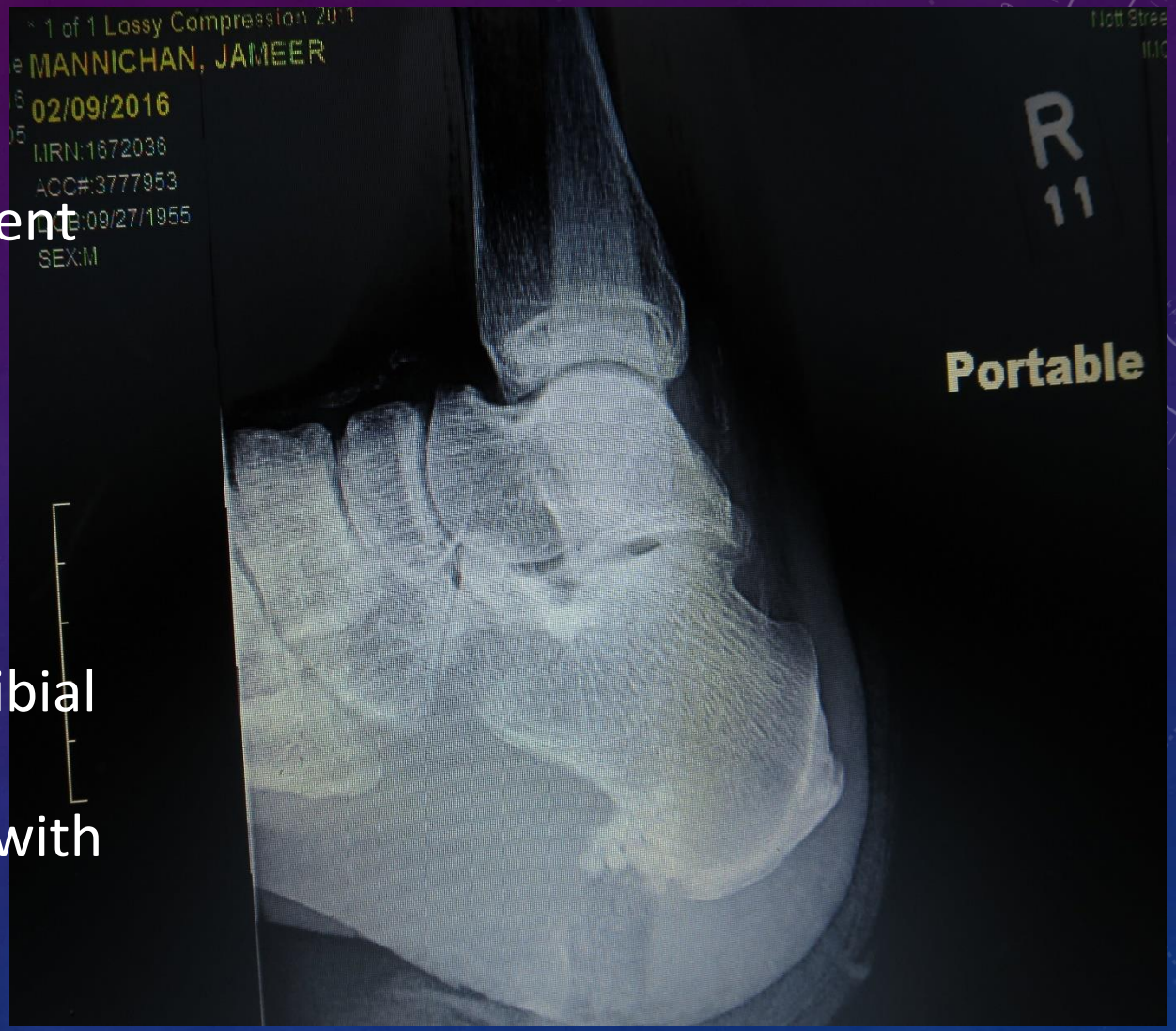
J.M. DOB 9/27/55

- MRI with contrast demonstrated soft tissue edema and localized cellulitis with adjacent Osteomyelitis

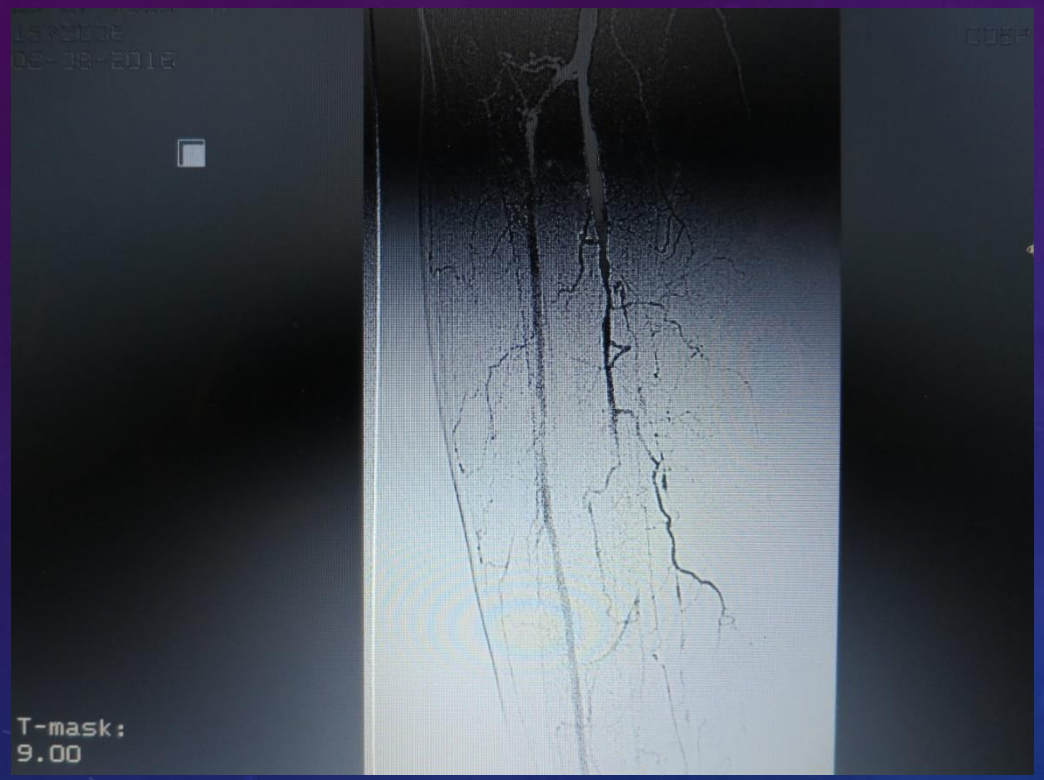


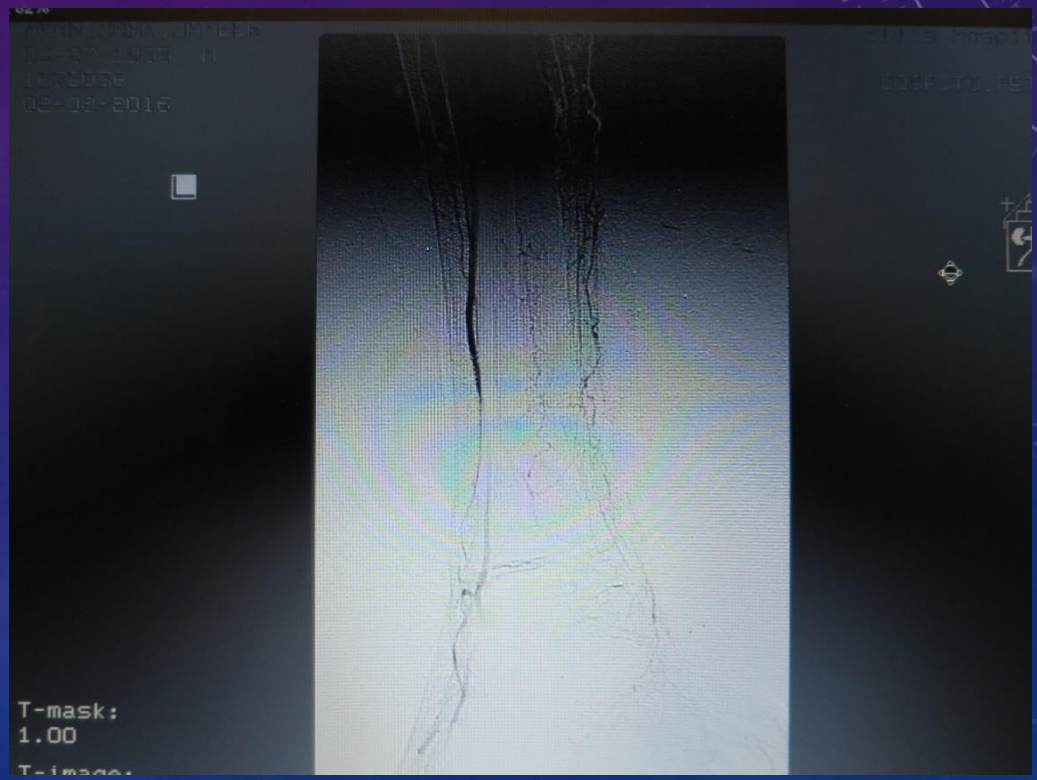
J.M

- 2/9/16 Excisional Debridement Calcaneus with insertion Vancomycin Beads
- Bone C&S demonstrated Pseudomonas; started on Cefepime 2 grams q 12hr
- 2/13/16 underwent Right Femoral to Distal Anterior Tibial In Situ bypass
- 2/19/16 transferred to SAR with Vac therapy



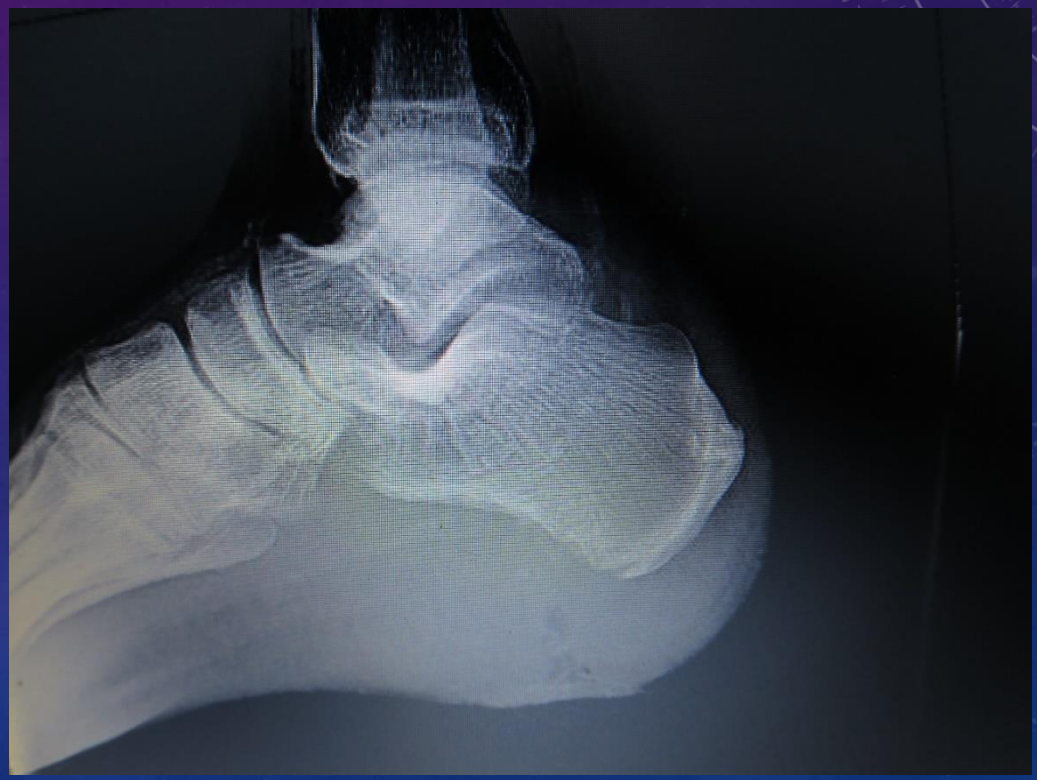
J.M. DOB 9/27/55 ANGIOGRAPHY





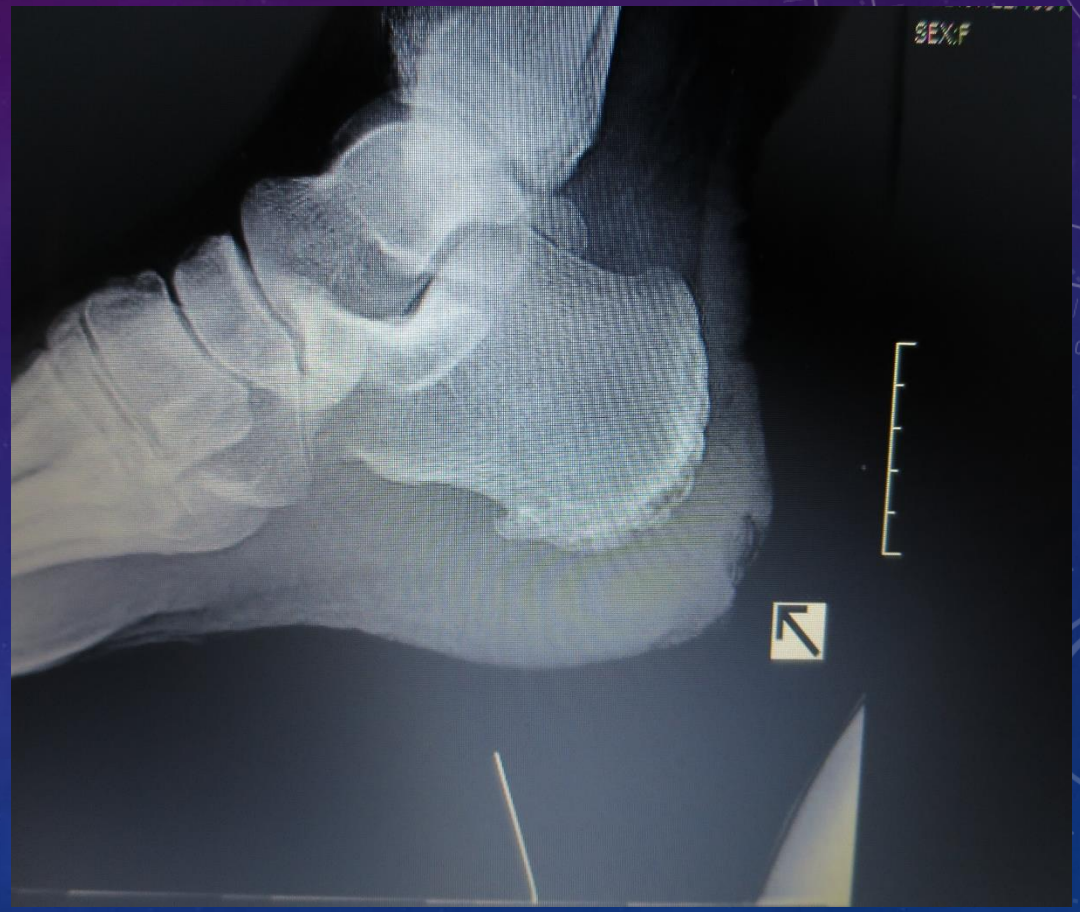
J.M. DOB 9/27/55

- Repeat x-ray 3/16/16
- Seen every other week at Wound Care Center using Vac therapy



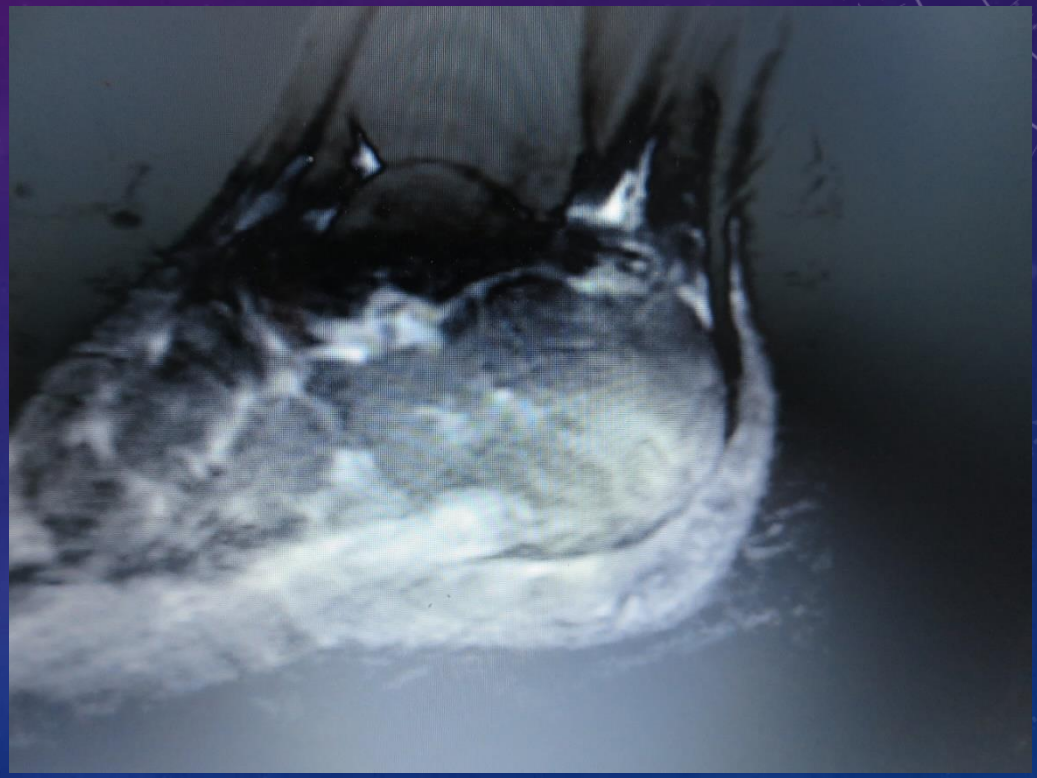
B.C. DOB 7/22/61

- 10/16/15 54 y/o female admitted for Cellulitis Left heel chronic wound present for 10 mos.
- PMH IDDM, HTN, Neuropathy
- MEDS: Insulin, Cymbalta, Statin, HTN Med
- Social: 30 Pack year history
- ALLERGIES: Codeine, Lortab, Morphine (nausea and vomiting)



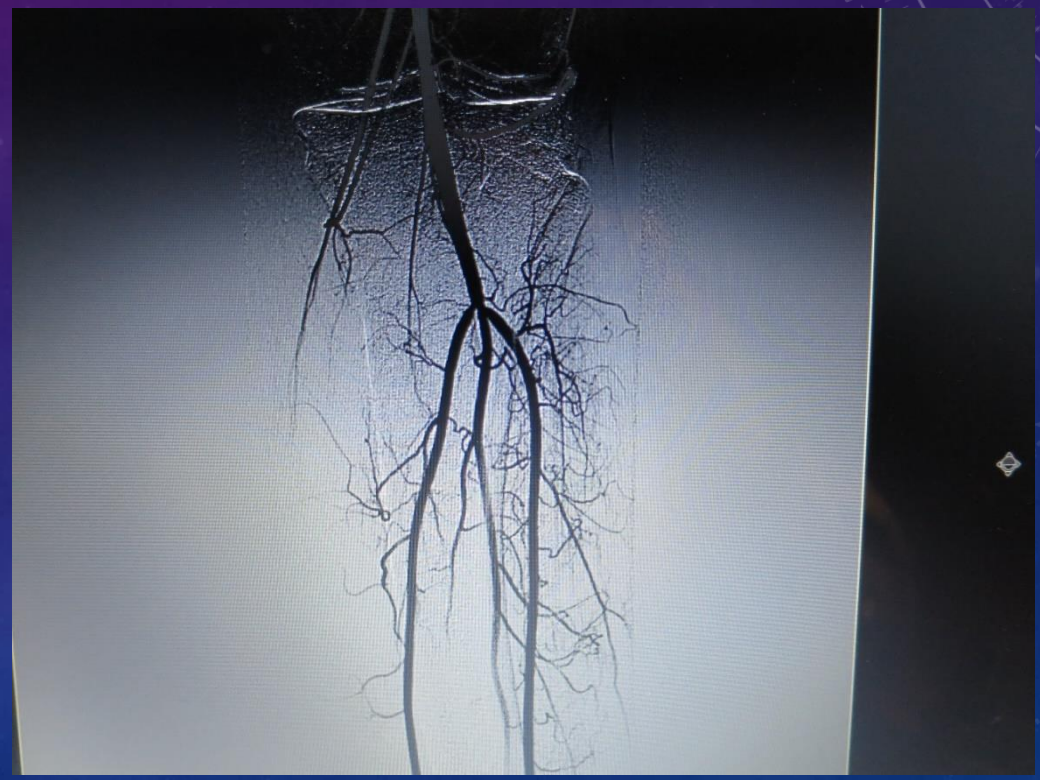
B.C. DOB 7/22/61

- WBC 8,900
- H/H 11.9/36.4
- ESR 61, CRP 5.99
- Lactate 1.8(venous)
- Cr 1.96, GFR 27
- HgA1C 14.5%
- PVR ABI 0.63 dampened waveforms
- MRI localized Cellulitis with underlying Osteomyelitis



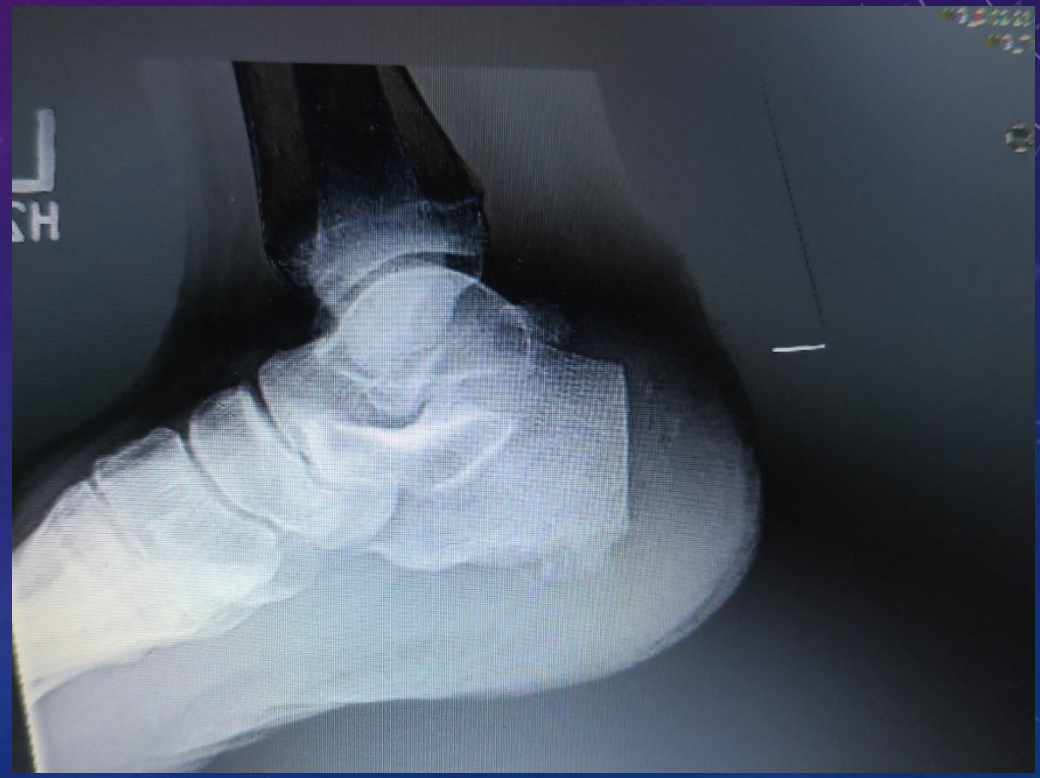
B.C. DOB 7/22/61

- 10/20 underwent I&D and Bone biopsy Left heel
- C&S grew Enterococcus Faecalis
- 10/23 underwent Angioplasty Left leg for SFA occlusion
- D/C on 10/26 with Hickman Catheter and IV Zosyn
- Followed with I.D. and Podiatry



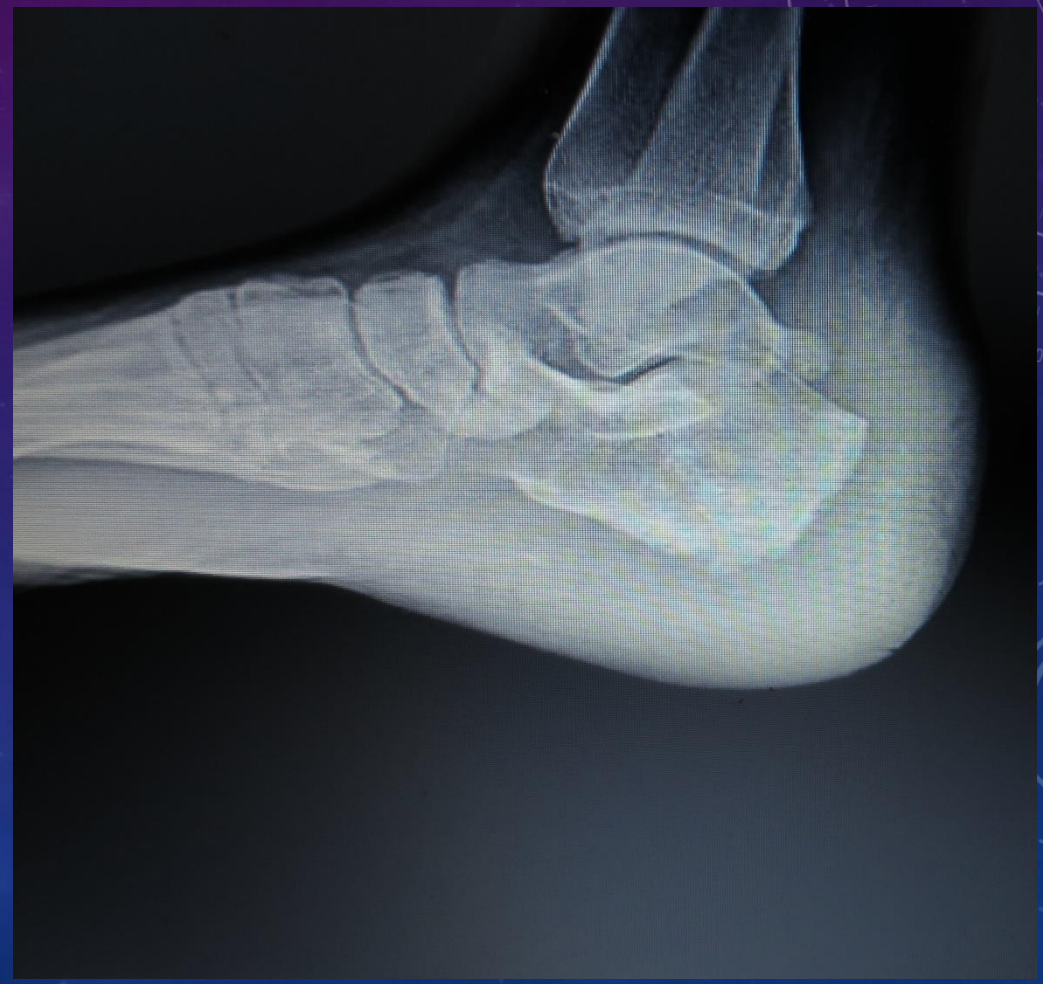
B.C. DOB 7/22/61

- 1/29/16 Admitted for worsening infection and failed outpatient antibiotics
- 2/1/16 underwent partial Calcanectomy
- Bone C&S grew Enterobacter Cloacae
- D/C 2/4/16 with IV Invanz



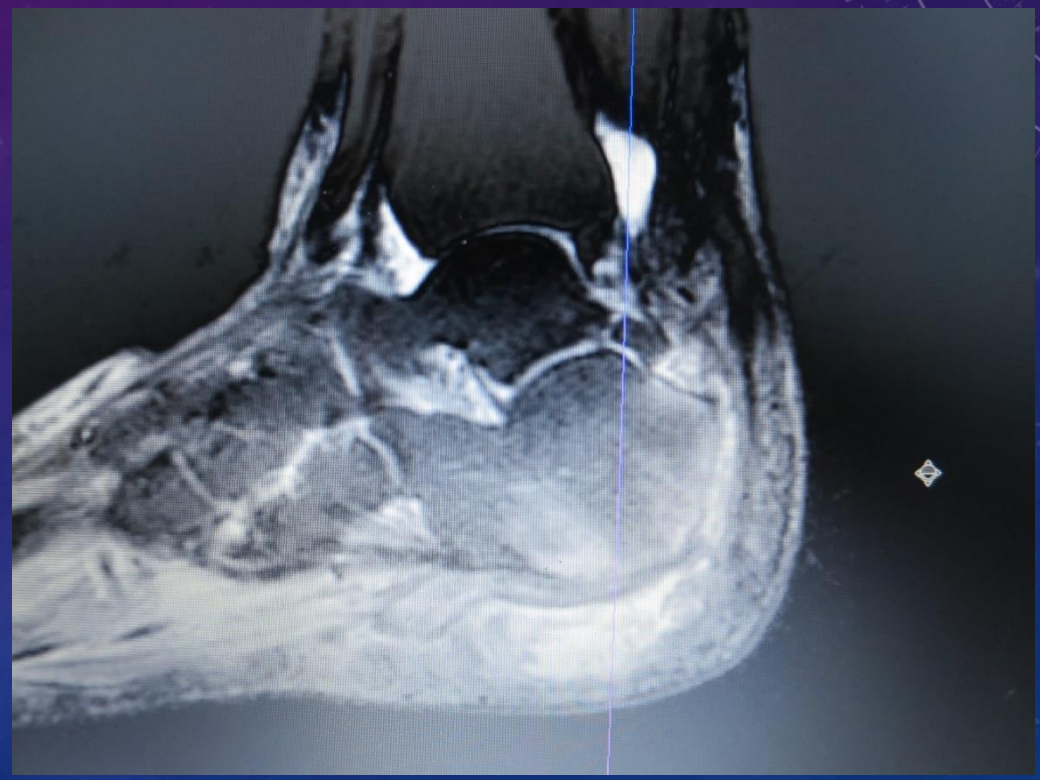
B.C. DOB 7/22/61

- 4/28/2016 Readmitted for redness, swelling on lateral aspect of heel
- T97.8
- WBC 11,200
- ESR 57, CRP 6.48
- Lactic Acid 1.5(venous)



B.C. DOB 7/22/61

- MRI demonstrated questionable fluid collection on posterior of Calcaneus and bone marrow edema; questionable Osteomyelitis
- 5/1/16 return to OR for I&D and Bone Biopsy
- C&S of bone was sterile
- PATH findings consistent with chronic Osteomyelitis

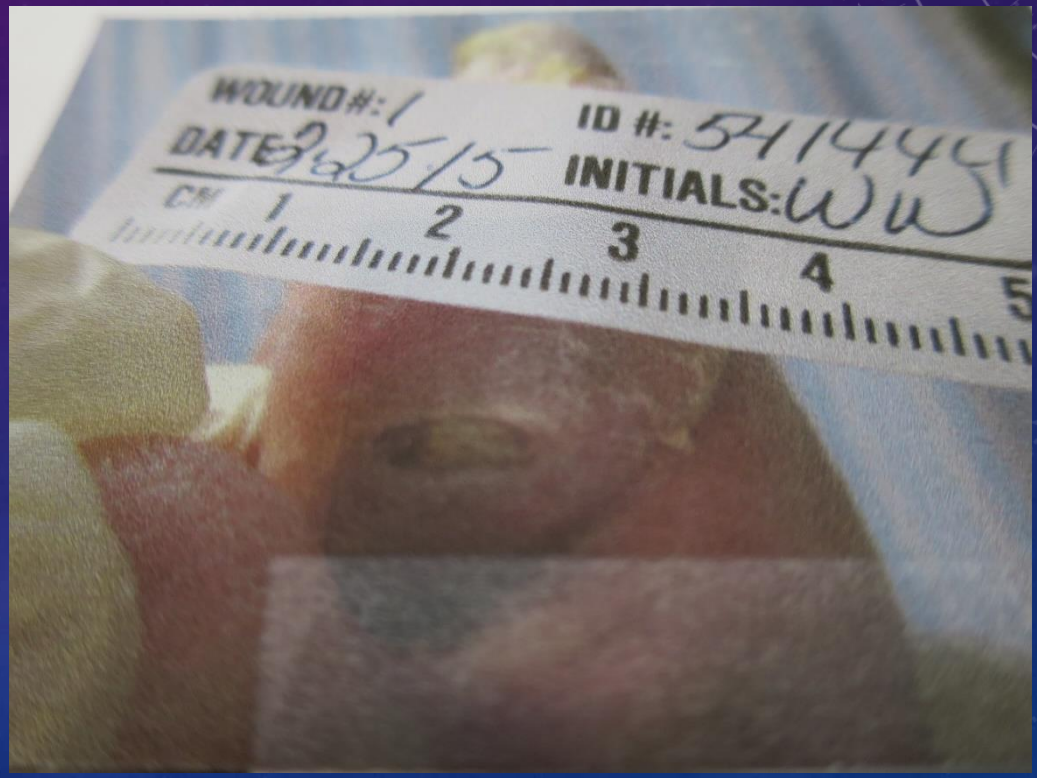


B.C DOB 7/22/61

- D/C on 5/5/16 on IV Zosyn
- Followed by I.D.

W.W. DOB 11/14/49

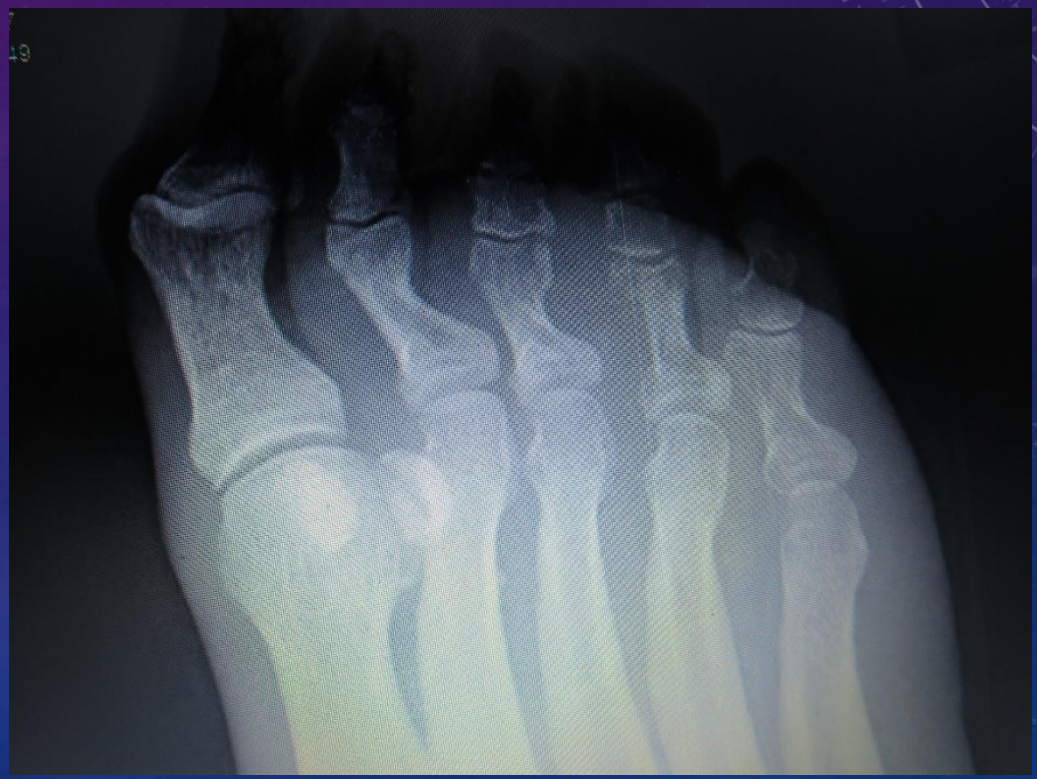
- 2/25/15 65 y/o male with chronic ulcer of Right 4th toe. Ulcer was secondary to blister caused by ill-fitting shoes. Failed out patient wound care and oral antibiotics
- PMH: HTN, Hypothyroidism, CAD, DM2, Neuropathy
- Meds: Lantus, Levothyroxine, Metformin, Nitroglycerin, Ramipril, Simvastatin
- NKDA
- Social: Non-smoker



W.W. DOB 11/14/49

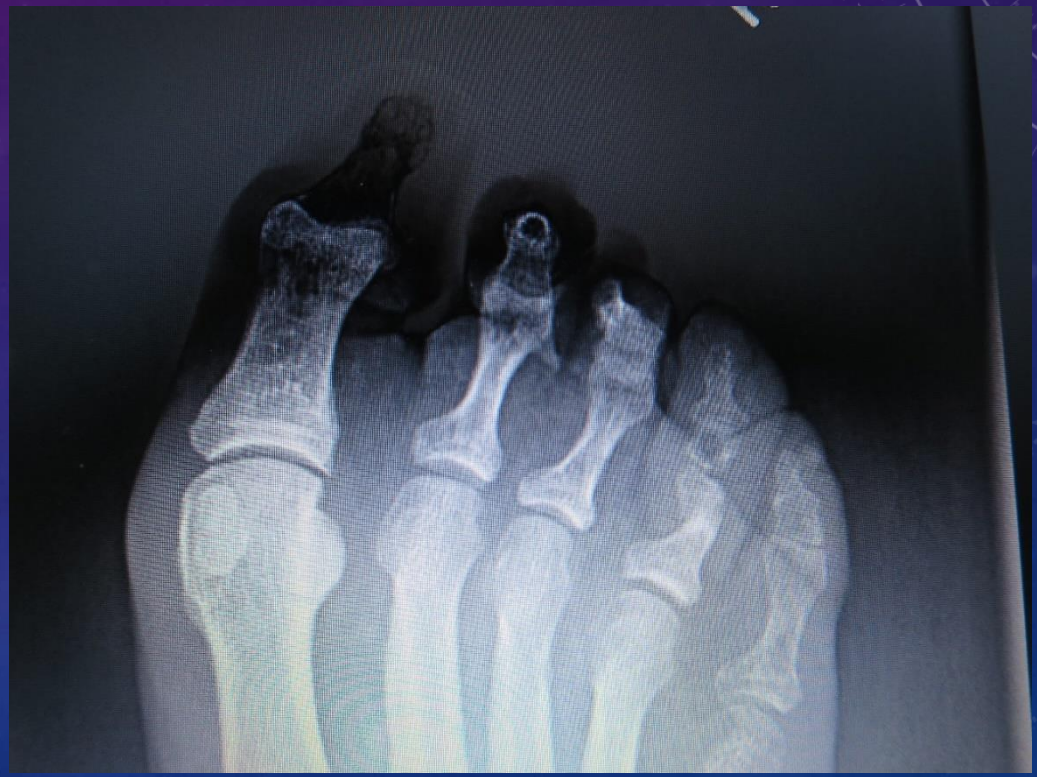
- WBC 5,600
- H/H 14.0/44.1
- ESR 4
- CRP ,0.29
- HgA1C 7.3%
- Palpable DP and PT pulses

- X-ray demonstrated cortical destruction of head of proximal phalanx of 4th toe consistent with Osteomyelitis
- Patient refused amputation
- Bone biopsy performed on 3/11 demonstrated acute Osteomyelitis
- C&S of bone demonstrated no growth with Gram + Cocci

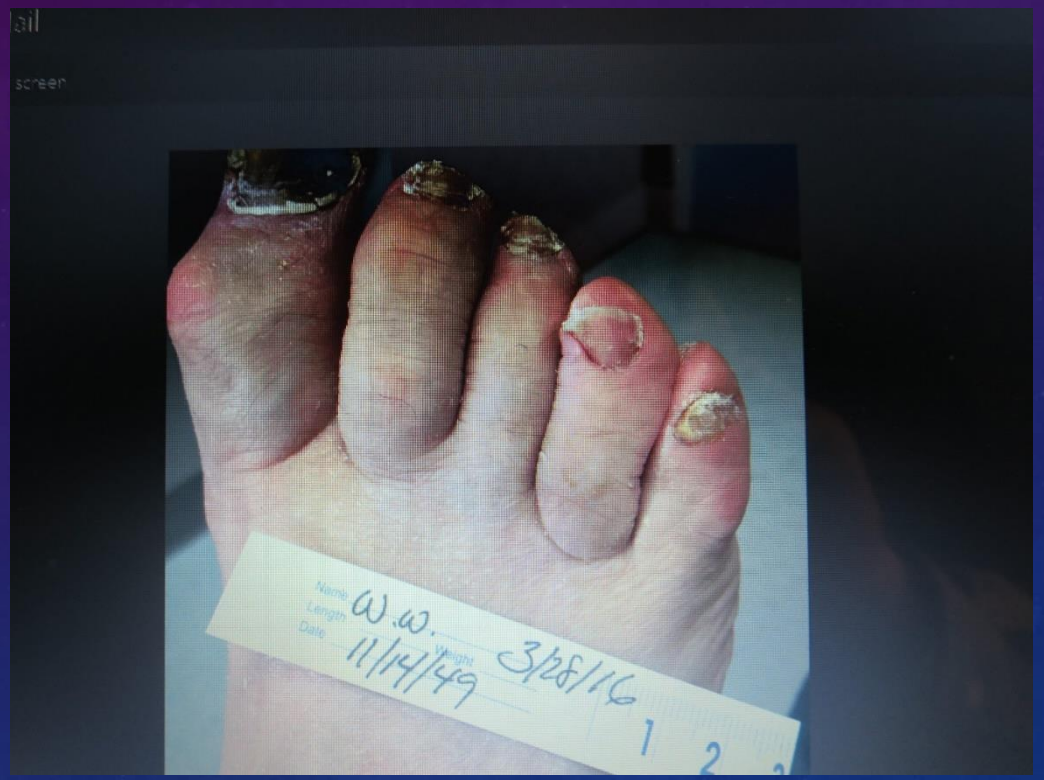


W.W. DOB 11/14/49

- Patient was treated with IV Rocephin 2 Grams daily via PICC line x 42 days
- Followed in Wound Care Center every other week for local wound care



W.W DOB 11/14/49



OSTEOMYELITIS

- Increasing incidence of Osteomyelitis secondary to number of Diabetics
- Diagnosis can be made by clinical findings and accurate culture and sensitivity results
- Radiology studies can assist with diagnosis and surgical planning
- Debridement creates a clean wound environment to improving blood flow and deliverance of antibiotics
- Bone biopsy targets pathogen
- PVR studies necessary if absent pulses and no wound healing
- HBOT therapy has a role with failed surgical/medical treatment
- Team approach achieves best results

THANK YOU