Lower Extremity Intervention – Evaluation and Management

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Presenter Disclosure Information

Name: ***RICHARD R. HEUSER M.D.***

Within the past 12 months, the presenter or their spouse/partner have had a financial interest/arrangement or affiliation with the organization listed below.

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- ***Medtronic, Abbott, AngioScore, Speaker; and***
- ***Acist Medical Systems Grant***
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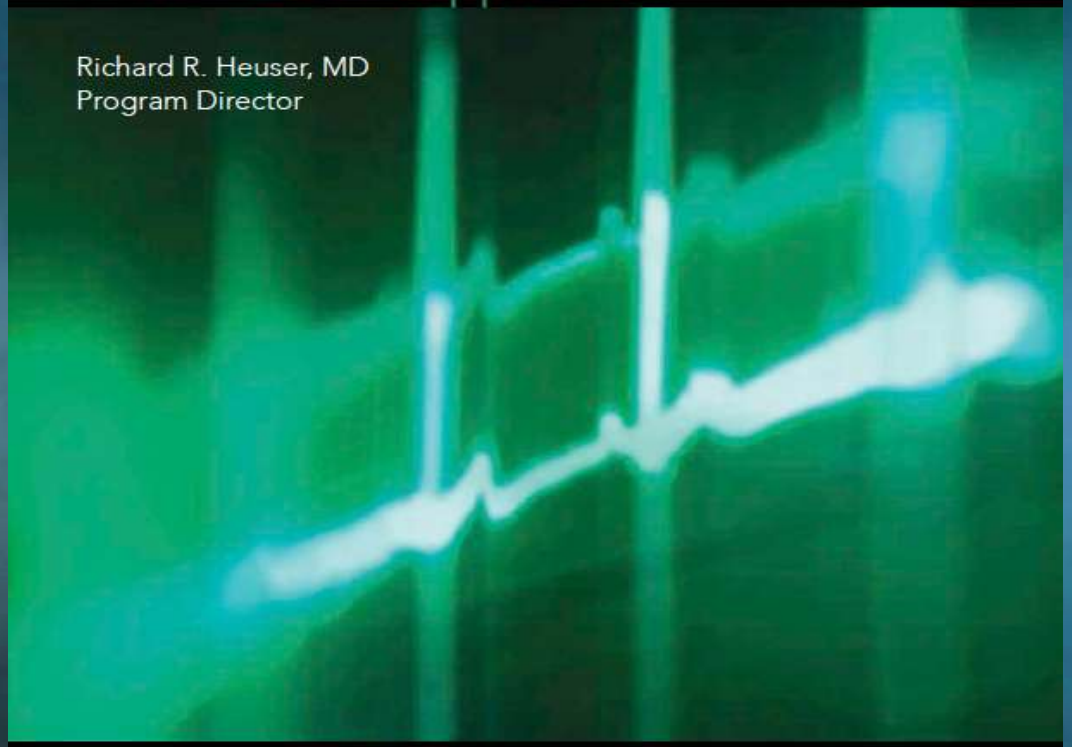
Patents *-- RF, Snares, Wires, Balloon Catheters, Covered Stents, Devices for Arterial Venous Connection, Devices for LV and RV Closure*

Cardiovascular Disease Management:
A Case-Based Approach



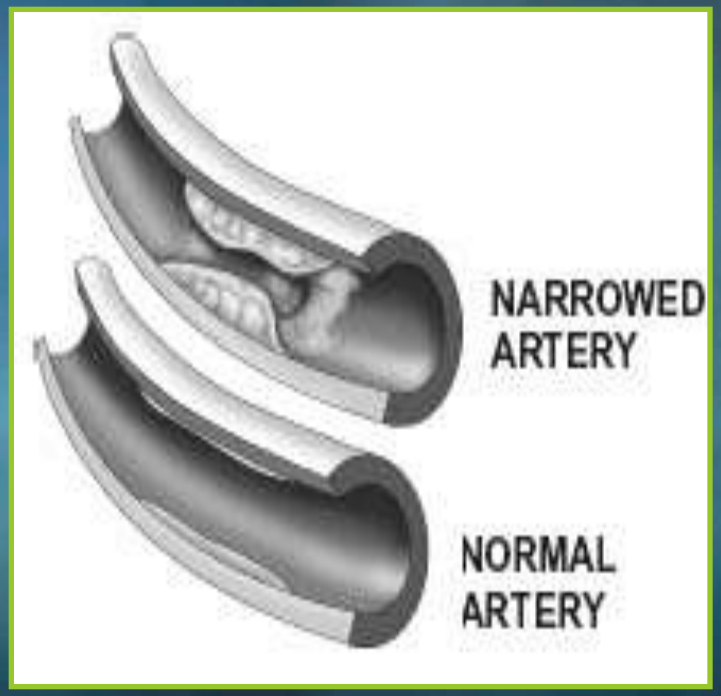
Richard R. Heuser, MD
Program Director

Save the Date Announcement

October 10-11, 2014 :: Arizona Biltmore Hotel, Phoenix, Arizona

Peripheral Arterial Disease (PAD)

Circulatory problem affecting
8 –12 million people in the U.S.



Source: Journal of American Medical Association.


THE PAD
PATIENT GETS
NO RESPECT!

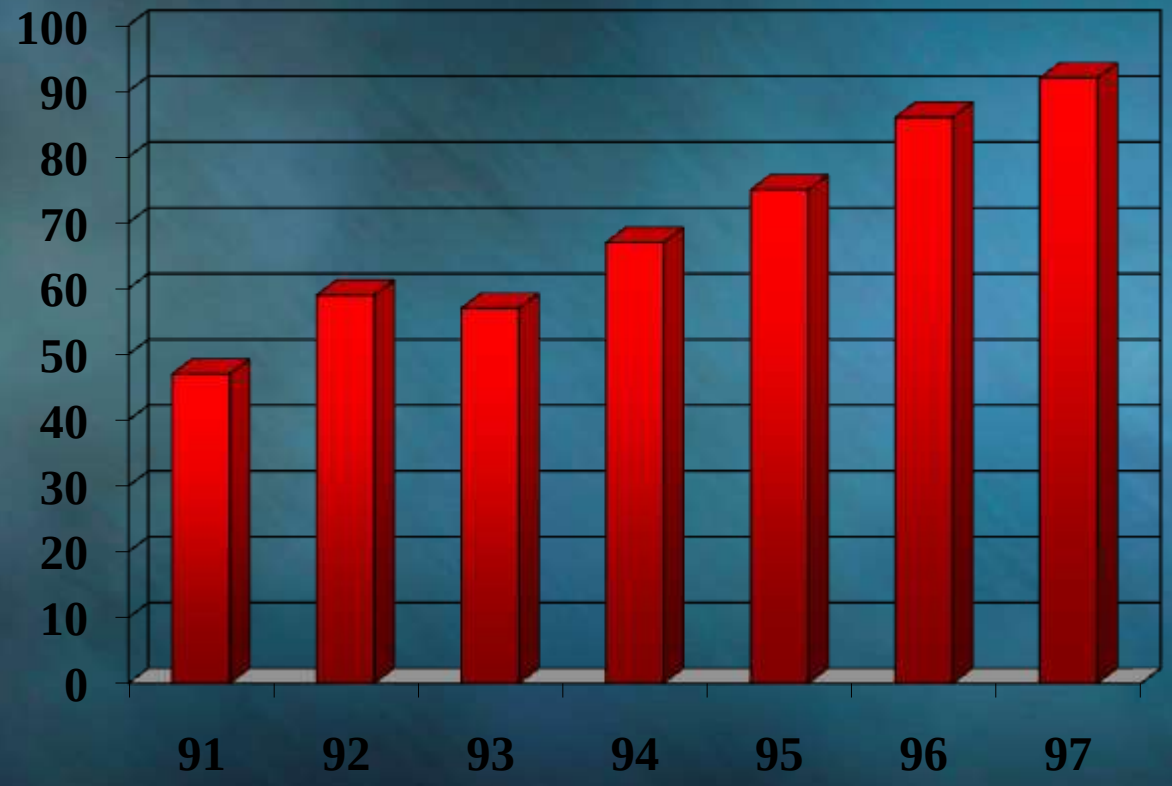
ABI

Critical Limb Ischemia

- 1%-2% of the PAD population
- Resting leg pain, non-healing foot or leg wounds on gangrene

Amputations: Increasing Burden

Non-Traumatic LEA in Patients with Diabetes



Trend continues: Amputations now > 150,000 year!

Source: CDC, Nat Hosp Disch Survey

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Why the wound care world is expanding

- Global aging with increases in diabetes and obesity
- Prevalence of patients with hard to heal wounds…roughly 50 million in the key countries around the world

Wound care explosion

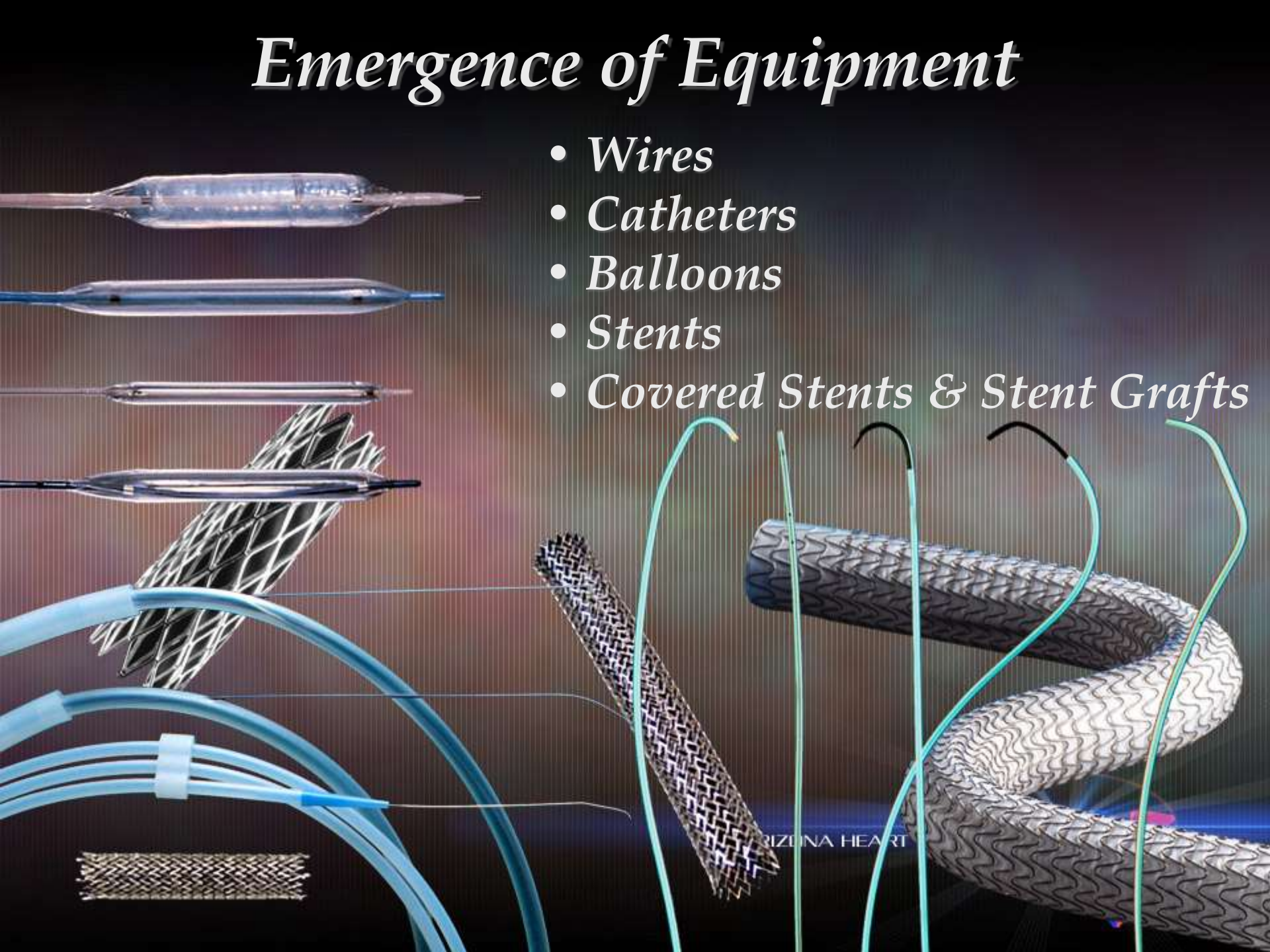
- USA, EU and Japan – 6.1 million cases of diabetic foot ulcers and 800,000 of these are hard to heal
- 15% will lead to amputation

Typical wound care patient

- At least 12 co-morbidities and averages two wounds or ulcers
- 60% of patients with diabetic foot ulcers don't heal
- 50% of those with venous ulcers don't heal

Emergence of Equipment

- *Wires*
- *Catheters*
- *Balloons*
- *Stents*
- *Covered Stents & Stent Grafts*



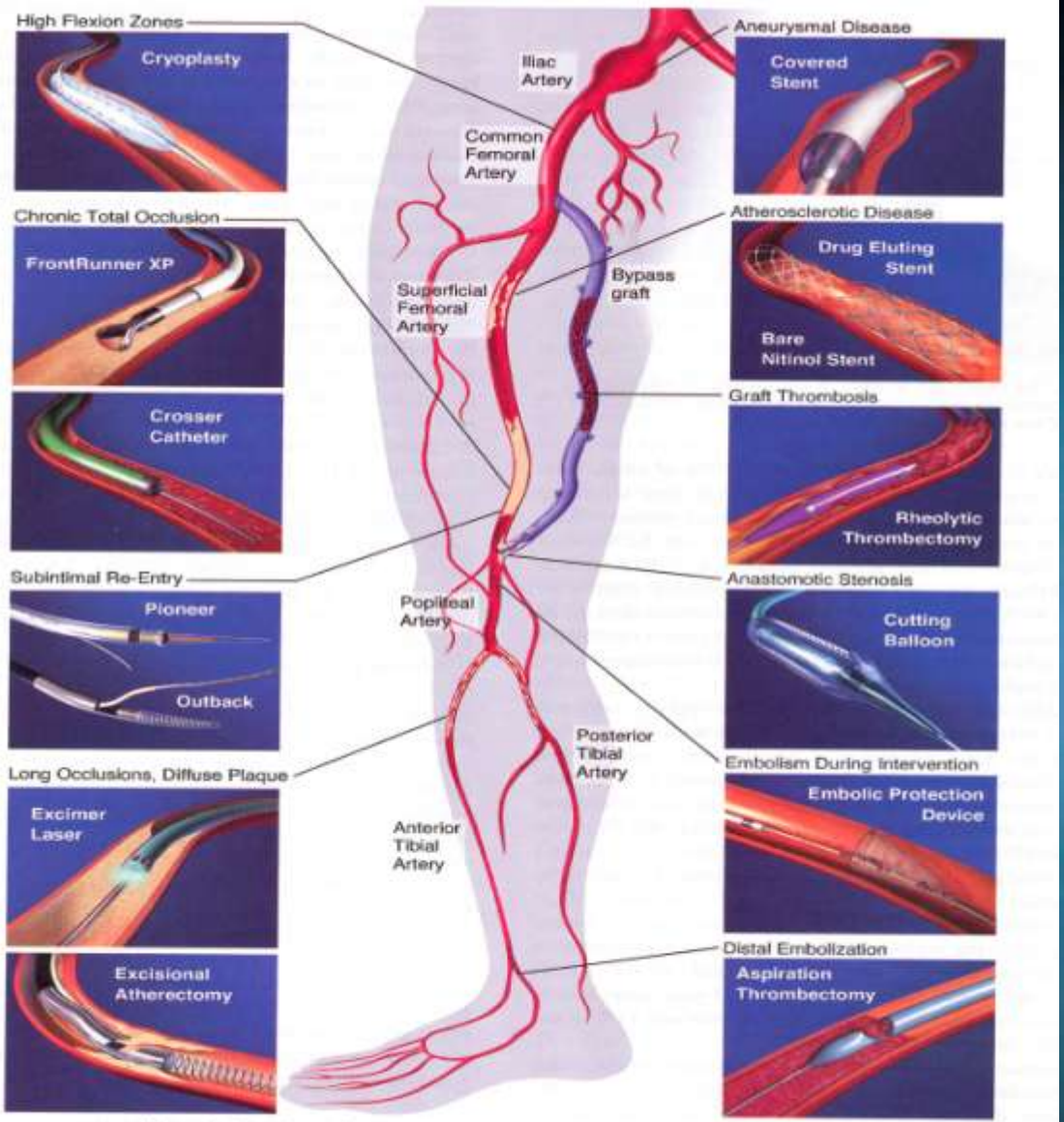
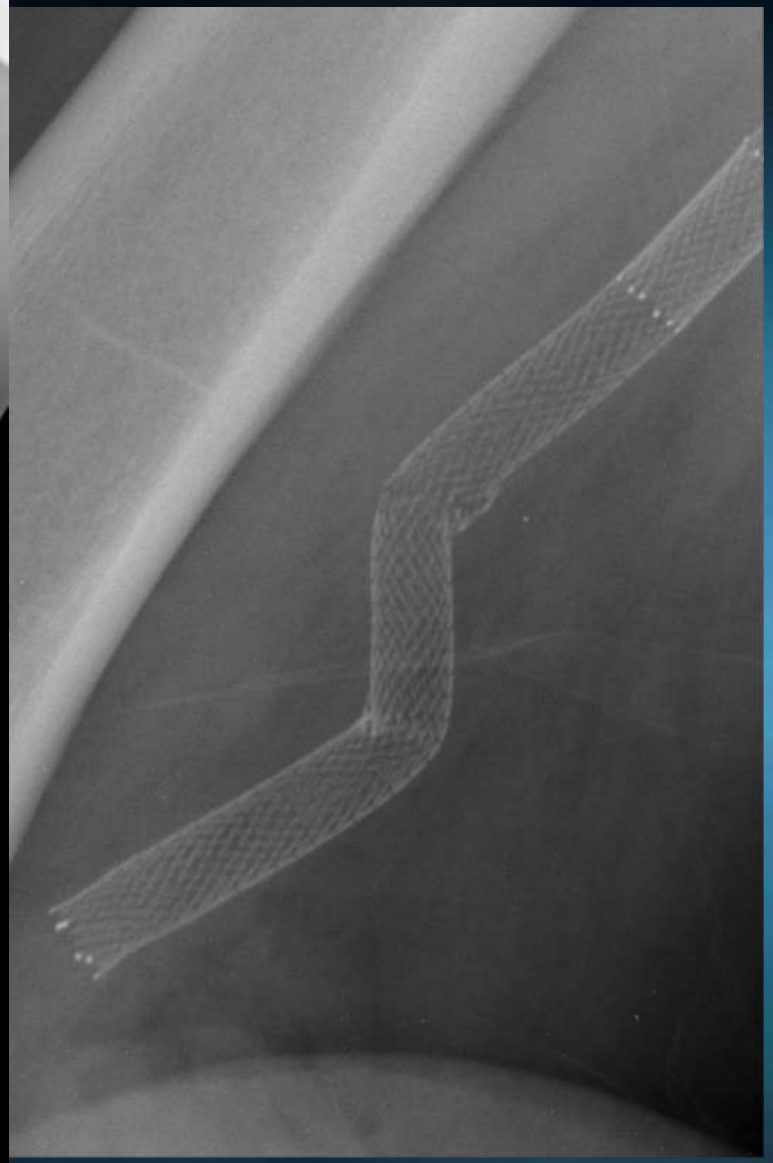


Figure 1. Overview of new technologies for lower extremity revascularization.


R

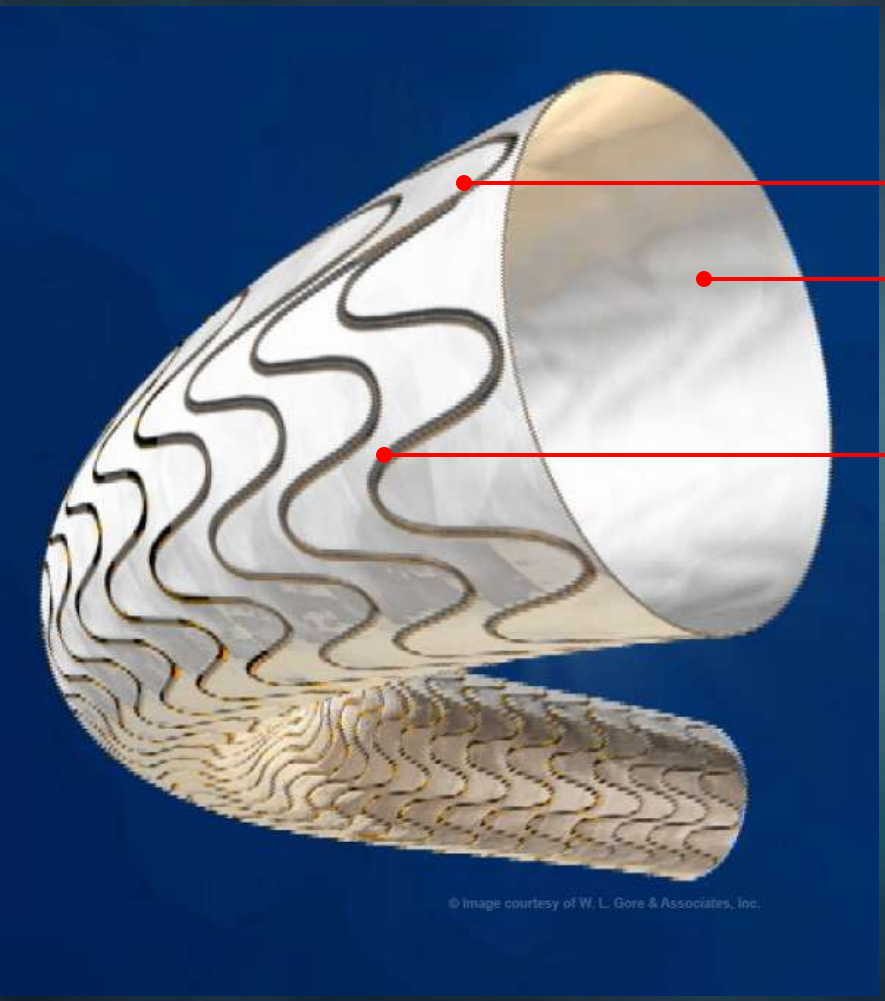

R
JH




K34
HEAD
R
JF
45 LPO SUPINE
FOOT

Description

New
HEPARIN-BONDED
Surface



- Polished nitinol support
- Ultra-thin wall ePTFE tube
- Unique, durable bonding film
- Heparin Bioactive Surface
- Lengths: 2.5, 5, 10, and 15 cm
- Diameters: 5 – 8 mm

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67 year old female who presents with a painful bunion of the right foot

She has hypertension, hypercholesterolemia and smokes

Her ABIs are right .05; left 1.01


Lossy

An 84 year old lady presents with critical limb ischemia of her right foot. She has already lost several toes.

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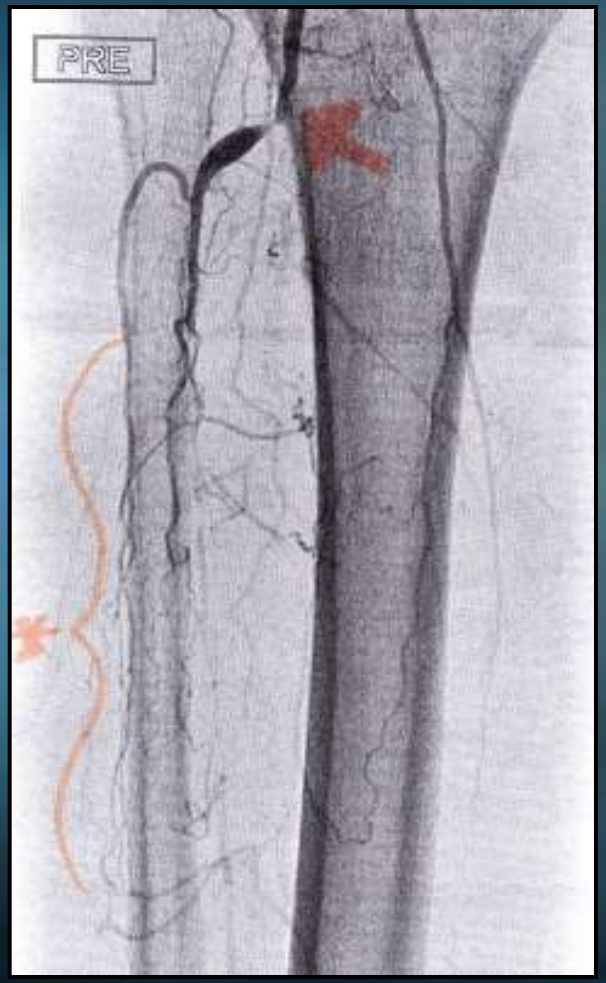
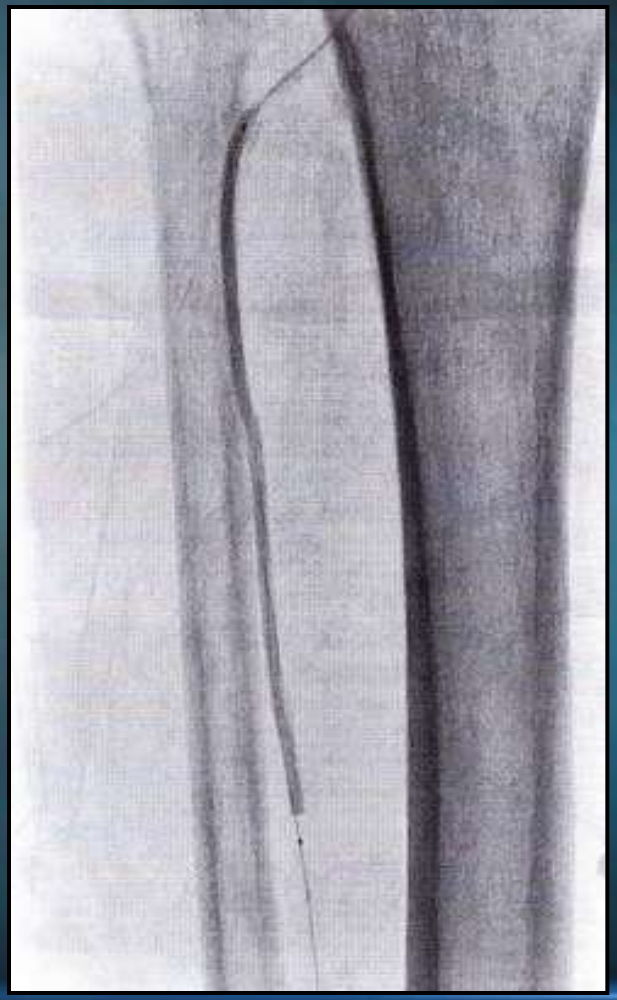
Severe BTK Disease Treated with 3 AngioSculpt PTA Catheters (Part 1)





- Long lesion in the anterior tibial artery
- Quick- Cross Catheter (Spectranetics) and Runthrough Wire (Terumo) used to cross
- 2.0 x 100 AS inflated to 6 atm; pressure held for 3 minutes.
- Same inflation regimen repeated

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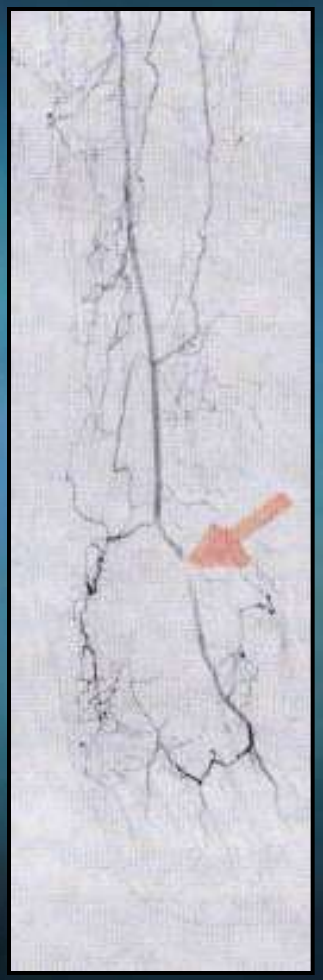
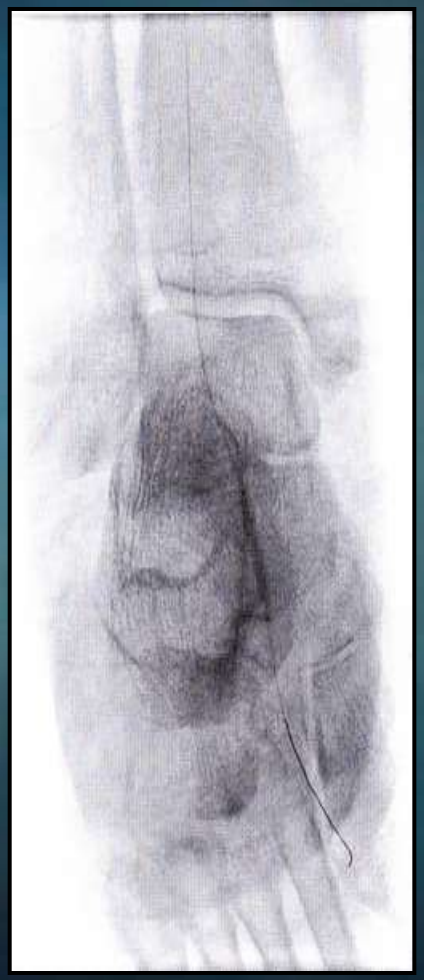
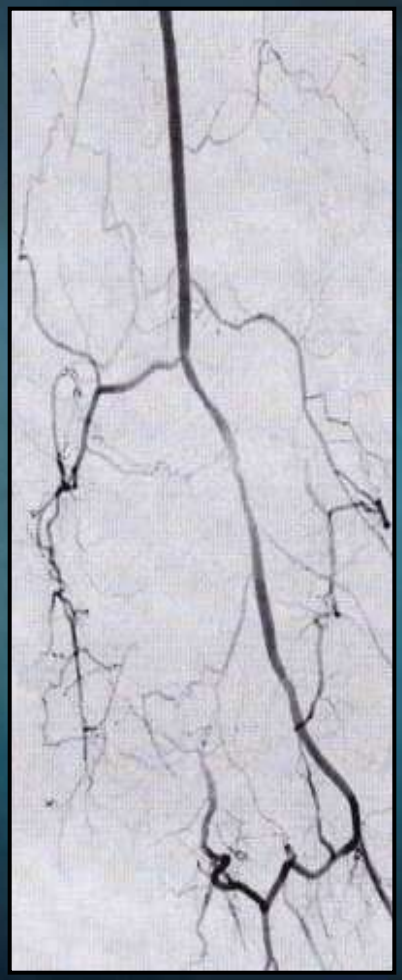
Severe BTK Disease Treated with 3 AngioSculpt PTA Catheters (Part 2)







- 2.5 x 20mm AS used to treat a lesion in the dorsalis pedis
- Three (3) prolonged inflations at 8 atm (85 seconds; 3 minutes; 170 seconds)

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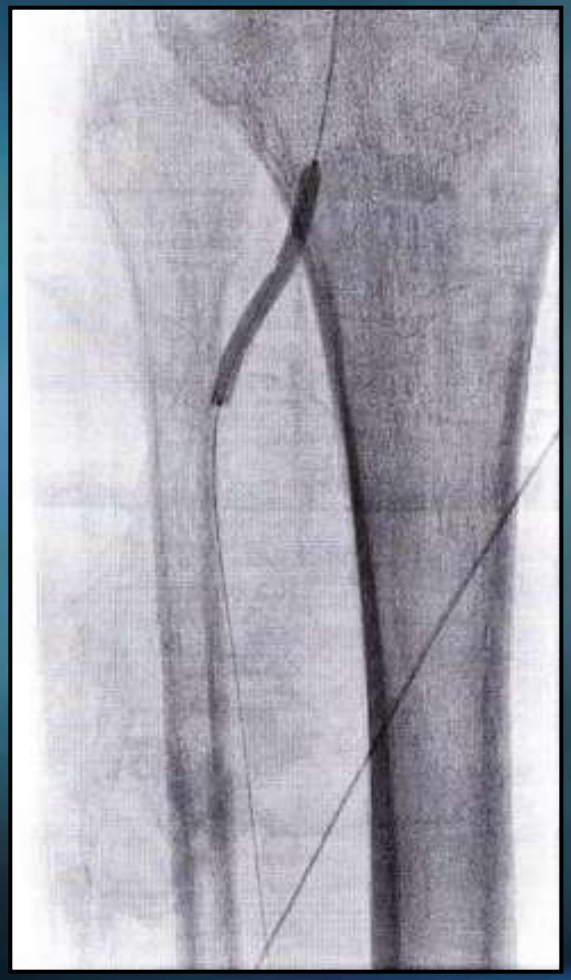
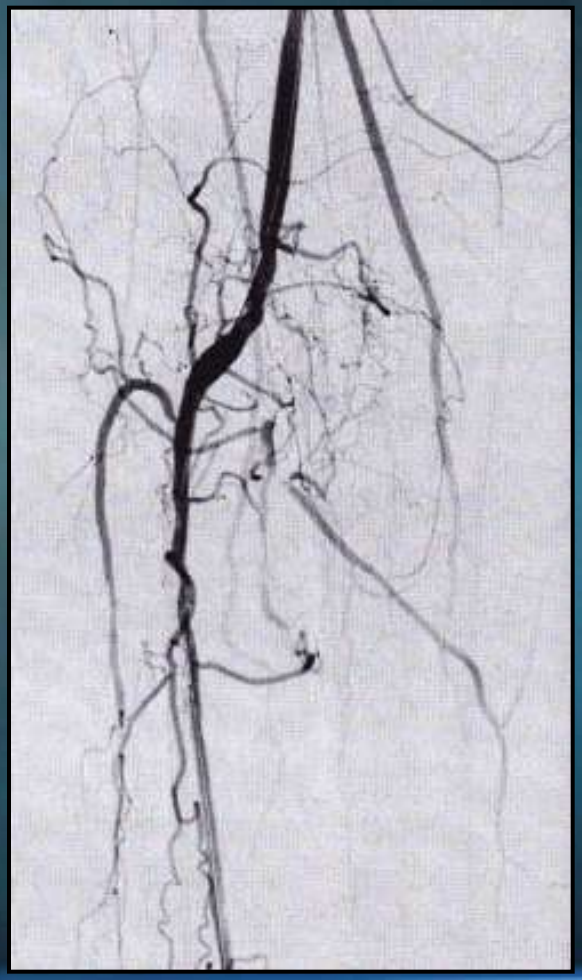
Severe BTK Disease Treated with 3 AngioSculpt PTA Catheters (Part 3)





- Proximal TPT & AT
- 3.0 x 40mm AS
- 8-atm inflation held for 3 minutes
- "Fabulous" final result

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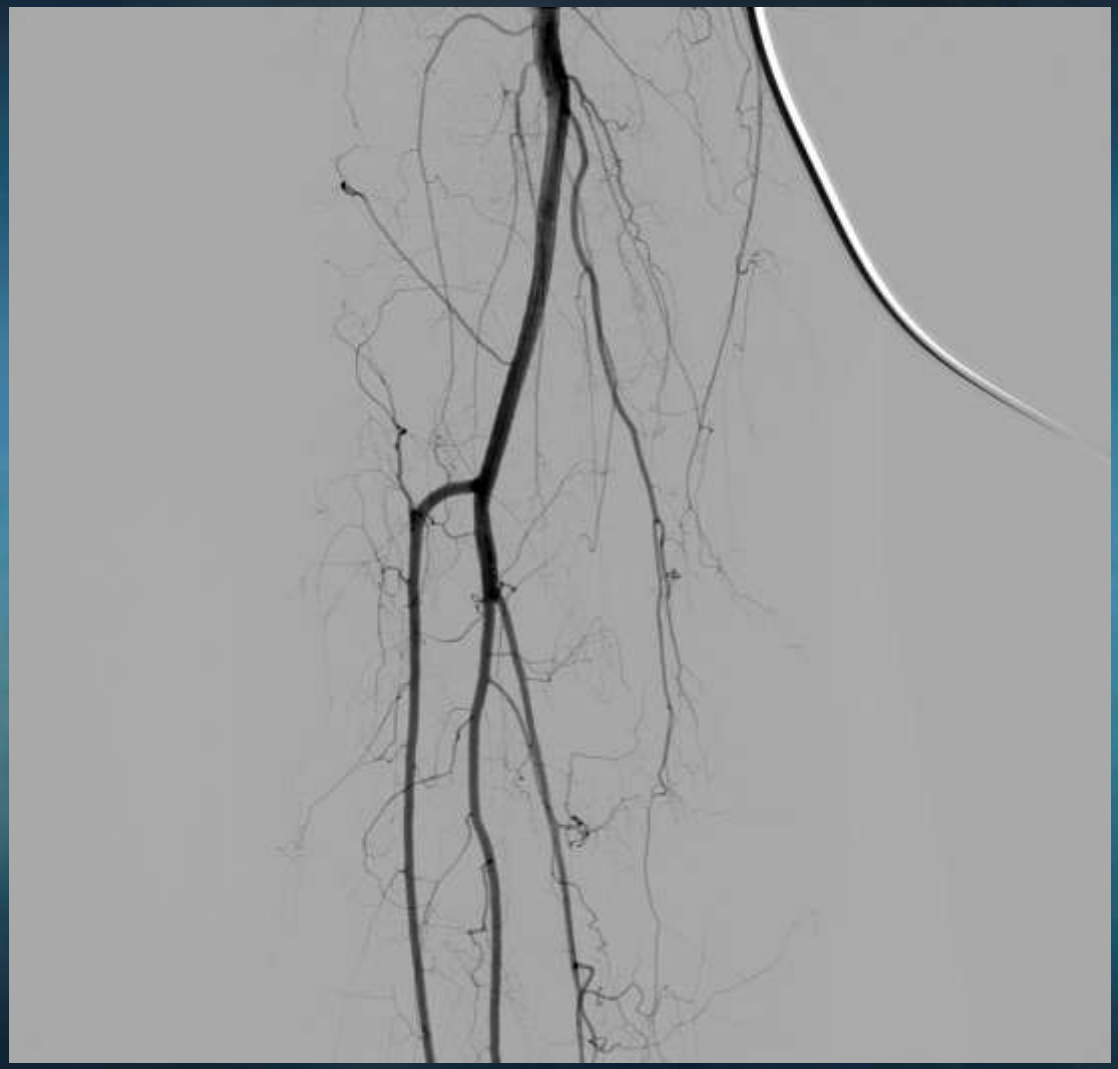
Successful Laser Recanalization of Totally Occluded Posterior Tibial Artery

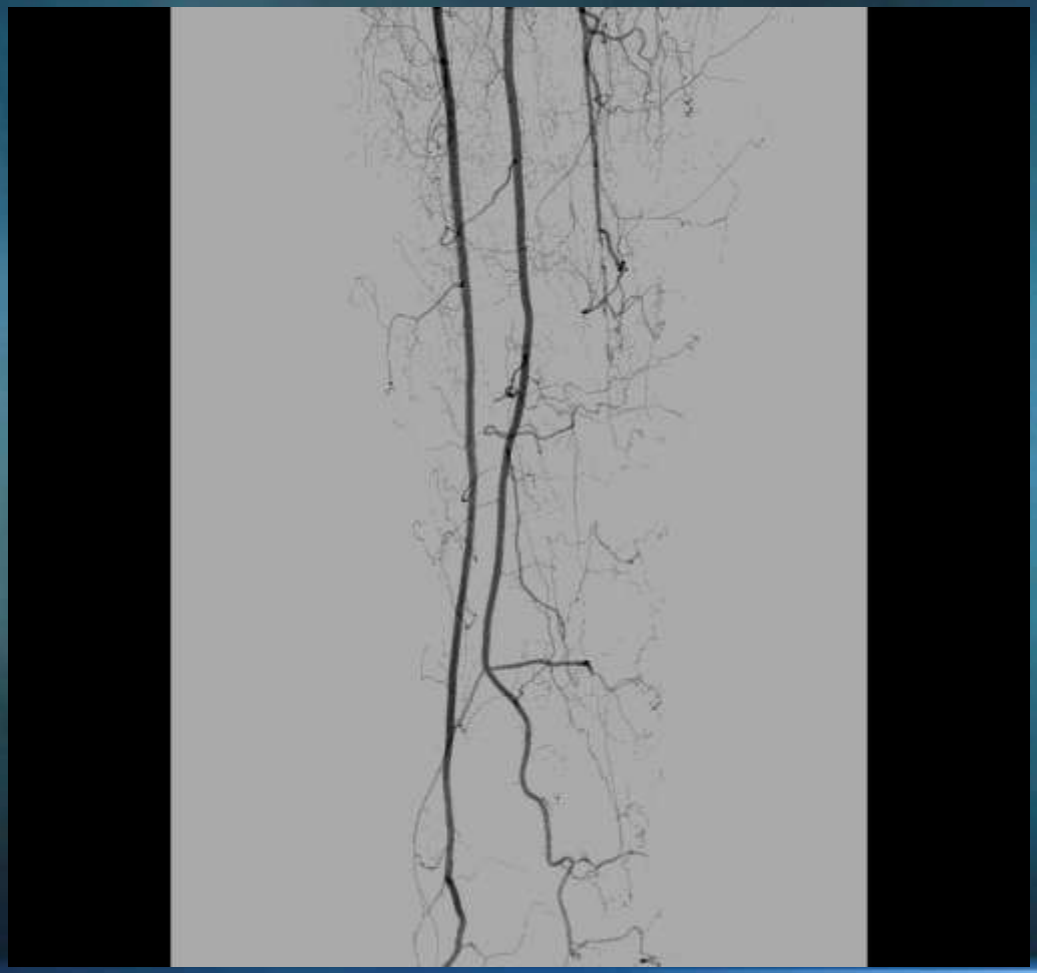
- This 62 year old white female has had chronic venous stasis ulcers for at least the last 12 to 15 years. For the last 2 years, she has had a non-healing ulcer.

- Her risk factors for coronary disease include remote smoking history and family history of heart disease. Her ankle brachial indexes were measured, 1.12 on the right, .92 on the left.

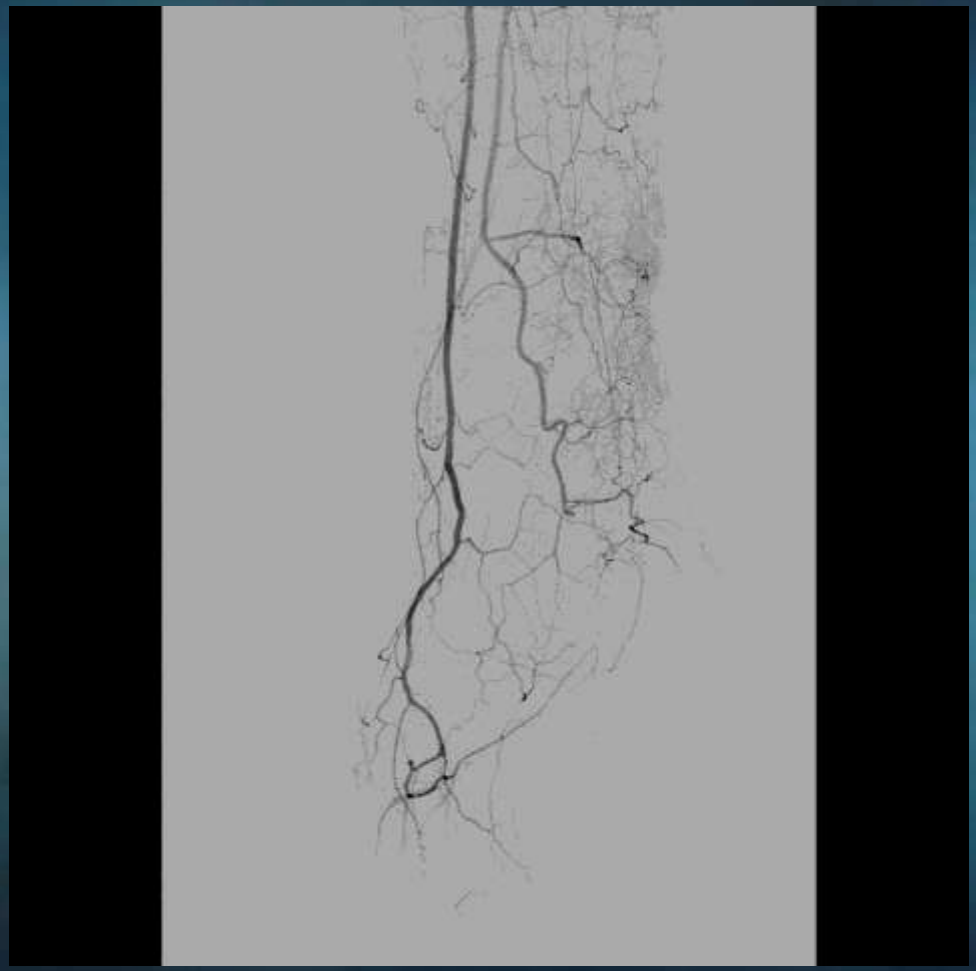
Catheter in place in the posterior tibial artery



Posterior tibial artery is occluded distally – this corresponds to the area of the non-healing ulcer



Distal posterior tibial artery is missing – note lack of collaterals



Wire successfully crossing into the pedal vessels

Angiogram confirming pedal vessel

.9 laser probe placed across previous CTO

Passing of Invatec balloon

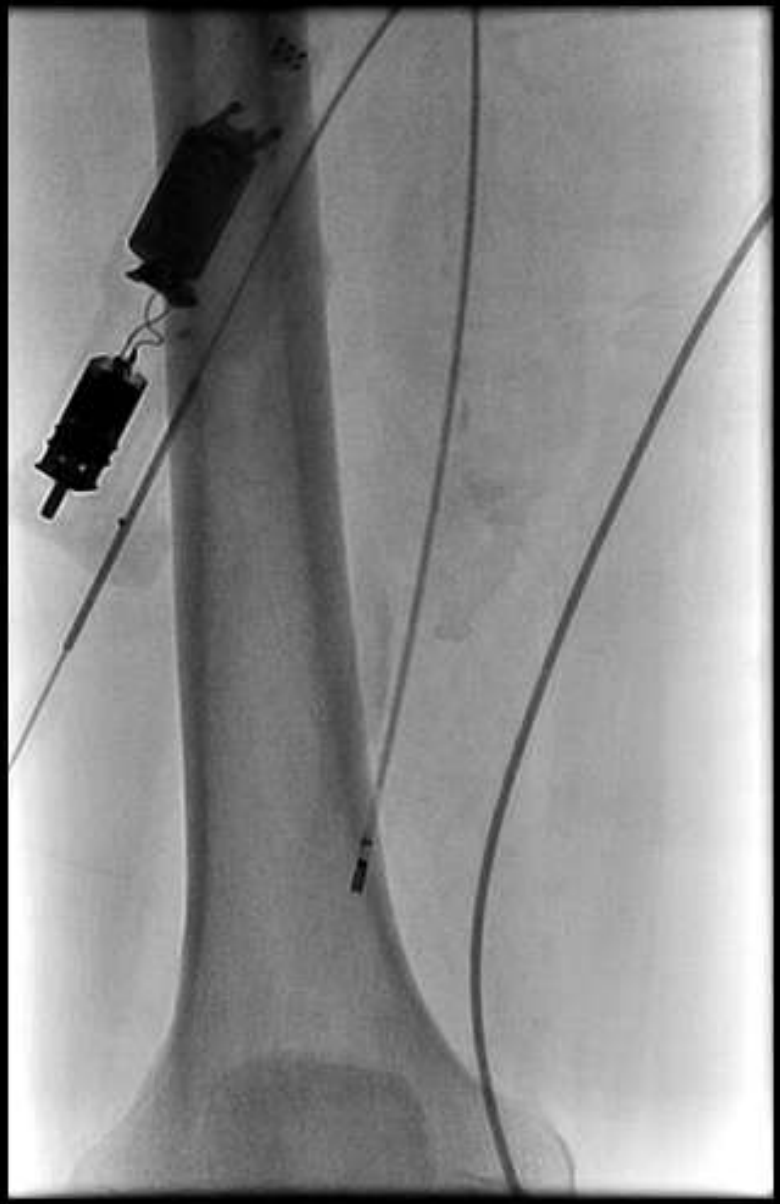
More proximal view post intervention

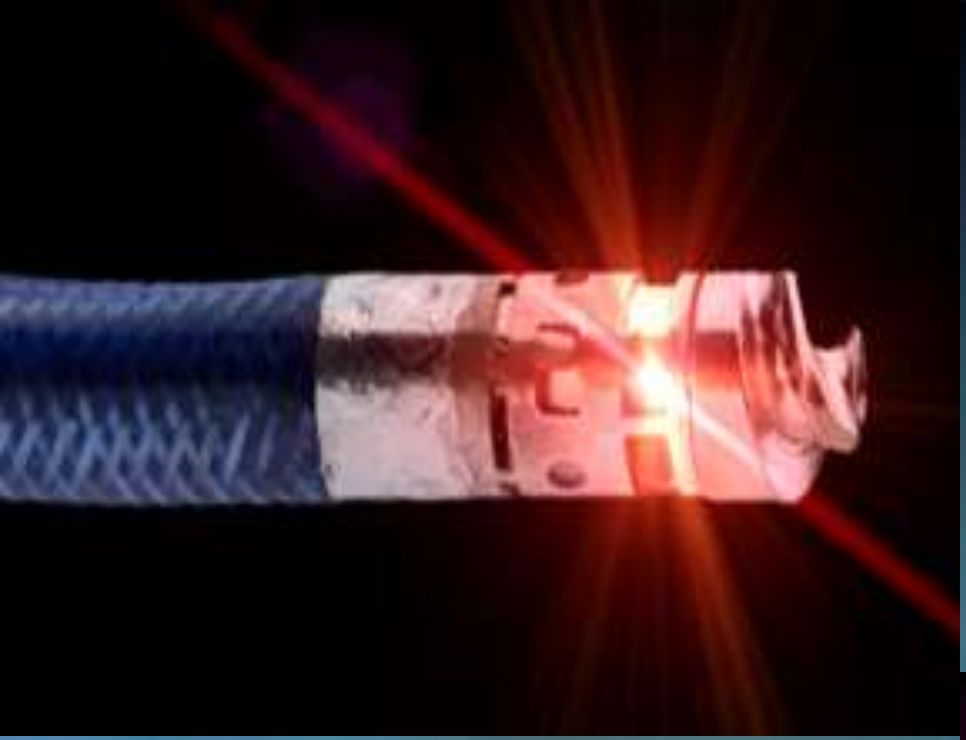
Patency to the pedal vessel after ballooning – this corresponds to the area of the ulcer

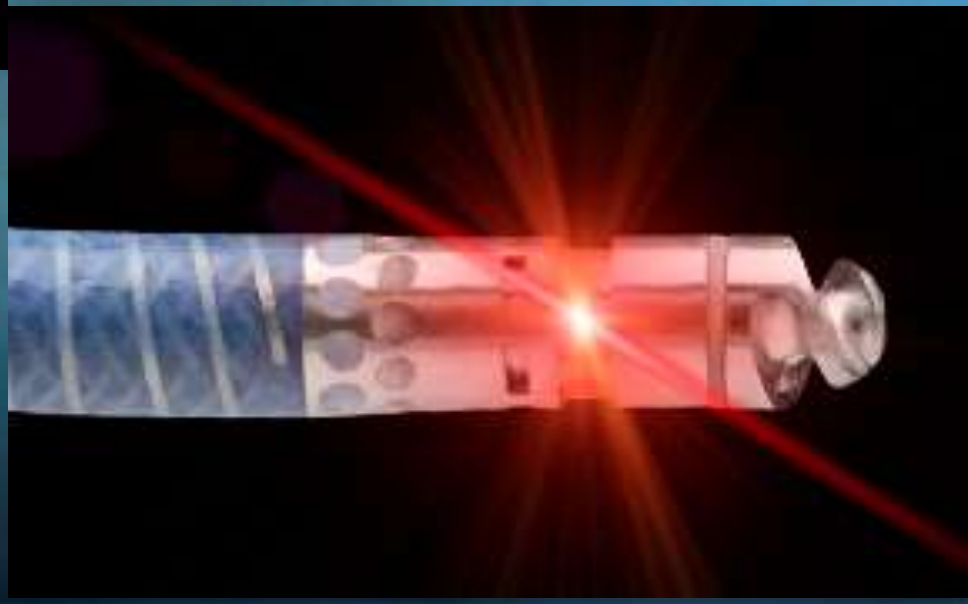
A 56 year old transgender female presents with a three month history of a 4x5 centimeter, non-healing ulcer on the dorsum of the foot. She had previously been diagnosed as having an idiopathic cardiomyopathy. She has had a history of hyperlipidemia and tobacco abuse. When eliciting a history, the patient admits to classic claudication bilaterally. We were asked to see the patient because of the question of possible cardiac clearance prior to amputation. Instead we decided to perform angiography.

Take a Good History

avinger | WILDCAT

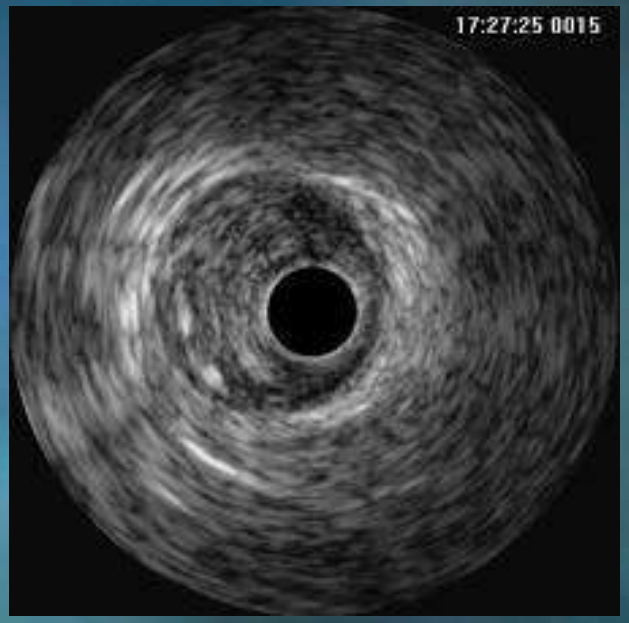






Current modalities for vascular imaging

IVUIVUS
(Intravascular Ultrasound)



- Good visualization through blood
- Resolution (~100 – 300 µm)
- Depth penetration (~5 – 7 mm)

OOCT
(Optical Coherence Tomography)

- Limited visualization through blood
- Resolution (~10 – 20 µm) → 10X IVUS
- Depth Penetration(~2 – 3 mm)

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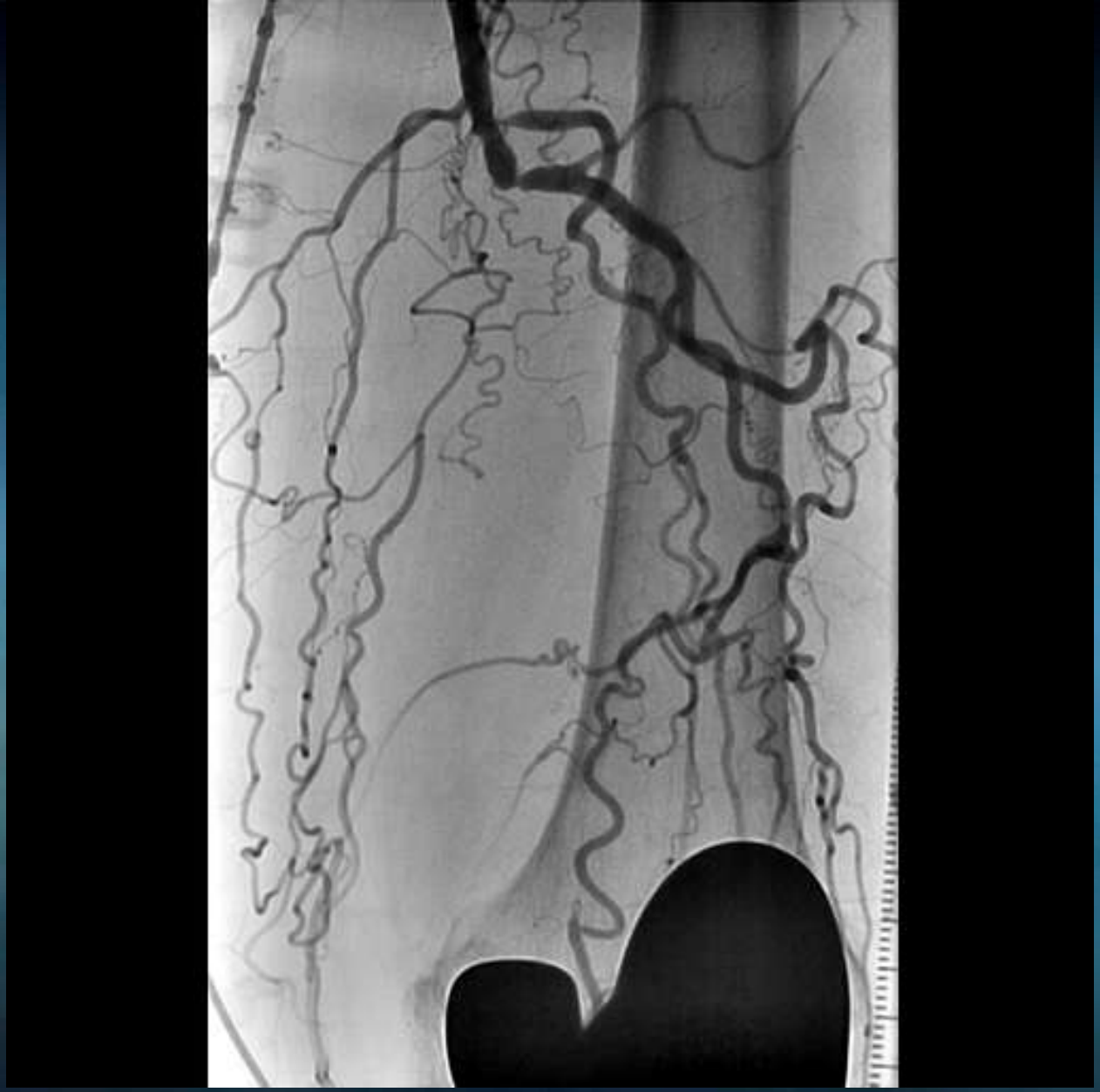
- We present the case of a 71 year old male who presented with intermittent claudication for few years and rest pain over the last 6 months, Rutherford Class IV, with no critical limb ischemia and with ABI of 0.5 on the left leg.

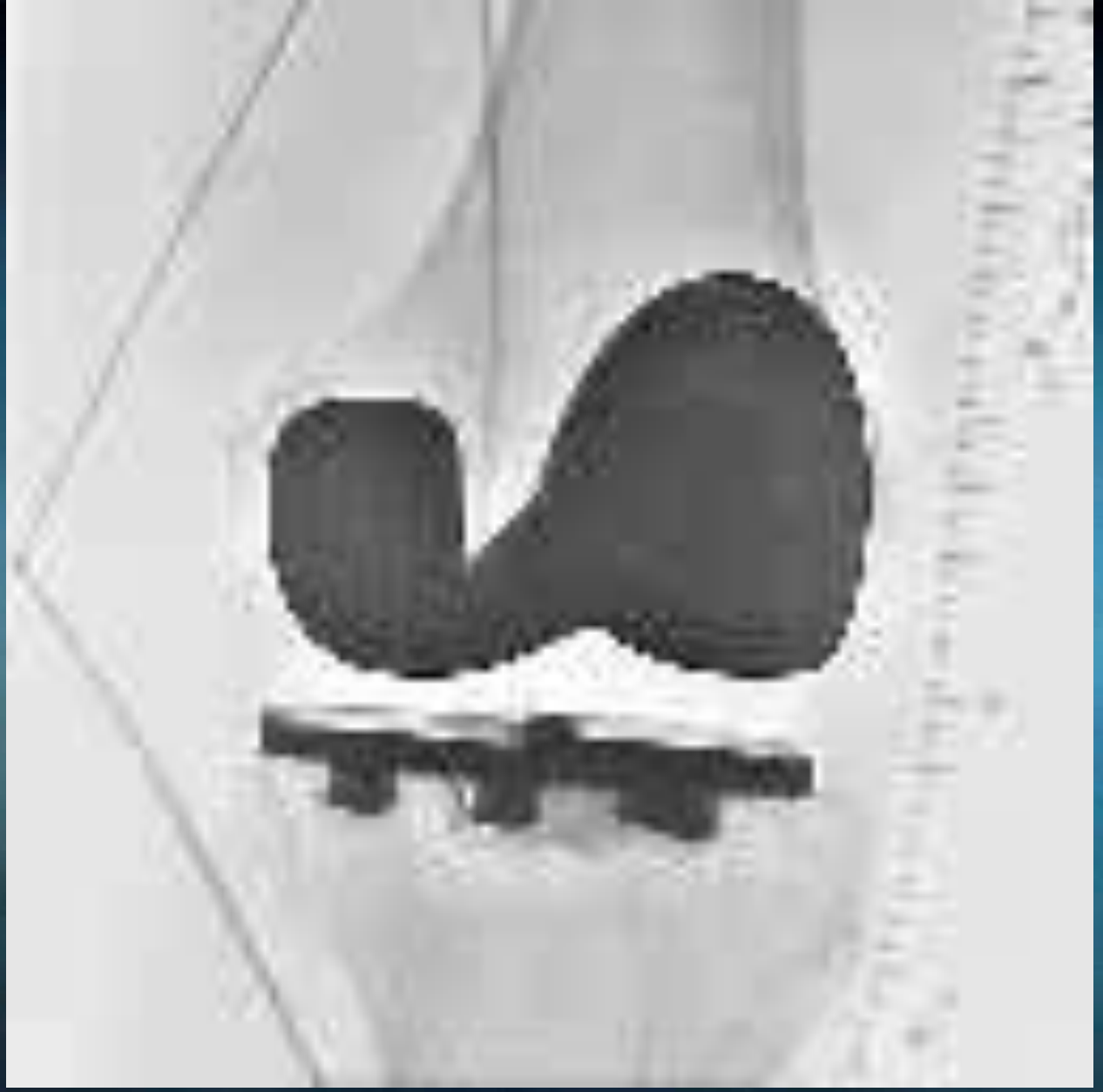


ViperTr


Lossy

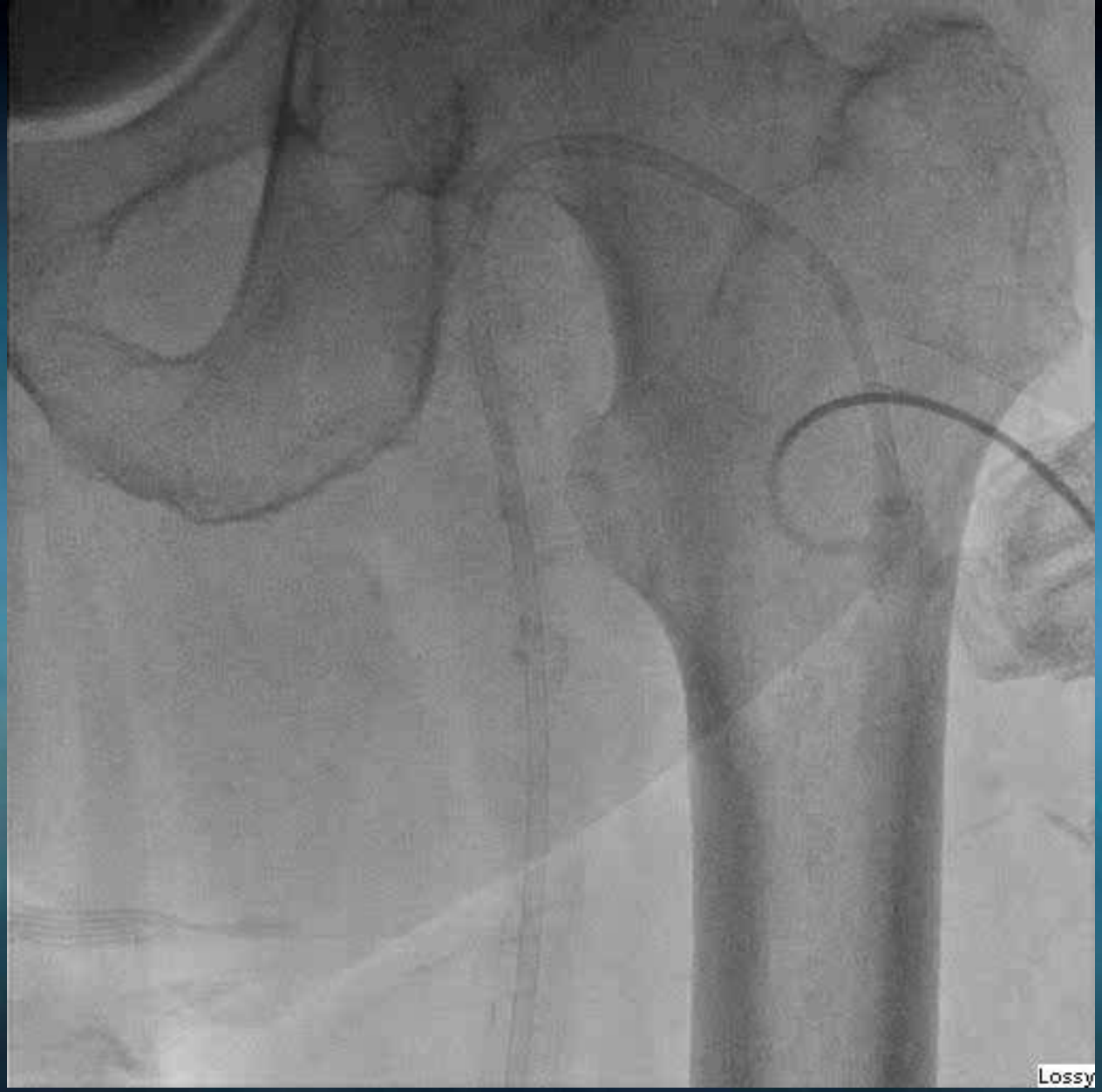
150
200
250

Lossy




Lossy


Lossy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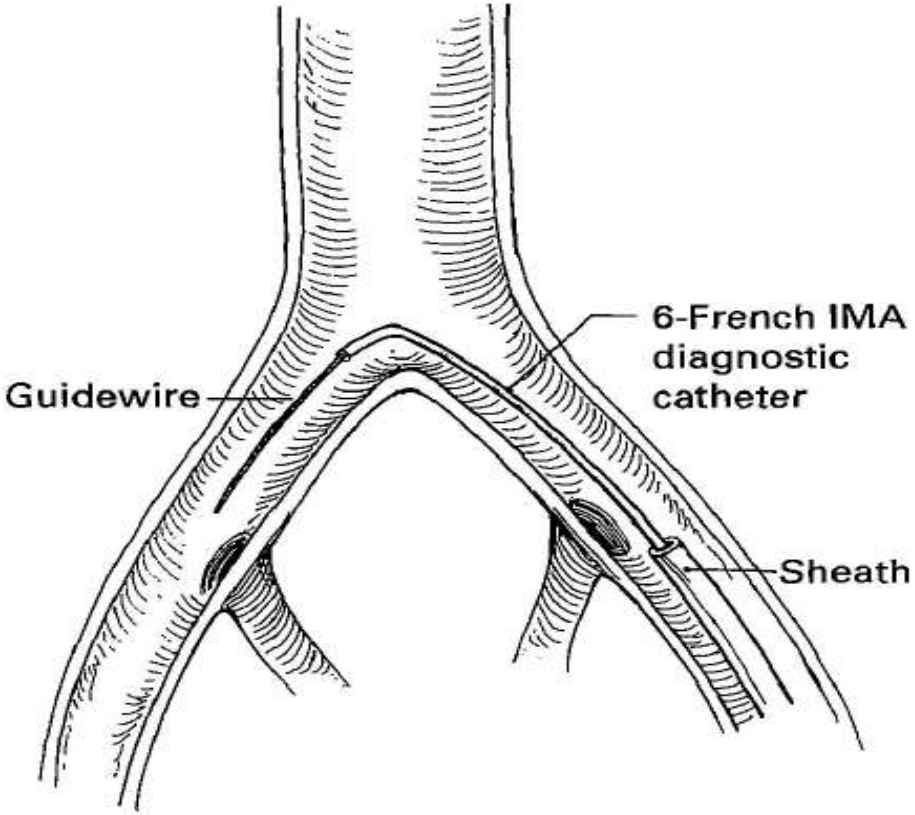


Figure 3.3
A 6-French internal mammary artery or Judkins' right 4 catheter will direct the guidewire to the contralateral iliac artery.

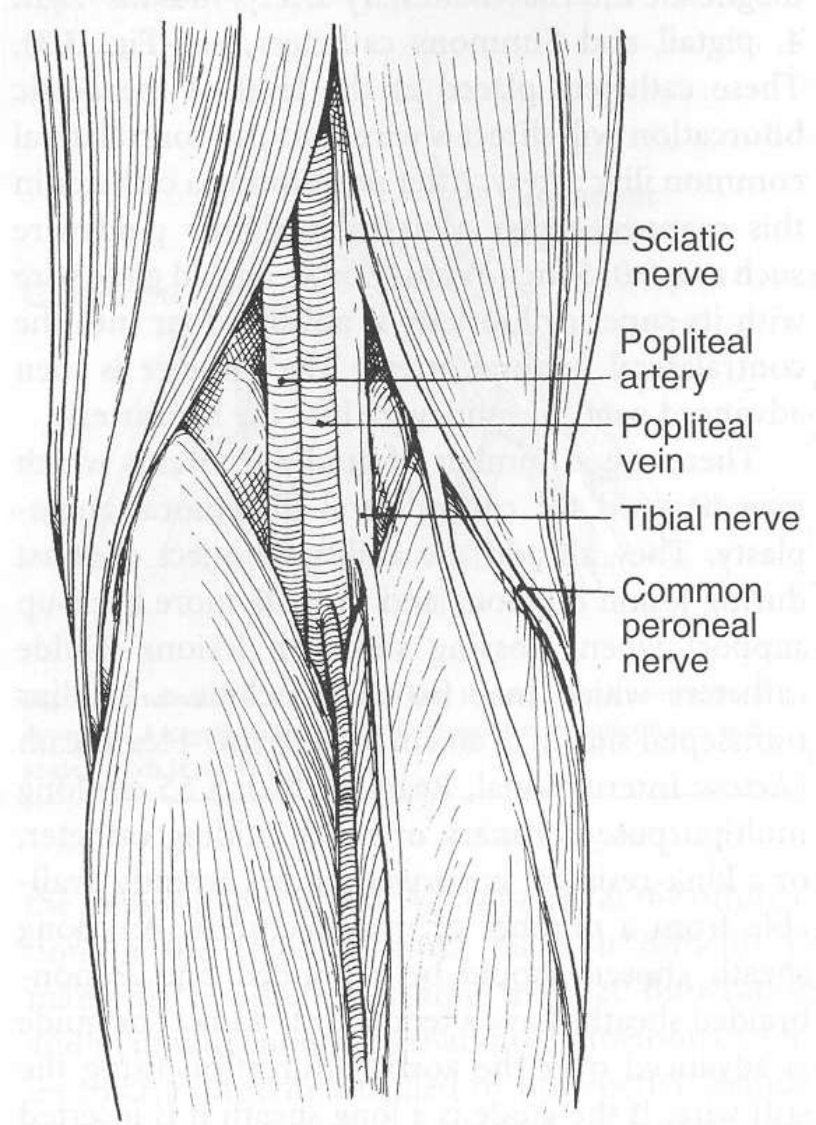
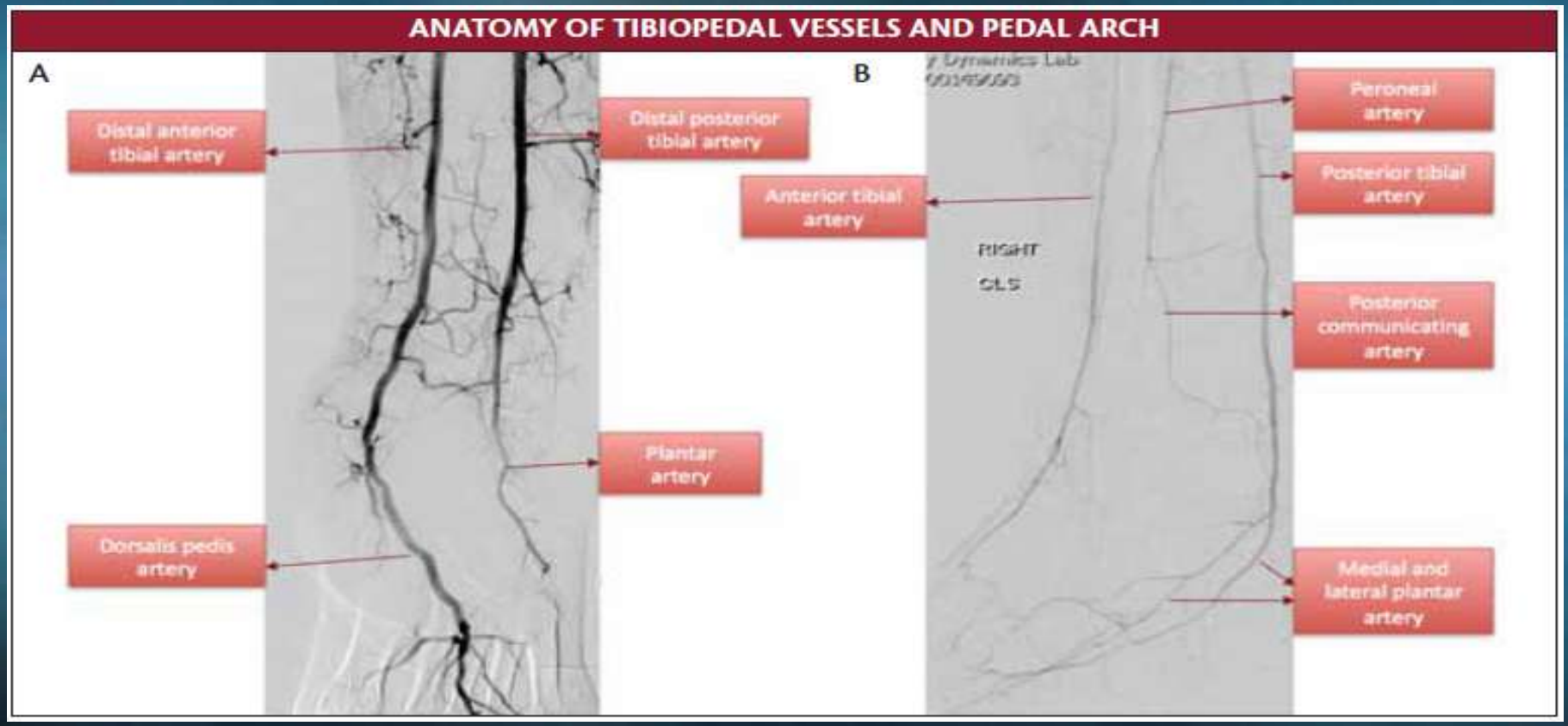


Fig. 3.7 The popliteal artery courses medial to the popliteal vein and overlaps 60% of the time at a level of 6.5 cm above the joint space.

Heuser, Biamino, Peripheral Vascular Stenting Second Edition, 2005 Taylor & Francis, an imprint of the Taylor & Francis group

Anatomy of Tibiopedal Vessels[1]



1. Endovascular Today January 2012 Anatomy of the Pedal Arch and Implications of Tibiopedal Access Mouusa, Nanjandappa, et al

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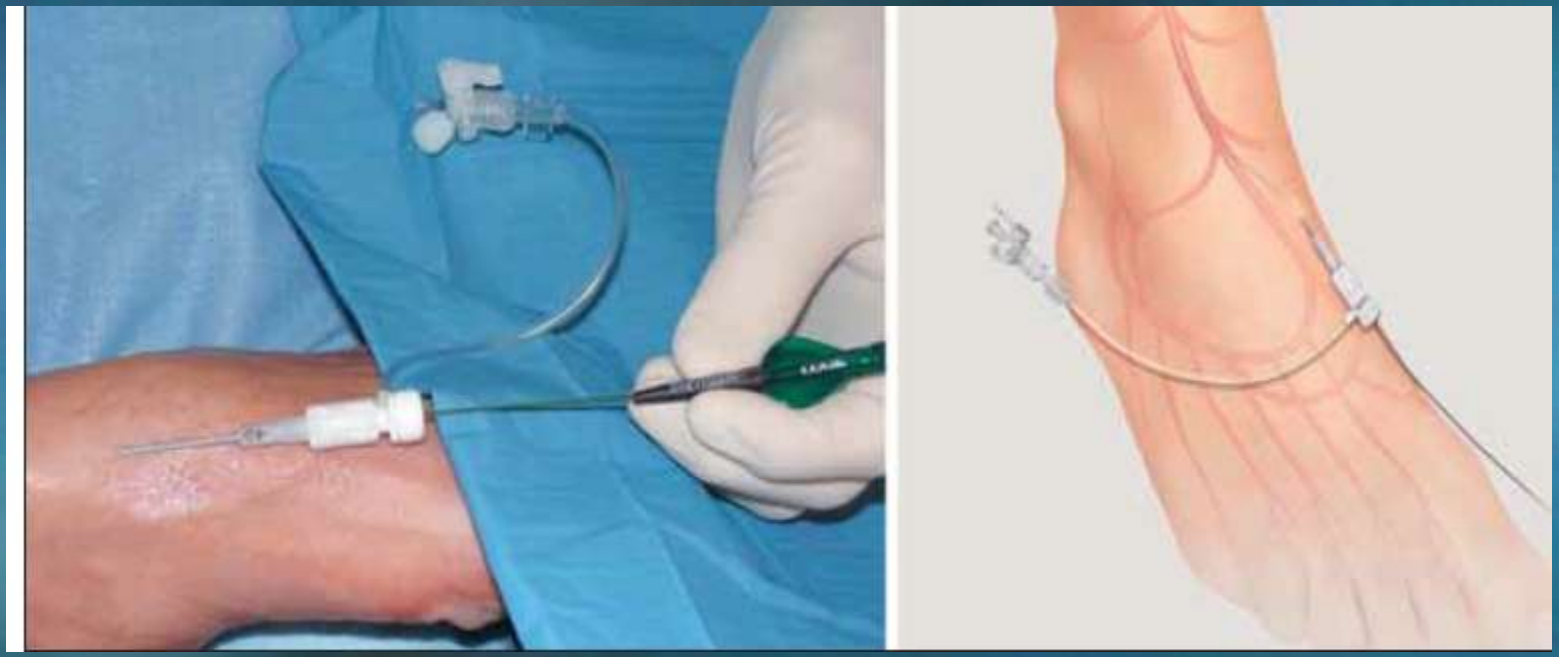
Transpedal Access[1]



Dedicated Micropuncture® Pedal Access Set in the dorsalis pedis artery.

1. Endovascular Today January 2012 Anatomy of the Pedal Arch and Implications of Tibiopedal Access Mouusa, Nanjandappa, et al

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Sheathless Transpedal Approach[1]

- .014 or .018 Guidewire 300cm
- OTW low profile balloon
- Support Catheter; Quick-Cross

1. Technical Tips for Retrograde Tibial Access Andrez Schmidt, MD

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69 year old male presents with non-healing ulcer of his right foot

- ESRD
- Diabetes Mellitus
- Previous AKA on the left side

Angiography and intervention was attempted

- 100% deep femoral artery occlusion
- Contralateral approach was unsuccessful

Non-healing ulcer

Prepopliteal shot

Pre-foot run off

Marking shot for post tibial approach

Retrograde access across CTO

Retrograde catheter at CTO

Retrograde probing

Confirmation of CTO crossing

PTA at site

Residual stenosis noted

AngioScore placement

Continued residual stenosis

Post stenting and AngioScore

Plantar vessel patency post procedure (note slight leaking at access site)

Peripheral Arterial Disease (PAD)

- Doesn't kill you
- Increased the risk of heart attack, stroke and death
- CLI patients face a prognosis worse than many cancers!

How are we doing treating PAD Patients?

- Depends who is following them
- In 4-year follow up, if on a statin, there is a 15% reduction in cardiovascular death, non-fatal MI and non-fatal stroke
- In the same period, there was a 21% relative drop in PAD events
- **A 43% relative drop in amputations**

JAMA 2010; 304:1350-7 (REACH) Registry.

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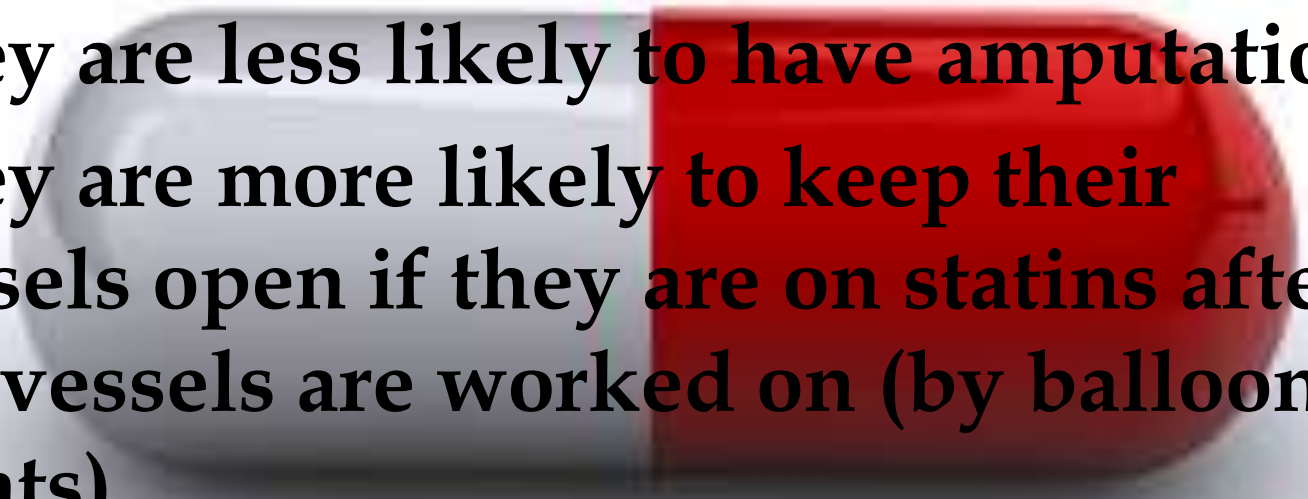
How are we doing treating PAD Patients?

- 80% of patients treated by cardiologists got statins
- 70% of patients treated by primary care physicians got statins
- <50% of patients treated by vascular surgeons got statins

- **Statins lower the PAD patients' cholesterol levels**
- **The patients on statins are less likely to have heart attacks, strokes or deaths**
- **They are less likely to have amputation**
- **They are more likely to keep their vessels open if they are on statins after the vessels are worked on (by balloons or stents)**



PAD

- Patients with PAD have a 3-5X greater risk of cardiovascular death than those without PAD
- It is far worse with CLI

CLI

Risk Factors

- Age (>65)
- HBP
- Hyperlipidemia
- Abnormal ABI

Lethal Risk Factors

- Smoking (triples Risk)
- Diabetes (increases risk fourfold)

- 30 million -- 230 million in the last 29 years
- Diabetic patients with CLI are 10 times more likely to require amputation than non-diabetics
- A limb is lost every 30 second to diabetes

CLI

- Immediate revascularization is the first step in treating CLI
- Only 40% receive prompt revascularization
- The team approach is best!
- Multidisciplinary foot care programs can reduce amputation rates by 36%-86%

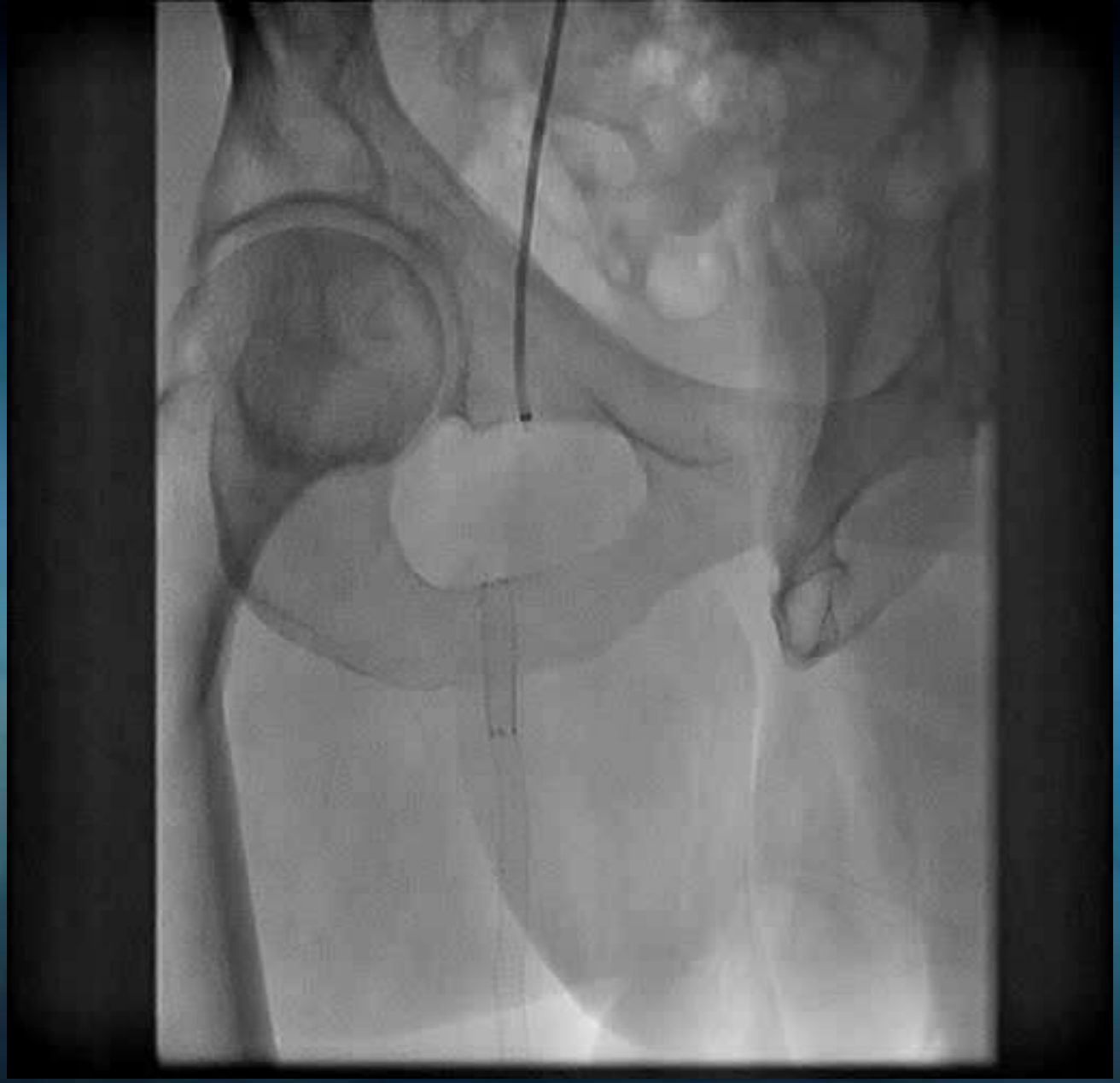
CLI

- Will get worse as Baby Boomers age
- Aging alone may account for an approximate 50% increase of CLI patients seeing us

58 year old African American gentleman with Huntington's Chorea has critical limb ischemia of his right heel.

In 2010, I recanalized a totally occluded series of self expanding stents of his SFA.

He presents with recurrence of symptoms in his heel.



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