Post-Intervention Scanning Bypasses and Stents

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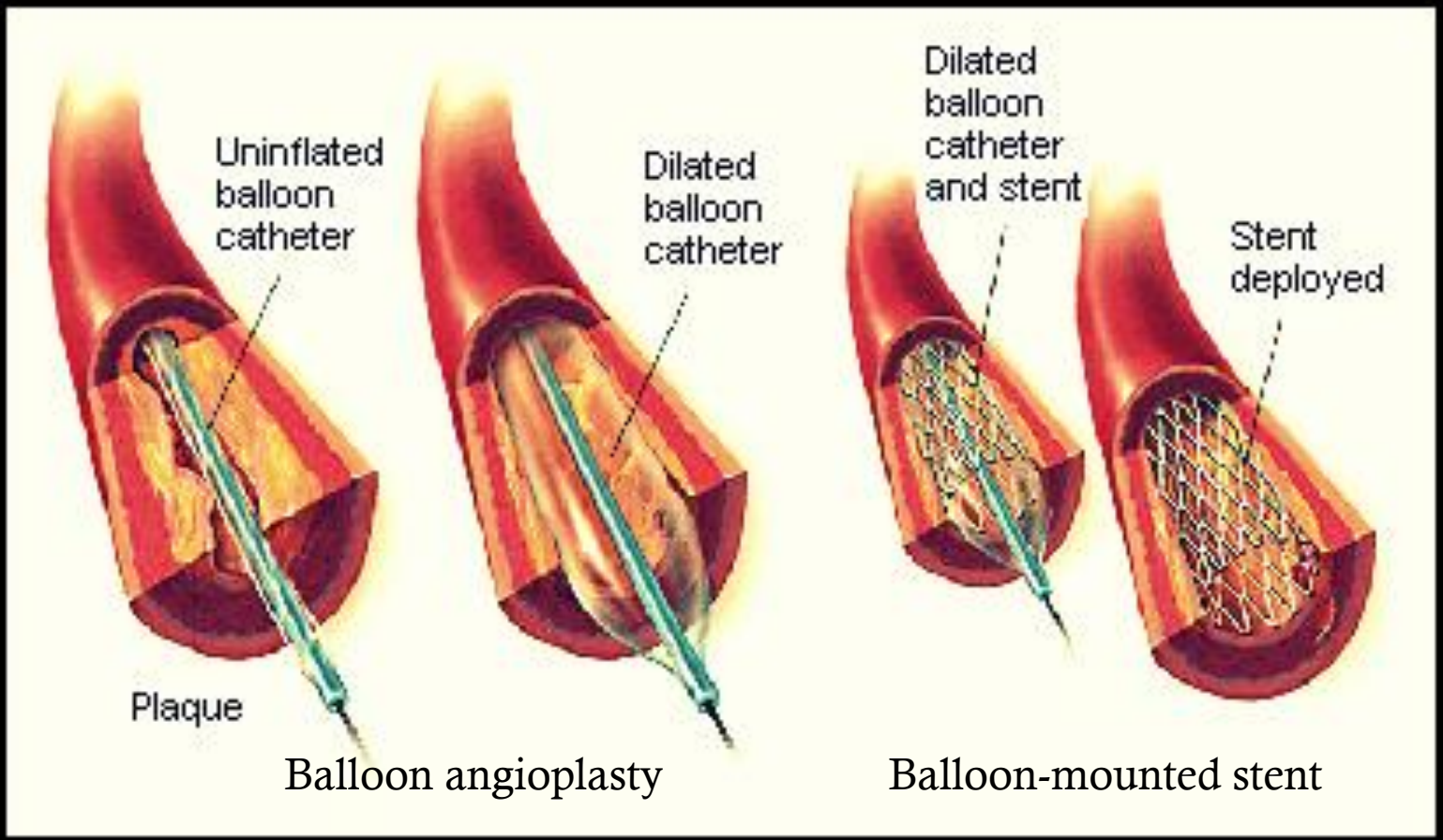
65 Year Old Male

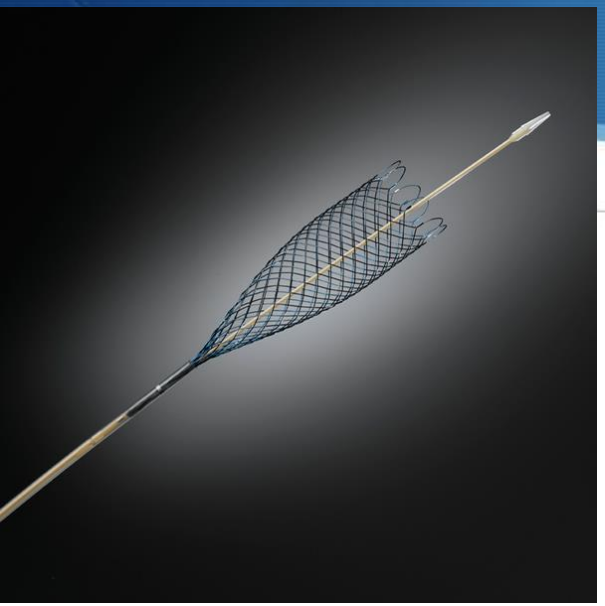
Indications for LE Intervention with Stents or Surgical Bypass

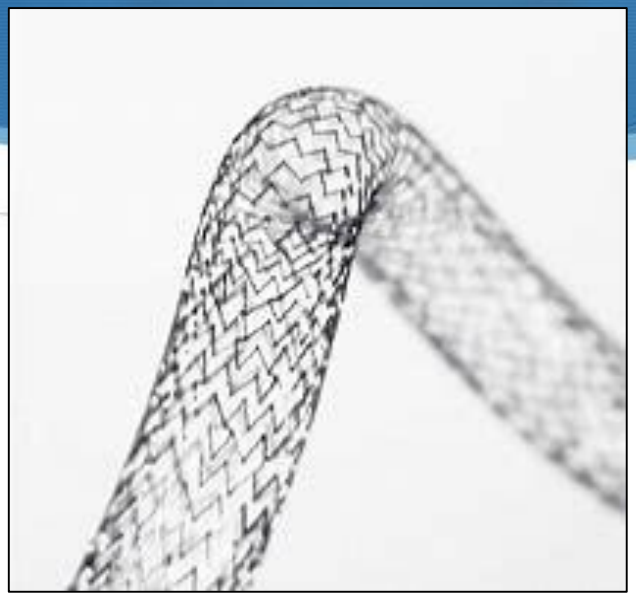
- Atherosclerosis (tandem lesions, focal stenosis)
  -Short or long segment arterial occlusions
- Trauma (dissection, injury)
- Arterial aneurysms

Balloon Angioplasty and Stents:



Self-expanding Stents

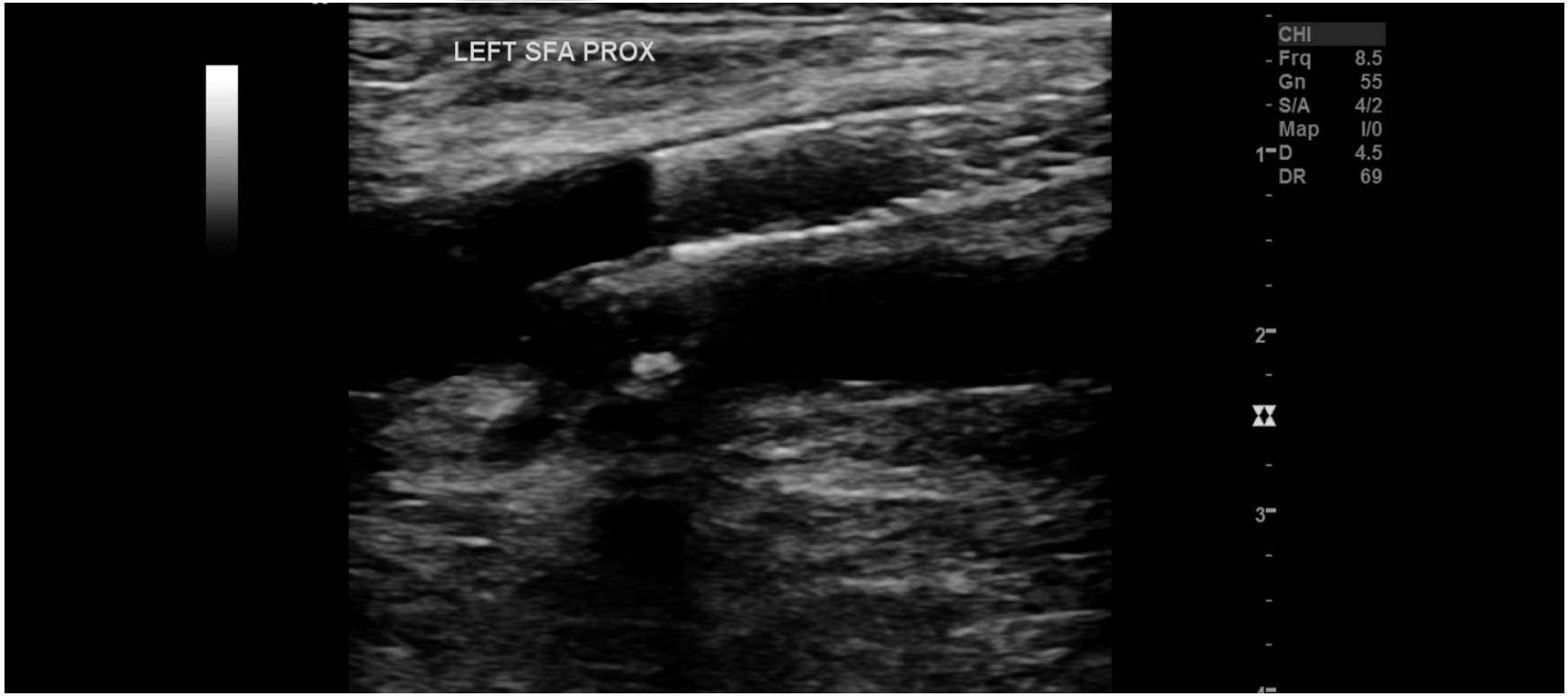




Self expanding bare metal stent

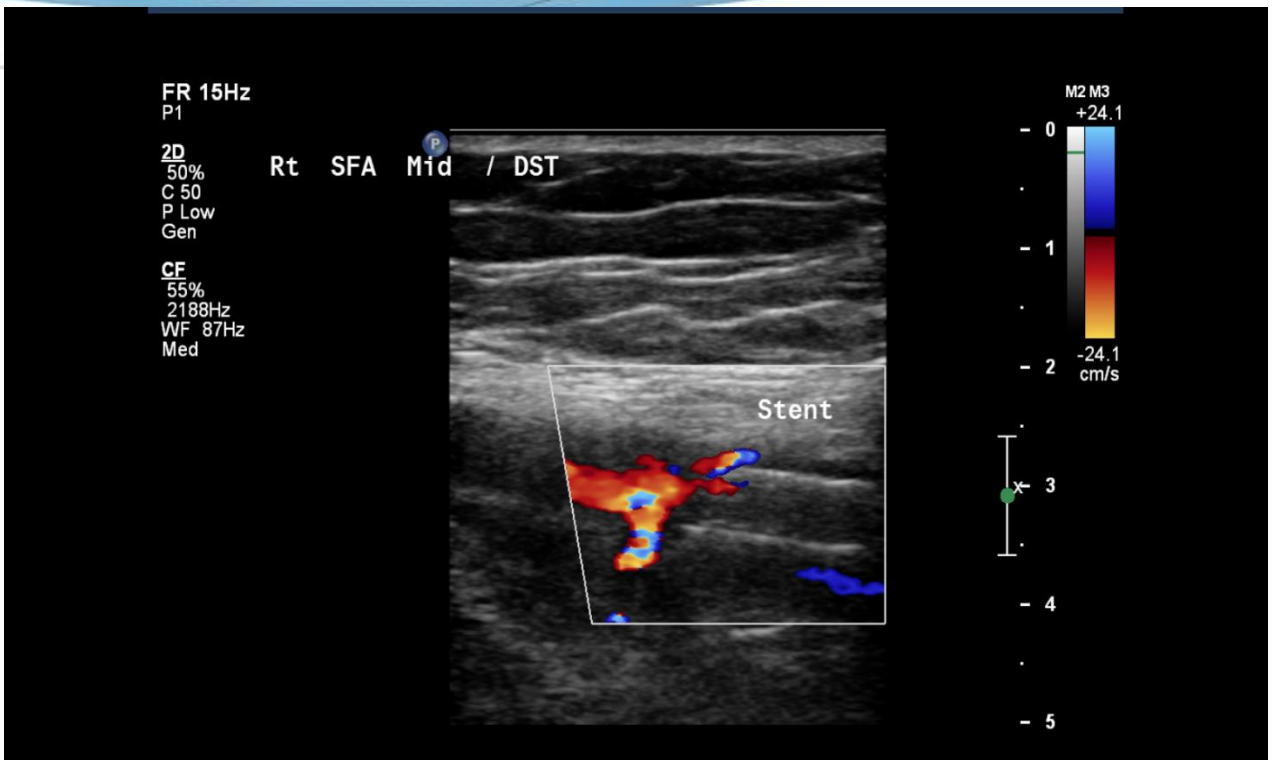
Self expanding covered stent

Stents in 2D



Stents: Imaging Approaches

- Pre stent
- Proximal stent
- Mid stent
- Distal stent
- Post stent



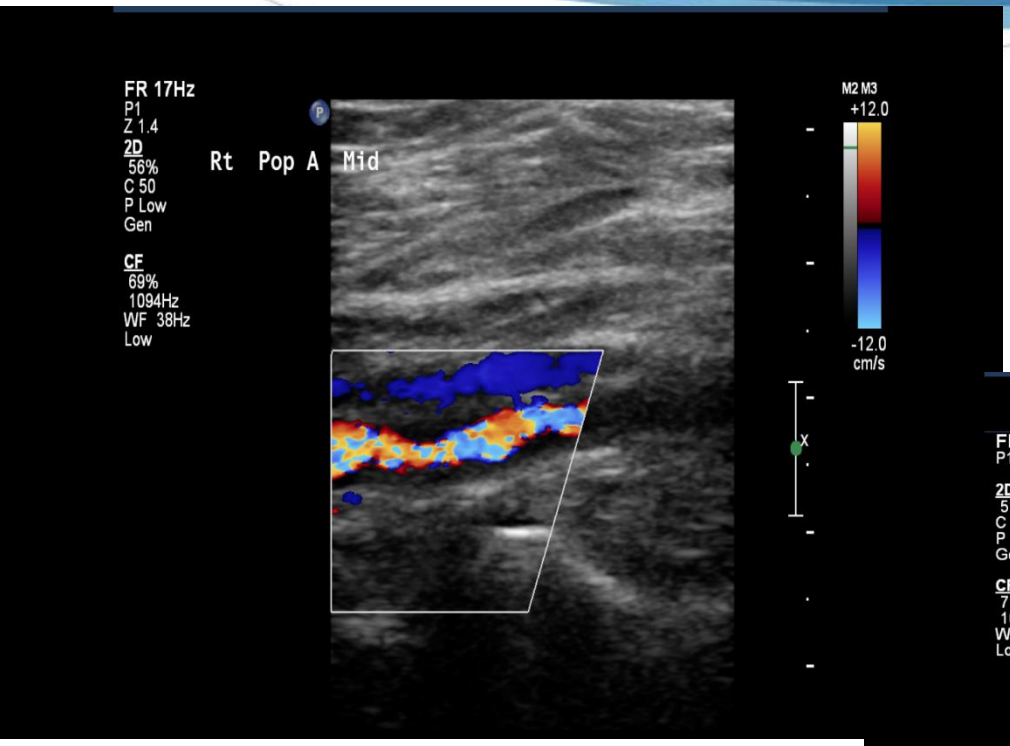
Proximal and distal ends of the stents can be area of concern as well

Stents: What are the Issues?

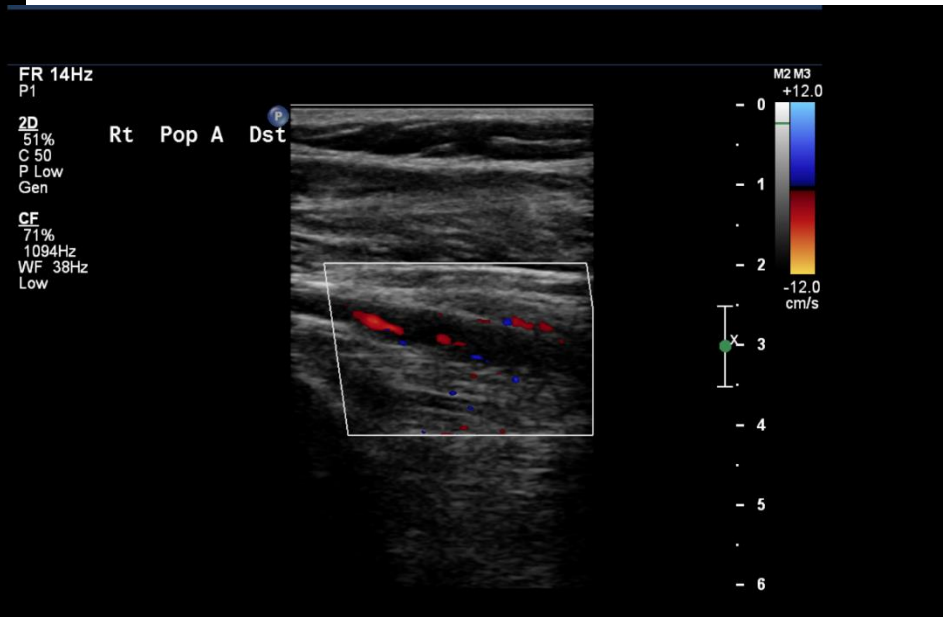
- Thrombosis
- Stenosis
- Fibro-Intimal Hyperplasia
- Occlusion
- Structural damage (fractures, bends)

Acute Limb Ischemia

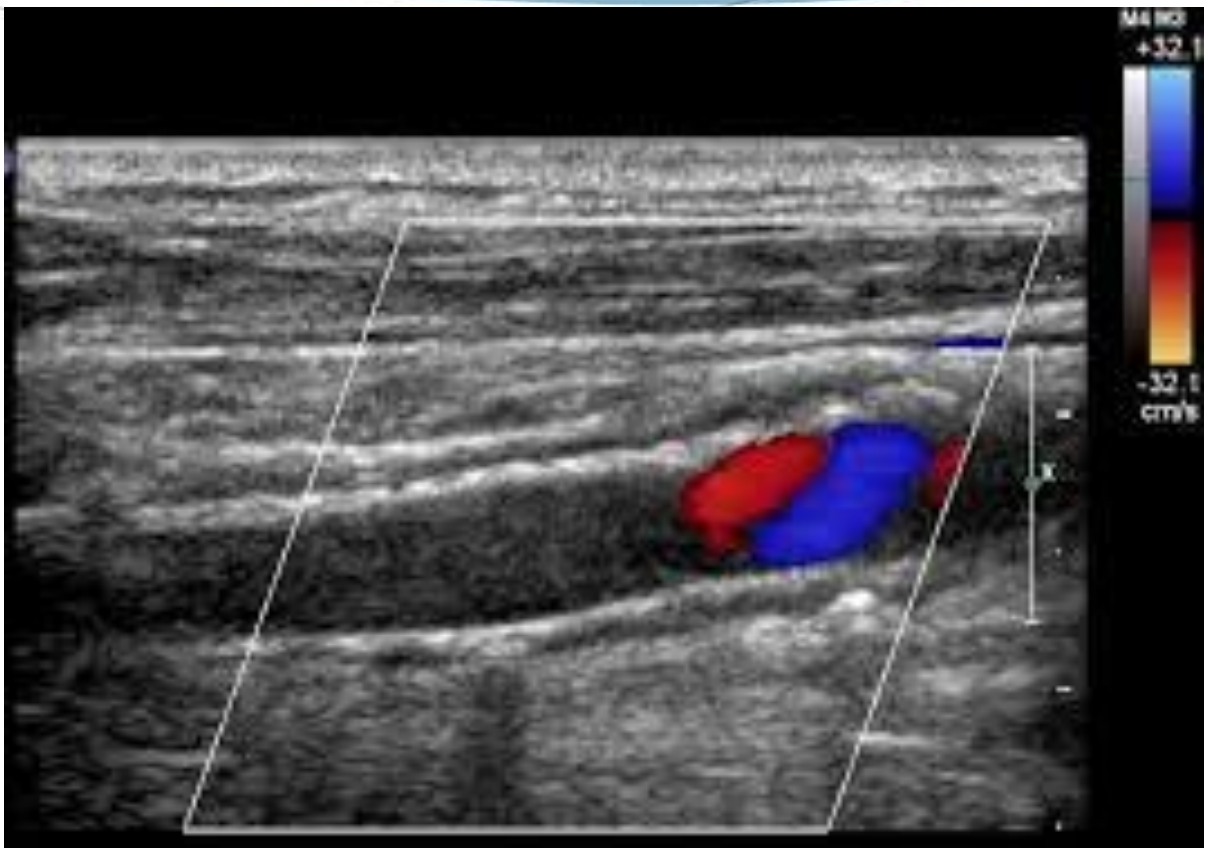
Stents & Initimal Hyperplasia



Color Doppler



Stents & Thrombosis



Stents & Structural Damage

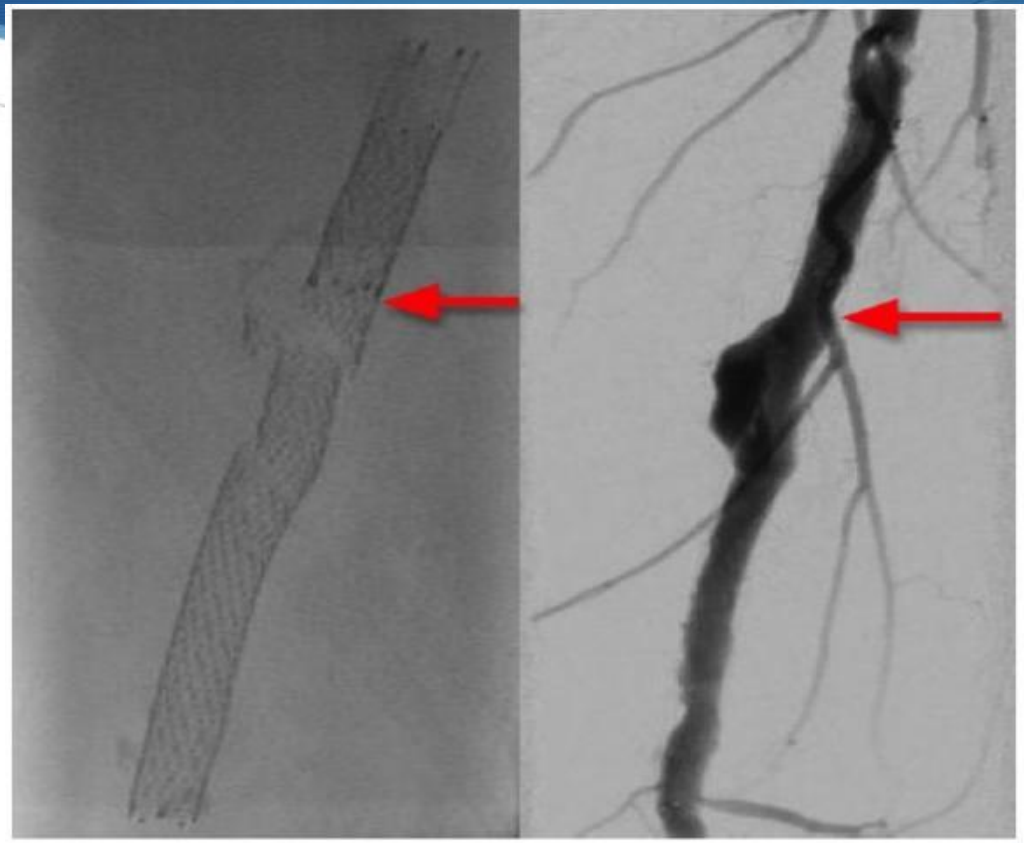
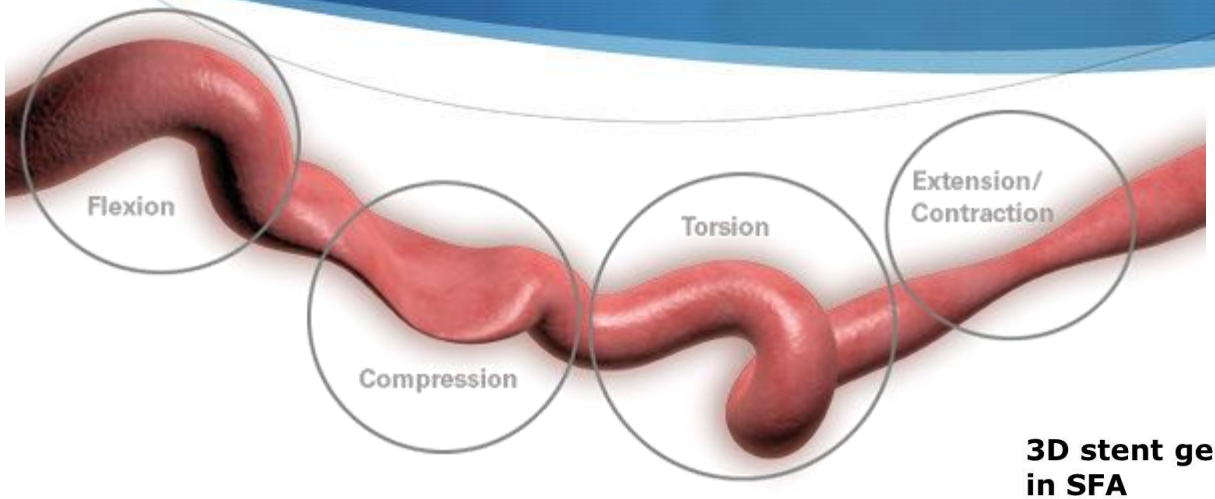


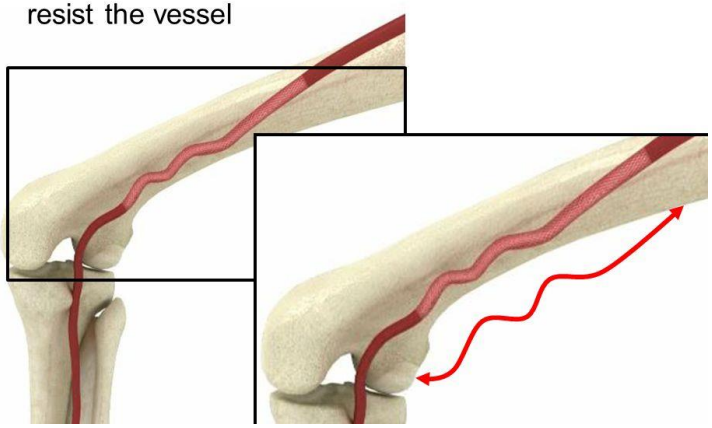
Figure 3. A case of type 5 stent fracture (red arrow, left) associated with pseudoaneurysm (red arrow, right) of the superficial femoral artery.

Why Do Stents Break?

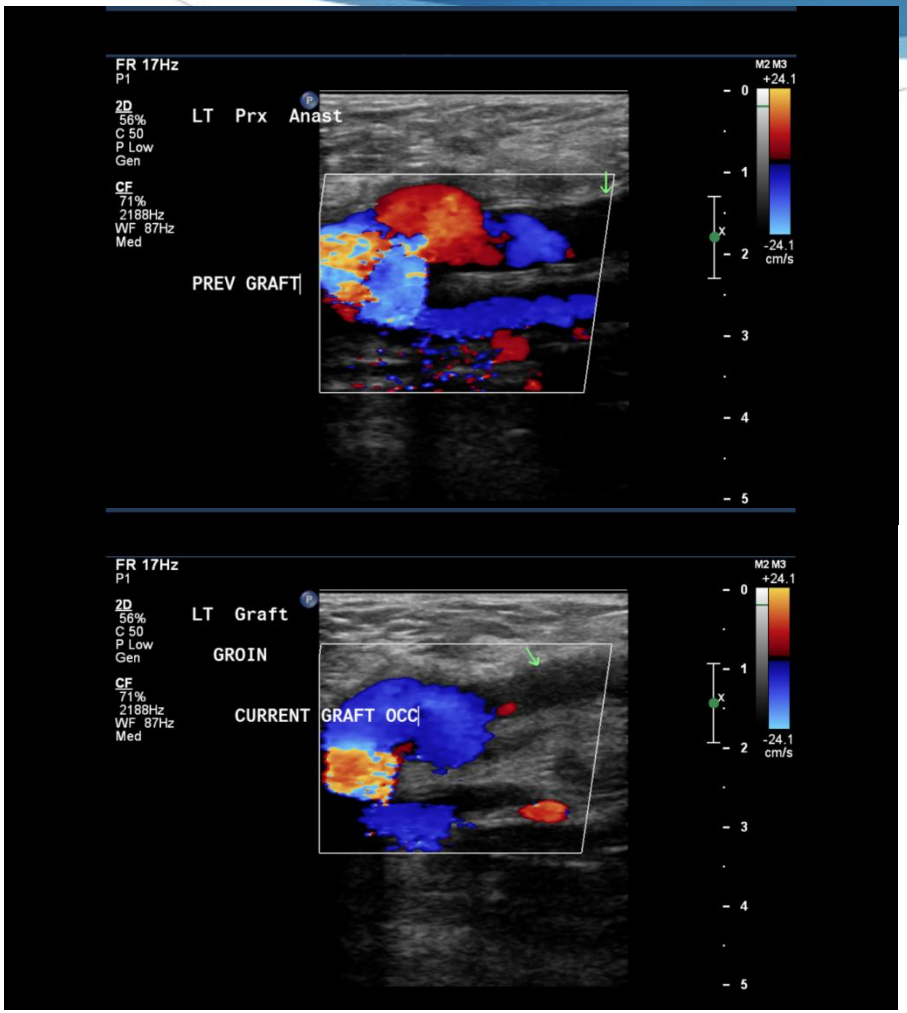


3D stent geometry accommodates loading in SFA

- Ideal mechanical implant would mimic rather than resist the vessel



Bypass Grafts: Anastomosis



Synthetic Graft

Vein graft
In-situ graft
Reverse great saphenous vein

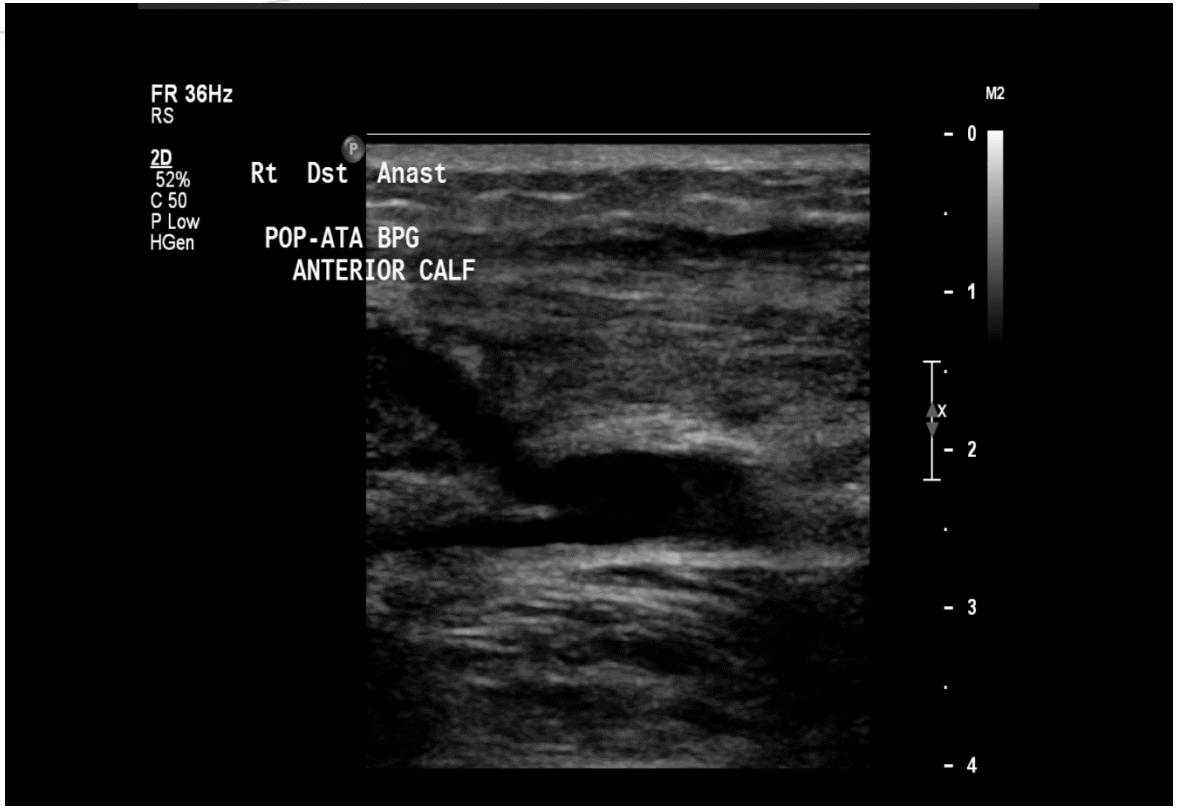
Clues to Bypass Type
Antiplatelet therapy vs Oral anticoagulants

- Autogenous bypass
  -Antiplatelets: ASA, Plavix, etc.

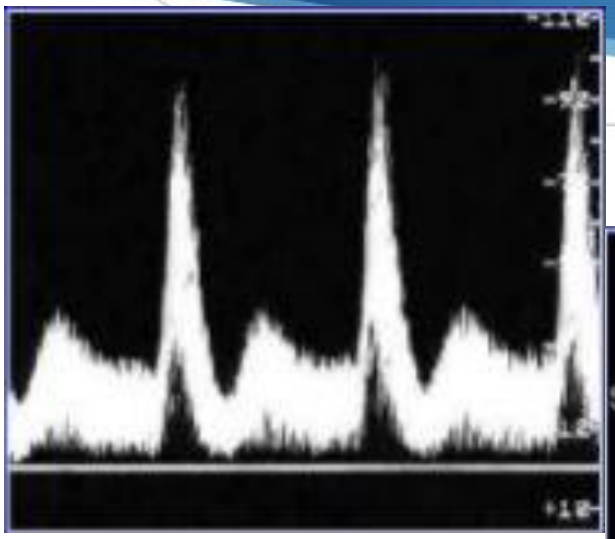
- Synthetic bypass
  -Oral anticoagulants: warfarin, NOACs

Bypass Grafts: Techniques & Protocols

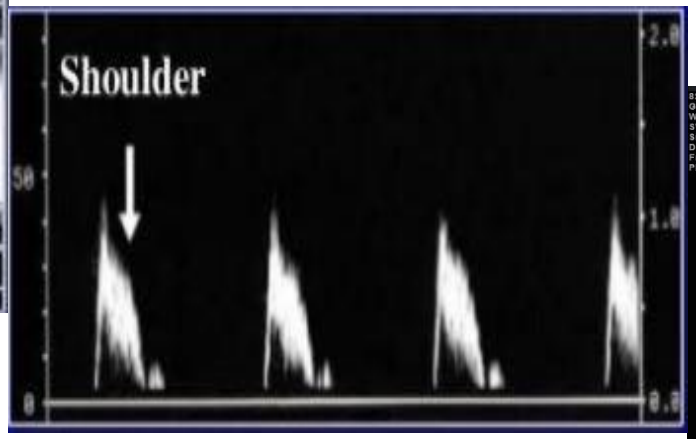
- Inflow
- Proximal anastomosis
- Proximal graft
- Mid graft
- Distal graft
- Distal anastomosis
- Outflow



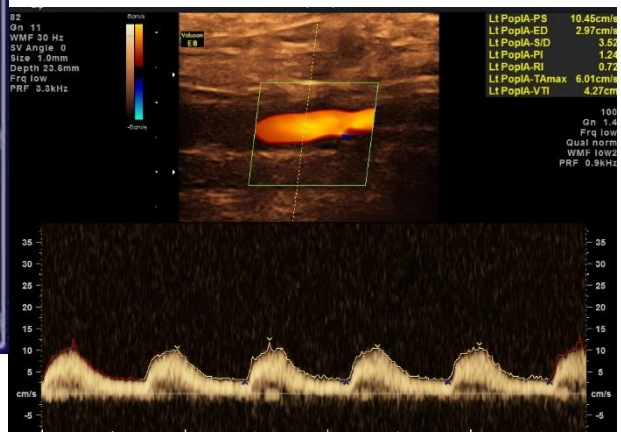
Blood Flow in Stents and Synthetic Bypass Grafts



Can be higher than native vessels
Vasodilation waveform appearance



High resistive wave forms



Dampened low resistive waveforms
Proximal lesion

Vascular Lab Assessment Ultrasound

2D grayscale

- Plaque
- Thrombus
- Intimal-hyperplasia
- Aneurysms

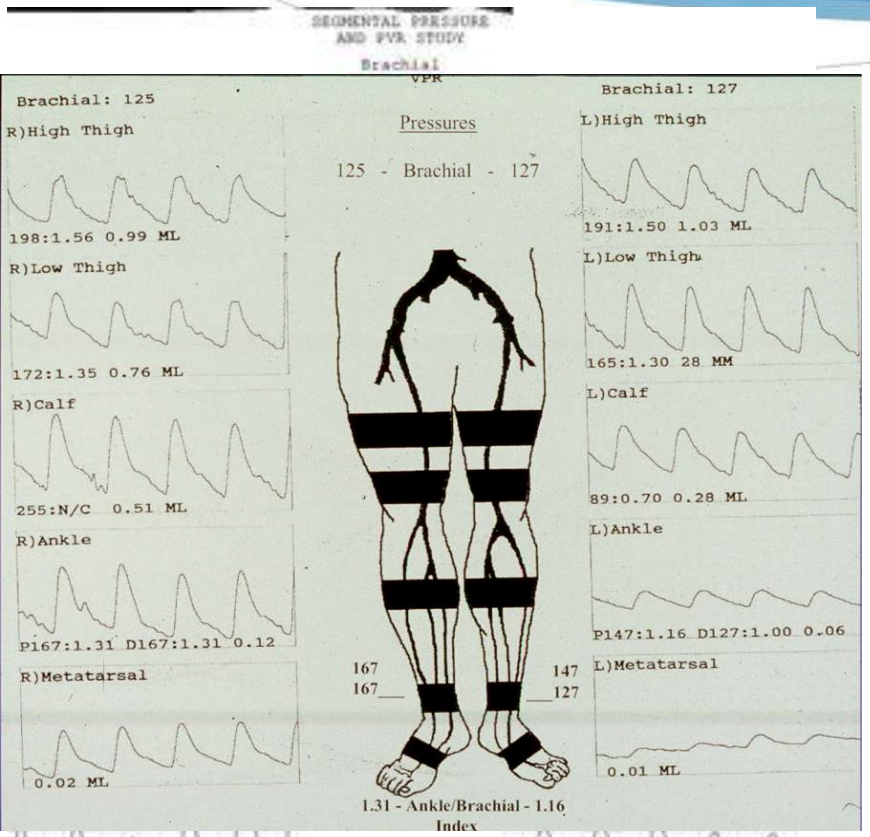
Doppler

- Color
- Power Doppler (CPA)
- Pulse wave

Vascular Lab Assessment Physiological Testing

- Multi-level segmental pressures & pulse volume recordings at rest or with exercise
- Toe brachial index (great toe)
- Photo plethysmography (PPG) of each digit

Vascular Lab Assessment
Physiological Testing



- **ABI**:

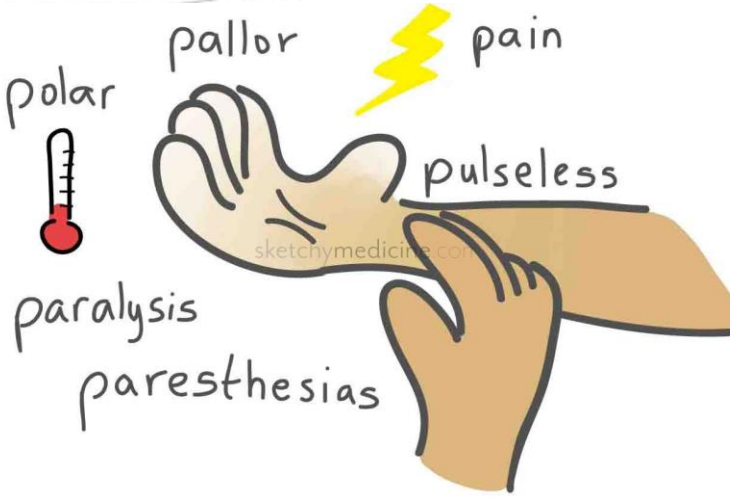
1.1-1.0 – normal

≤ 0.90 – PAD

≤ 0.50 – critical ischemia

**Exception in diabetics – PVRs may be critical / ABIs unreliable*

Stick to the Basics



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