
LEIPZIG INTERVENTIONAL COURSE
LINC

The Angiosome Concept:
How to Connect the Right Arterial Segments?

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Disclosure

Peter A. Schneider

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I have the following disclosures:

X Scientific Advisory Board: AbbottVascular, Medtronic

X Royalties: Cook

X Educational programs: Medtronic, Gore, Cook, Terumo

X Steering Committee for VIVA

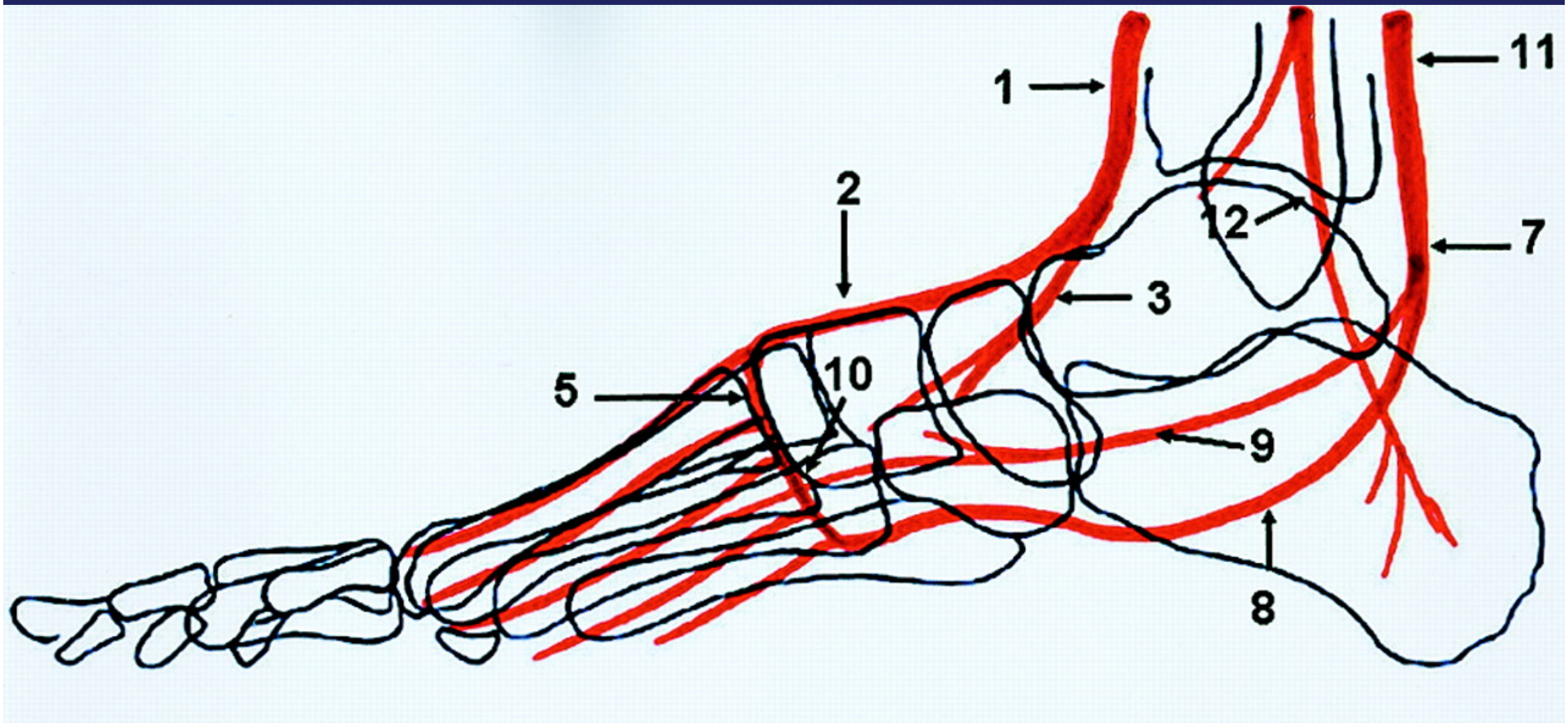
X Enroll in clinical studies with sponsors: Cordis, Abbott, Gore

Old Teachings

- "Must establish in-line flow to the foot"
  - Typically with bypass, we are looking for the best quality target blood vessel to work with.

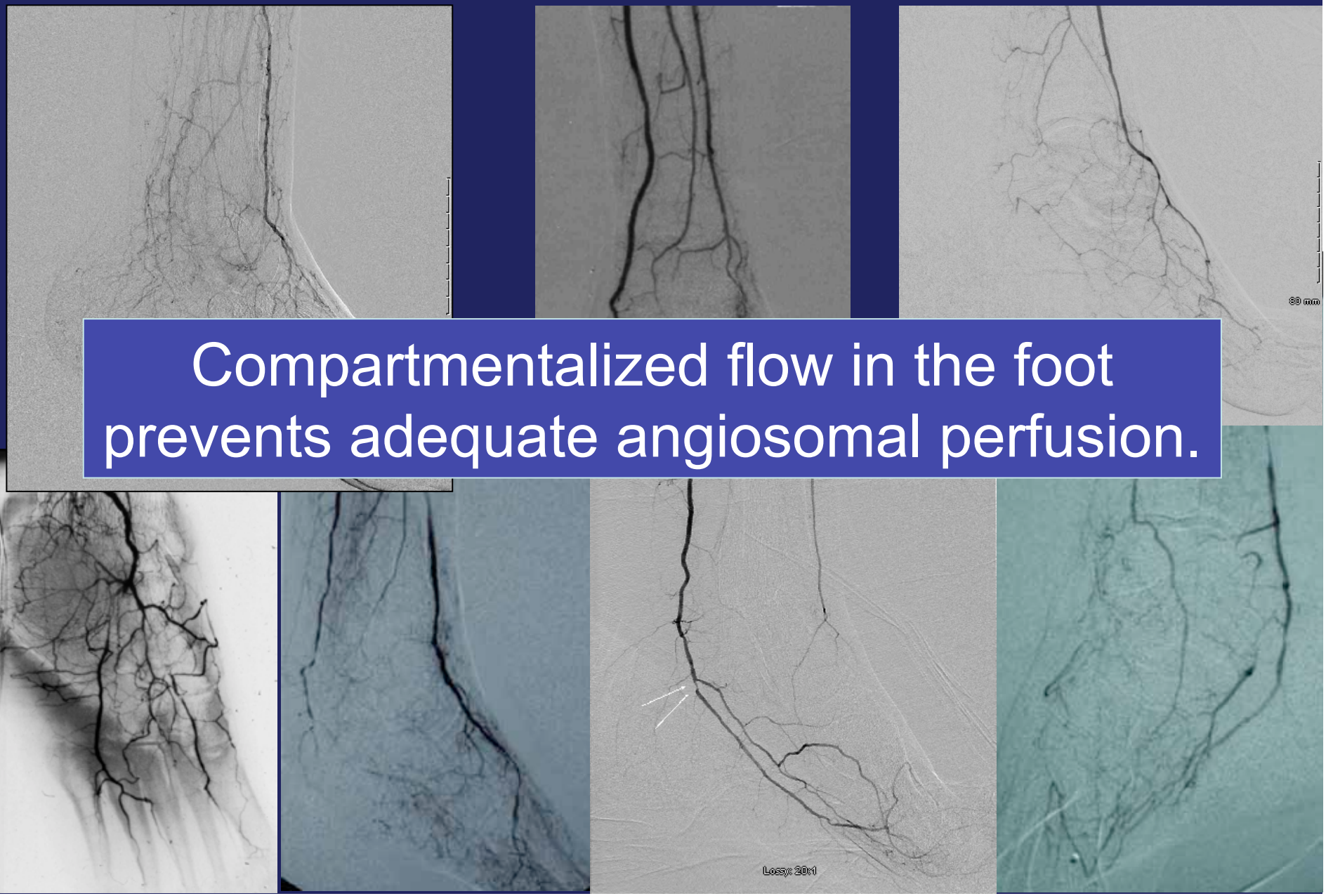
Limb Amputation or Clinical Failure Despite a Patent Bypass

Study	CLI Patients	Results
Goodney at al Ann Vasc Surg 2010;24:59	2306 bypass	8% amputation at one year, 17% of these had a patent bypass
Simons et al. J Vasc Surg 2010;51:1419	1012 bypass	10% of those with a patent graft had no clinical improvement
Taylor et al J Vasc Surg 2009;50:534	361 bypass 316 PTA	Survival, limb salvage, and ambulation for one year: 37% for PTA and 44% for bypass



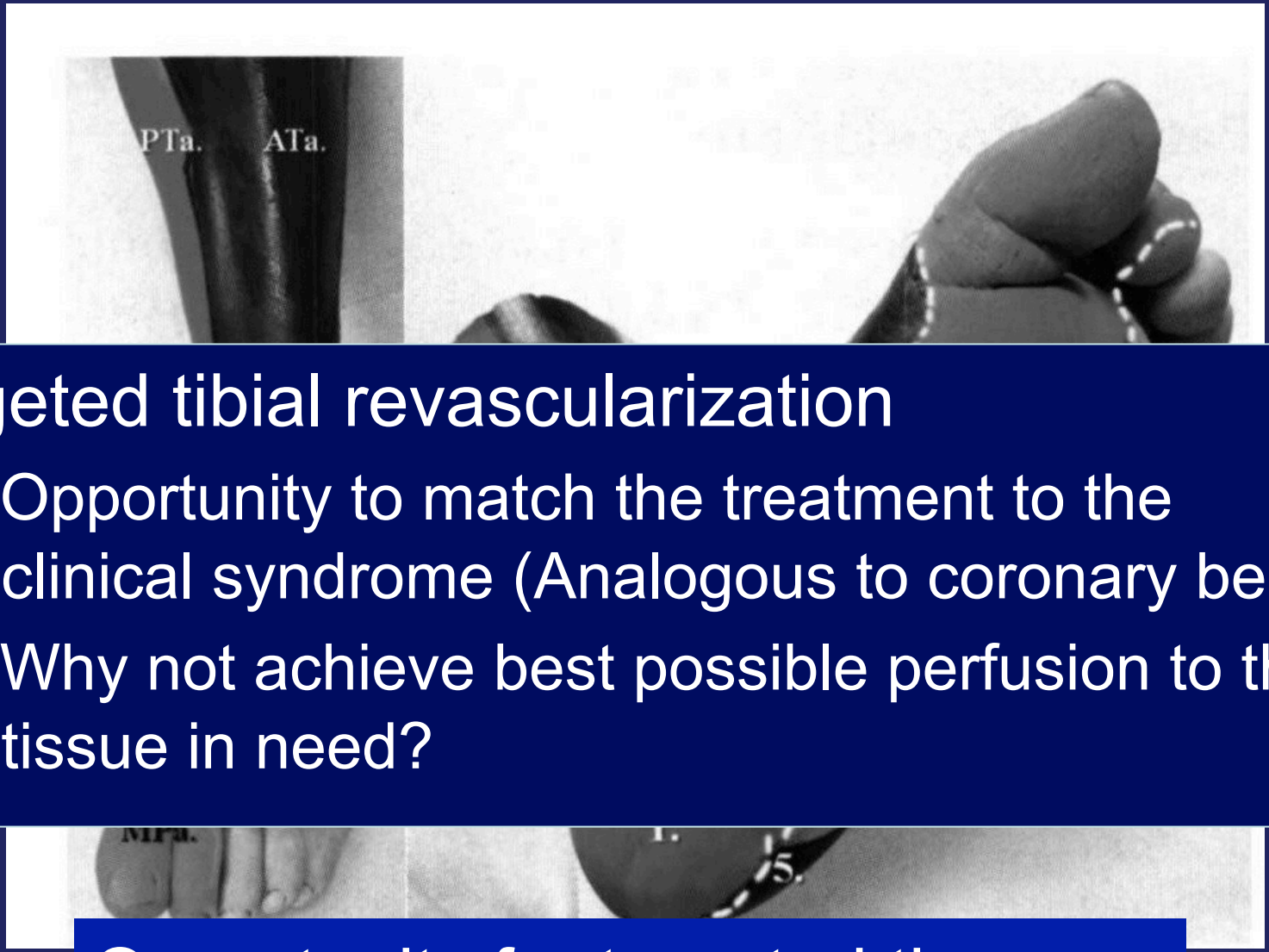
A fully intact pedal arch is rare in diabetics.

Pedal Flow in Diabetic CLI



Compartmentalized flow in the foot prevents adequate angiosomal perfusion.

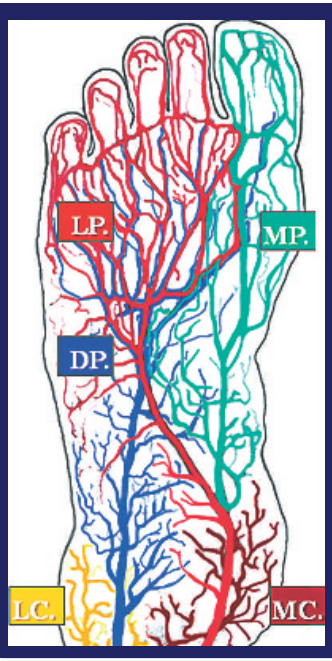
Angiosomes of the Foot and Ankle



Targeted tibial revascularization

- Opportunity to match the treatment to the clinical syndrome (Analogous to coronary bed)
- Why not achieve best possible perfusion to the tissue in need?

Opportunity for targeted therapy

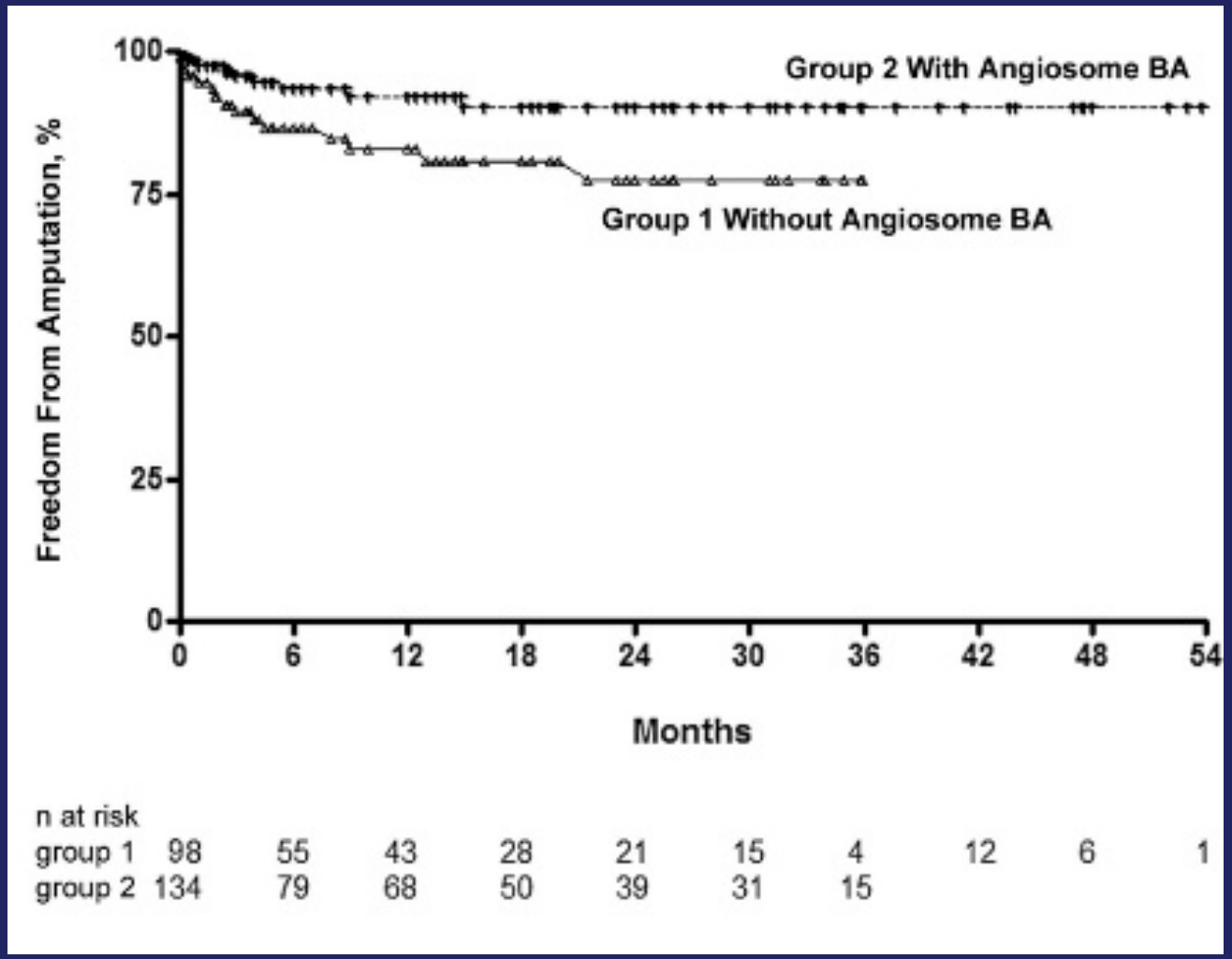


Strategy for BTK Angioplasty Angiosomal Perfusion Matters

Method of Revasc	Appropriate Angiosome Treated	Boundary Angiosome Treated
PTA Alexandrescu et al. J Endovasc Ther 2008;15:580	83% healed	59% healed
Bypass Neville et al. Ann Vasc Surg 2009;23:367	91% healed	62% healed

Angiosome Concept

Comparison of BTK Angioplasty in Diabetics With and Without Use of the Angiosome Concept



Alexandrescu et al. J Endovasc Ther 2011;18:376

Angiosome Concept

Composite of renal failure and angiosomal perfusion

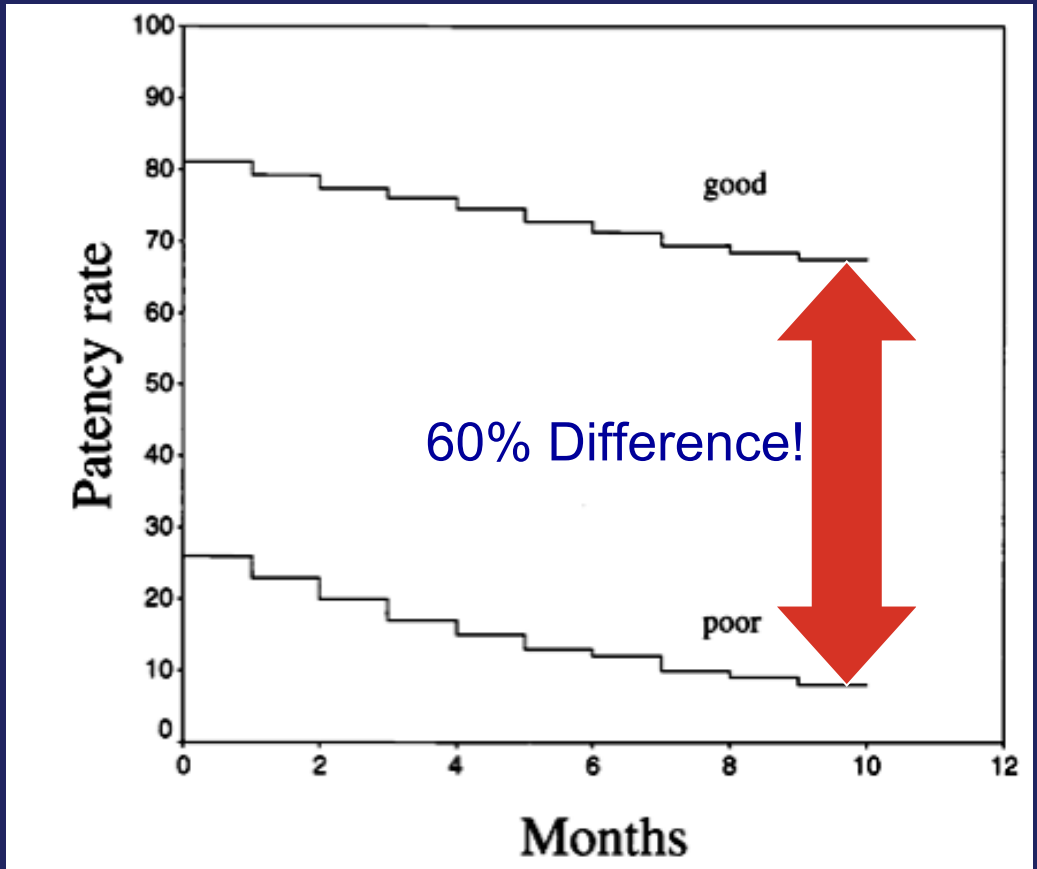
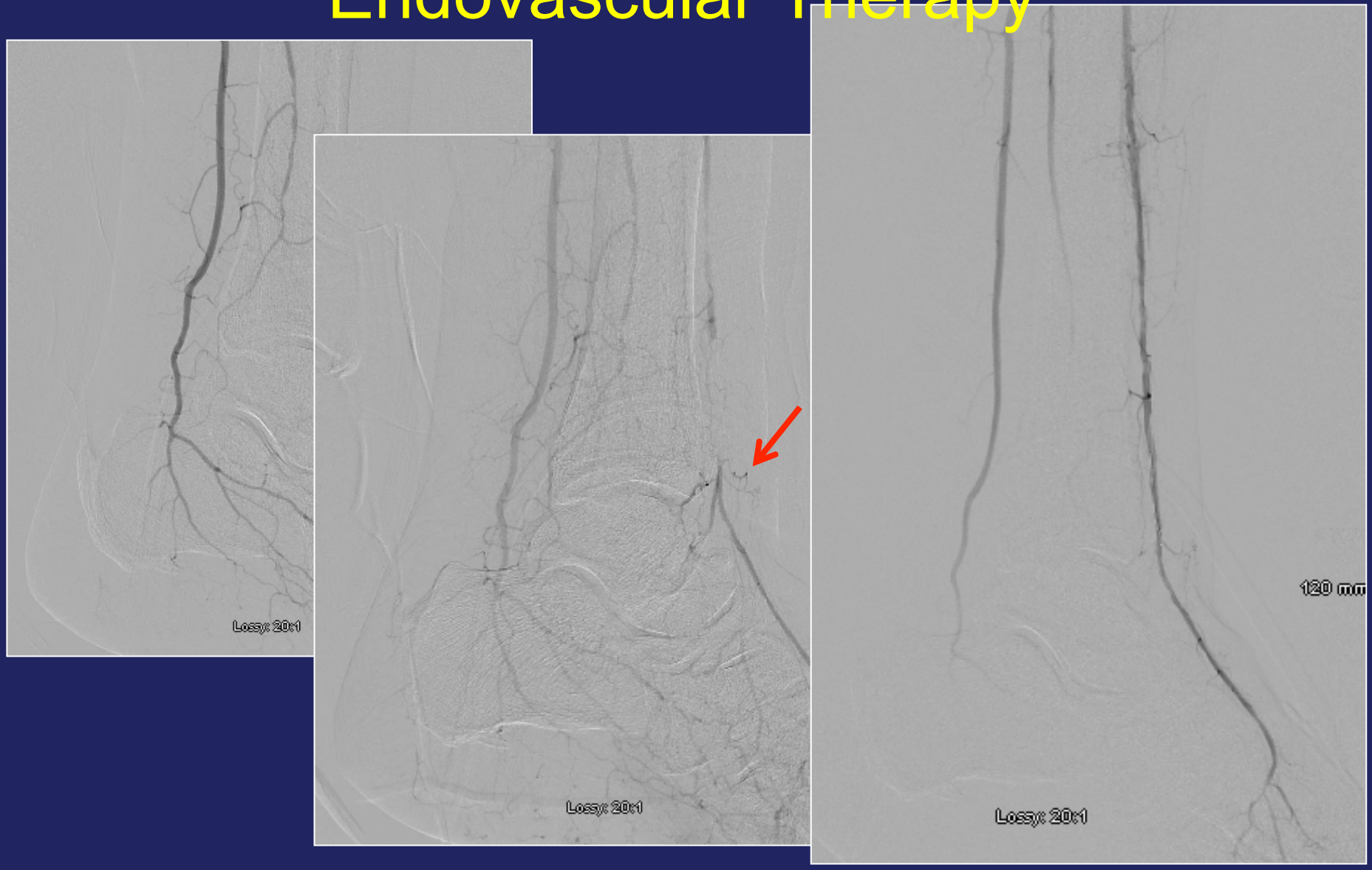
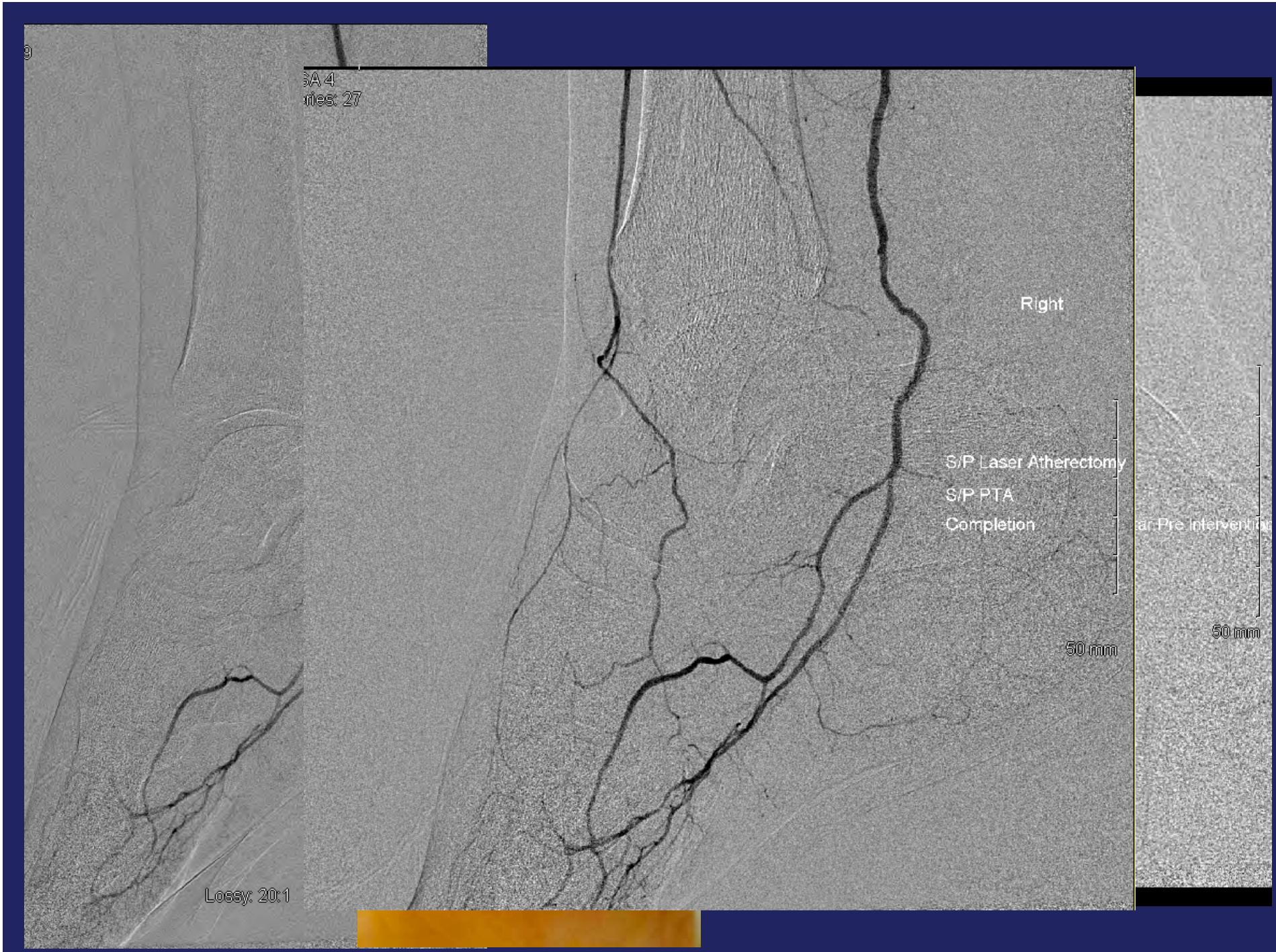


Figure 3. Results of Cox multiple regression analysis: predicted primary clinical patency in the treated limb for "good" and "poor" groups. "Good" = serum creatinine level ≤130 μmol/L and angiographic improvement of arterial filling at the site of the most severe ischemia. "Poor" = serum creatinine level >130 μmol/L and no angiographic improvement.

H. K. Soder et al., J Vasc Interv Radiol 2001;11:1021

Exploit the Advantages of Endovascular Therapy




Right
S/P Laser Atherectomy
S/P PTA
Completion
50 mm
50 mm
Lossy: 20:1

When is Angiosome concept less important?

- Non-diabetics
- Rest pain (Rutherford 4), no tissue loss
- Lesion above the ankle
- Superficial ulceration (<10mm in diameter), esp. if toe pressure ≥50mmHg after PTA
- Fully intact pedal arch

Angiosomal Variability

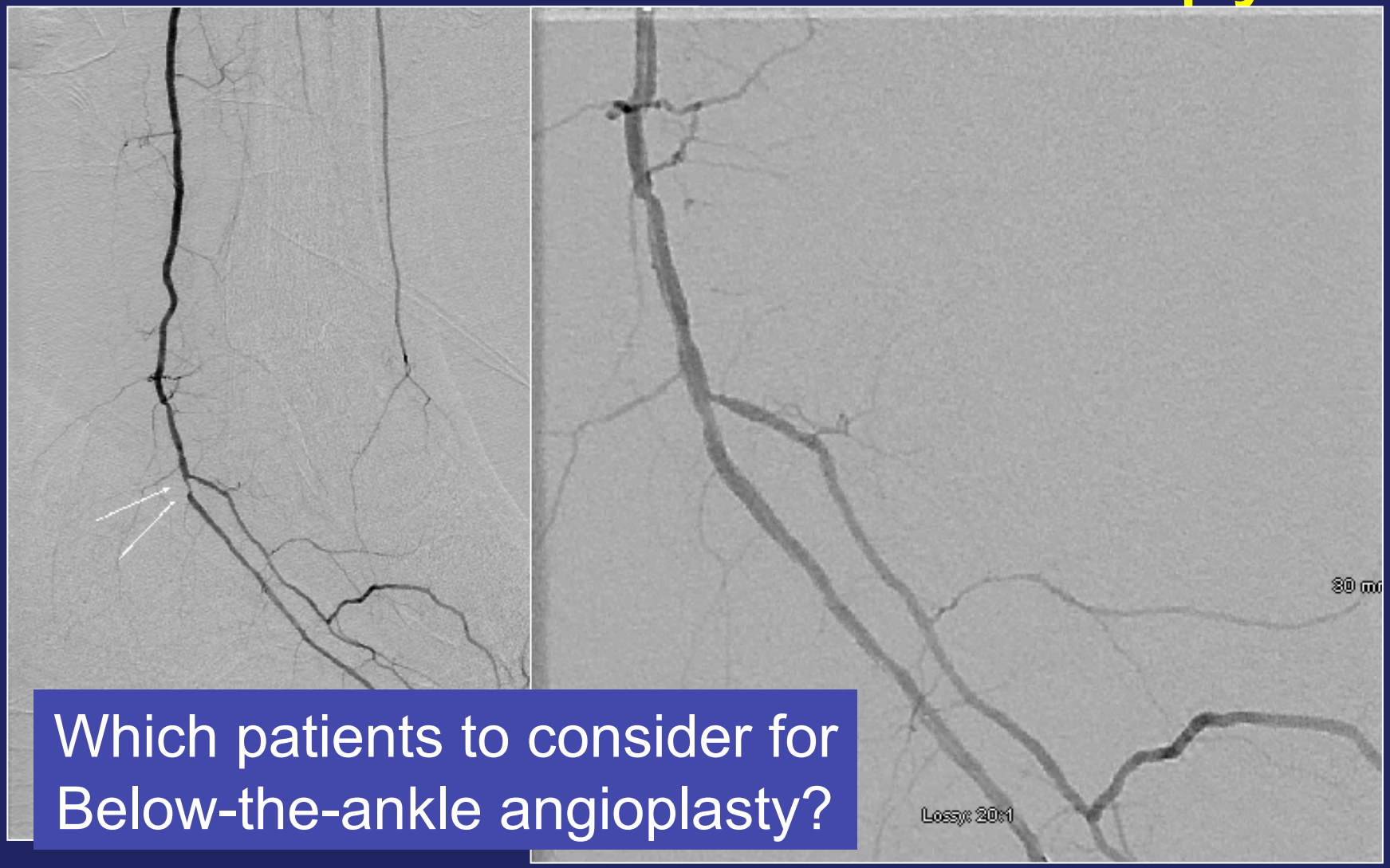
Medial plantar artery

Attinger. Plast Reconstr Surg 2006;117:261

Angiosome Concept
Need More Understanding

- Angiosomal variability.
- Differences in collateralization
  - Example: variable affect peroneal artery revasc
- When to revasc a boundary angiosome.
- Match angiosomal revascularization to tissue perfusion

Angiosome Concept
How Can It Guide Therapy?



Which patients to consider for Below-the-ankle angioplasty?

Angiosome Concept
How Can It Guide Therapy?

Angiosome Concept
Conclusions

- Helps to explain some of the variability in results of revascularization for CLI.
  - Especially in diabetics
- Healing is more likely after direct revasc of the correct angiosome.
- An opportunity for targeted therapy.
- May help determine best strategy in some subgroups of patients.