

# CARDIOVASCULAR INNOVATIONS DIGITAL 2020

## **Multifocal Necrotizing Fasciitis in a Patient with Rutherford Class V Lower Extremity Ischemia: A Case of Last-Option Diabetic Limb Salvage**

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Program

# History of Present Illness (HPI)

A 61-year-old female presented to the emergency department with severe pain to the left lower extremity. The pain was originally suspected to be related to a known occluded superficial femoral artery (see arterial duplex) stent that she was scheduled to have revised 2 weeks prior but was postponed due to findings of acute liver injury after a liver biopsy raised concerns about Wilson's disease.

## LEFT SIDE

External iliac artery distal: plaque noted without evidence of hemodynamically significant stenosis .

Common femoral artery : plaque noted without evidence of hemodynamically significant stenosis .

Profunda femoral artery proximal: plaque noted without evidence of hemodynamically significant stenosis .

Superficial femoral artery mid-distal: occluded . Stent noted.

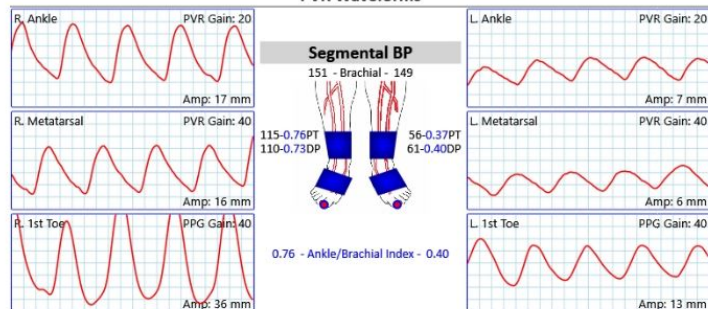
Popliteal artery proximal: occluded .

Popliteal artery mid: reconstituted .

## Lower Arterial Segmental Pressures

Right		Left	
Pressure	Index	Pressure	Index
151		149	
115	-0.76	56	-0.37
110	-0.73	61	-0.40
Brachial			
Ankle (PT)			
Ankle (DP)			

## PVR Waveforms



# Past Medical History (PMH)



**PMH:** T1DM, HTN, CKD3, hypothyroid



**PSH:** Tibial fracture repair (2 years prior), metatarsal head 4 and 5 resection left foot 2/2 osteomyelitis



**Meds:** Lyrica, insulin, protonix, metoprolol, levothyroxine



**Allergies:** Morphine



**Soc:** Denies all

**ROS:** Unremarkable



# Physical Exam (Left lower extremity focused)

**Vasc**: Dorsalis pedis/posterior tibial artery nonpalpable

**Neuro**: Grossly intact

**MSK**: Motor intact DF/PF/In/Ev,

**Derm**: (A) Plantar 1<sup>st</sup> toe 1.0 x 0.5 cm wound, (++) induration of LE skin, (+) Stemmer sign, (+) erythema w/ swelling





# Hematology & Biochemistry

**CBC:** WBC 15.88, HgB 8.5

**Chem7:** BG elevated 469 mg/dL, anion gap 22 meq/L, Sodium 143 mmol/L, Cr 1.7 mg/dL

**HbA1c:** 9.9% (5 weeks prior)

**LRINEC Score : 12**

**CRP 22.8 mg/dl (+4)**

**WBC 15.88 k/uL (+1)**

**HgB 8.5 g/dL (+2)**

**Na 134 mmol/L (+2)**

**Cr 1.7 mg/dL (+2)**

**Glucose 469 mg/dL (+1)**

Table 2. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score

Variable, Units	$\beta$	Score
C-Reactive Protein, mg/L		
<150	0	0
$\geq 150$	3.5	4
Total white cell count, per mm <sup>3</sup>		
<15	0	0
15–25	0.5	1
>25	2.1	2
Hemoglobin, g/dL		
>13.5	0	0
11–13.5	0.6	1
<11	1.8	2
Sodium, mmol/L		
$\geq 135$	0	0
<135	1.8	2
Creatinine, $\mu$ mol/L		
$\leq 141$	0	0
>141	1.8	2
Glucose, mmol/L		
$\leq 10$	0	0
>10	1.2	1

# Imaging

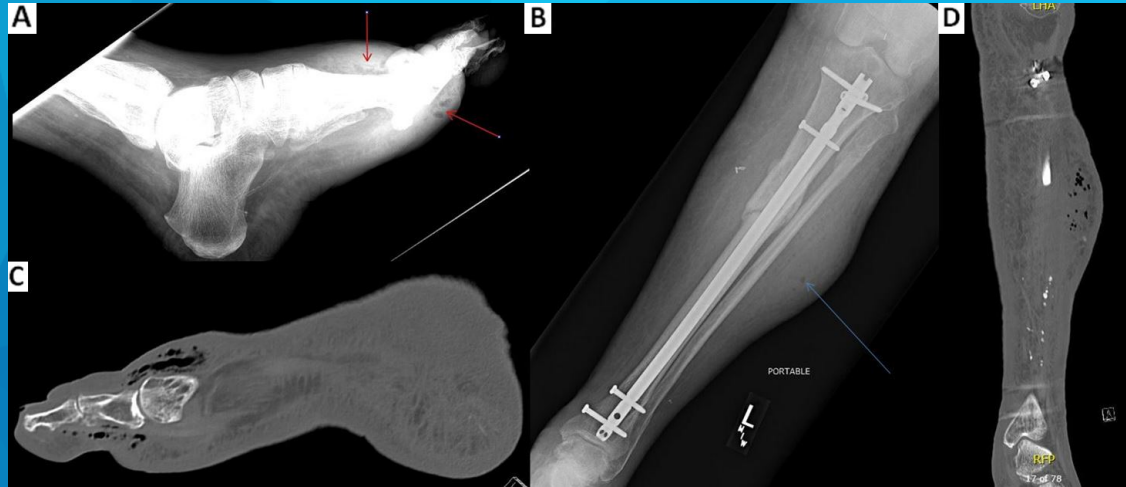
**XR Foot (A):** (+) Soft tissue emphysema @ dorsum and plantar forefoot

**XR Leg (B):** (+) Small focal and punctuate gas (CT recommended)

**CT Foot (C):** (+) Soft tissue emphysema along course of extensor/flexor tendons

**CT Leg (D):** (+) Superficial calf compartment gas collection

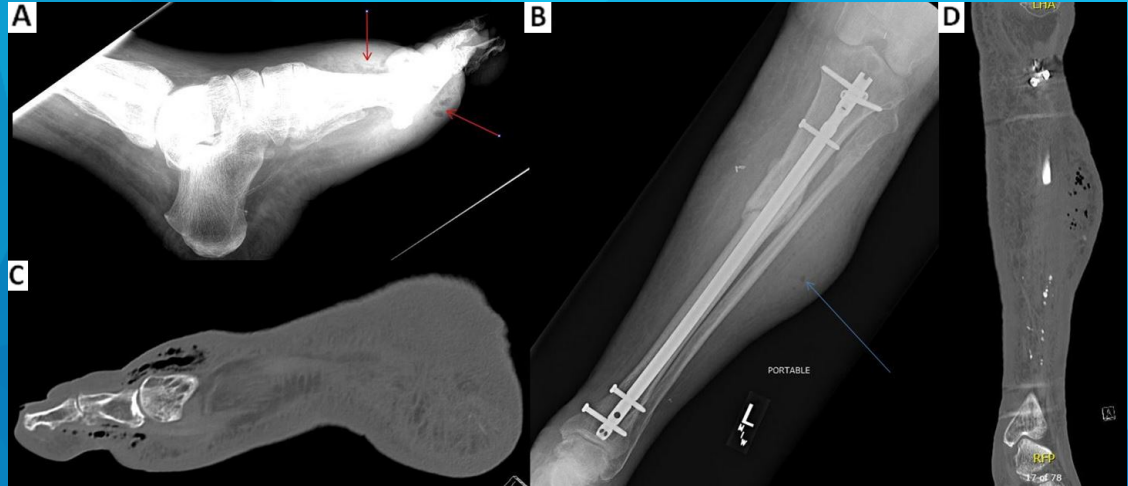
**Impression:** LRINEC 12 + Linear gas distribution= LIMB/LIFE THREATENING MULTIFOCAL NECROTIZING FASCIITIS



# Plan

## Solution: Multidisciplinary Limb Salvage

- Podiatry: I&D w/ exploration of all compartments (Days 1 and 4)
- Vascular Surgery: Angiogram plus intervention (Day 2)
- Infectious Disease: Antibiotic management



# Plan

## Podiatry I&D #1 (Day 1):

### IntraOperative Findings:

- Foot: (+) necrosis/purulence of dorsal soft tissue, (+) tissue separation via finger sweep test
- Leg: (+) 30 ccs of “dishwater” fluid superficial to deep fascia w/ compartmental tissue separation but no deeper infection

LEFT LEG 1

10/26/2019 11:06 AM - Micro, Muar Oru In

### Component Results

Component

**Smear Result (Abnormal) (Final)**

Many

Gram negative bacilli

**Smear Result (Final)**

Moderate

Polymorphonuclear leukocytes

**Smear Result (Final)**

Few

Mononuclear cells

**Smear Result (Final)**

Many

Red Blood Cells

**Culture (Abnormal) (Final)**

Moderate

*Citrobacter freundii* complex

**Culture (Final)**

Refer to specimen collected on  
10/21/2019 AT 2240 (M6211311)

**Culture (Abnormal) (Final)**

Rare

Coagulase negative *Staphylococcus* species

No further workup

LEFT FOOT

10/26/2019 11:06 AM - Micro, Muar Oru In

### Component Results

Component

**Smear Result (Abnormal) (Final)**

Few

Gram negative bacilli

**Smear Result (Final)**

No Polymorphonuclear Leukocytes

**Smear Result (Final)**

(NOTE)

Positive result called to and read back by:  
10/22/19 0647 [REDACTED]

**Culture (Abnormal) (Final)**

Moderate

*Citrobacter freundii* complex

**Culture (Final)**

Refer to specimen collected on  
10/21/2019 AT 2240 (M6211311)

**Culture (Final)**

Rare

skin flora

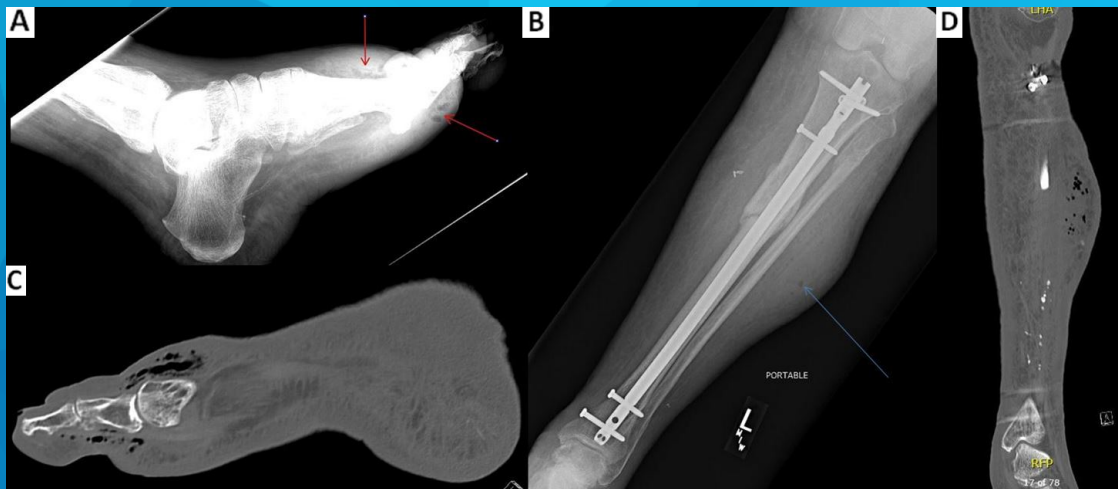


# Plan

Vascular Surgery (Day 2 or 16 hours after I&D):

## IntraOperative Findings:

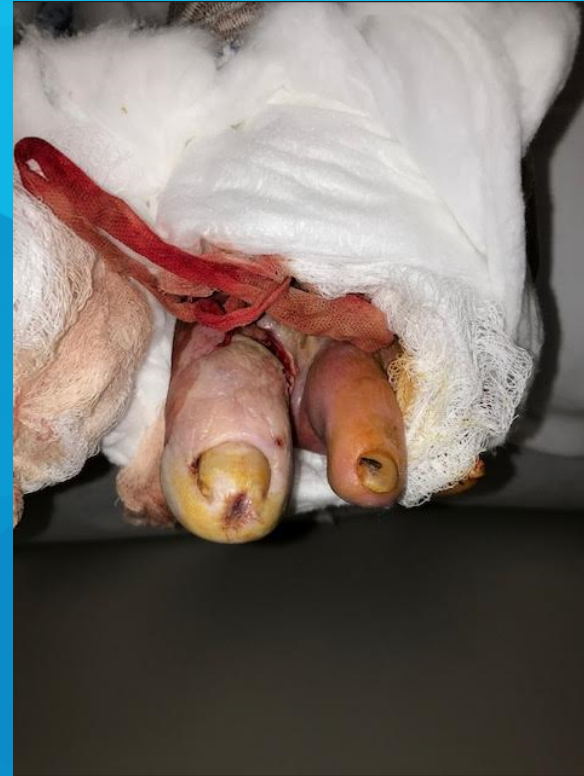
- In-stent stenosis @ distal superficial femoral artery and proximal popliteal artery
- Treatment: Balloon angioplasty/stenting of left SFA and above knee popliteal artery via 6x40 Innova, 6x150 Innova, 6x120 Innova, and Vascade closure of the right Common femoral artery



## Day 3

<36 hours after I&D and <12  
hours after revasc:

- OVN page from nursing team for cold left hallux w/ loss of previously appreciated cap refill
- Plan: Allow hallux to demarcate



## Podiatry I&D #2 (Day 4 or 18 hours after revasc):

### IntraOperative Findings:

- Hallux gangrene
- Treatment: Repeat debridement of nonviable soft tissue with 1<sup>st</sup> ray amputation and application of negative pressure wound therapy



LEFT~Foot~POST WASH

10/28/2019 1:06 PM - Micro, Muar Oru In

#### Component Results

Component

##### Specimen Request (Final)

Specimen collected in surgery.

Swab

##### Smear Result (Final)

No organisms seen

##### Smear Result (Final)

No Polymorphonuclear Leukocytes

##### Smear Result (Final)

Rare

Mononuclear cells

##### Culture (Abnormal) (Final)

One colony.

**Citrobacter freundii complex**

##### Culture (Final)

Refer to specimen collected on

10/21/2019 AT 2240 (M6211311)

##### Culture (Final)

For wound culture, tissue or aspirates : must be used, eSwab is preferred (Lawson)

LEFT LEG POST WASH

10/28/2019 1:06 PM - Micro, Muar Oru In

#### Component Results

Component

##### Specimen Request (Final)

Specimen collected in surgery.

Swab

##### Smear Result (Final)

No organisms seen

##### Smear Result (Final)

Few

Polymorphonuclear leukocytes

##### Smear Result (Final)

Few

Mononuclear cells

##### Culture (Abnormal) (Final)

Rare

**Citrobacter freundii complex**

Refer to specimen collected on

10/21/2019 AT 2240 (M6211311)

##### Culture (Abnormal) (Final)

Rare

**Coagulase negative Staphylococcus species**

**No further workup**

##### Culture (Final)

For wound culture, tissue or aspirates are must be used, eSwab is preferred (Lawson)

# Interval Event During Course of Admission

## Day 7:

- ABX: Solo piperacillin/tazobactam
- NPWT: VeraFlo q72 hours

## Day 14-19:

- ABX: Ceftriaxone (Cipro on d/c)
- NPWT: VeraFlo q72 hours
- Podiatry: Bedside debridement PRN
- Discharge: Day 19





# Interval Event Post Admission

## s/p 2 months:

- ABX: Completed oral Ciprofloxacin (6 weeks, post d/c)
- NPWT: VeraFlo q72 hours
- Podiatry: In office debridement PRN
- Daily hyperbaric oxygen therapy (HBOT)

## s/p 6 months:

- Podiatry: In office debridement PRN
- Daily hyperbaric oxygen therapy (HBOT)



# Key Takeaways

- Prompt recognition and quick response is limb/life saving
- Multidisciplinary effort improves outcomes in limb salvage

**Thank you for your time and patience!**