My most promising perspective for AV fistula BTK treatment

A. Schmidt, MD

Y. Bausback, MD

Clinic of Angiology

University Hospital Leipzig

Germany
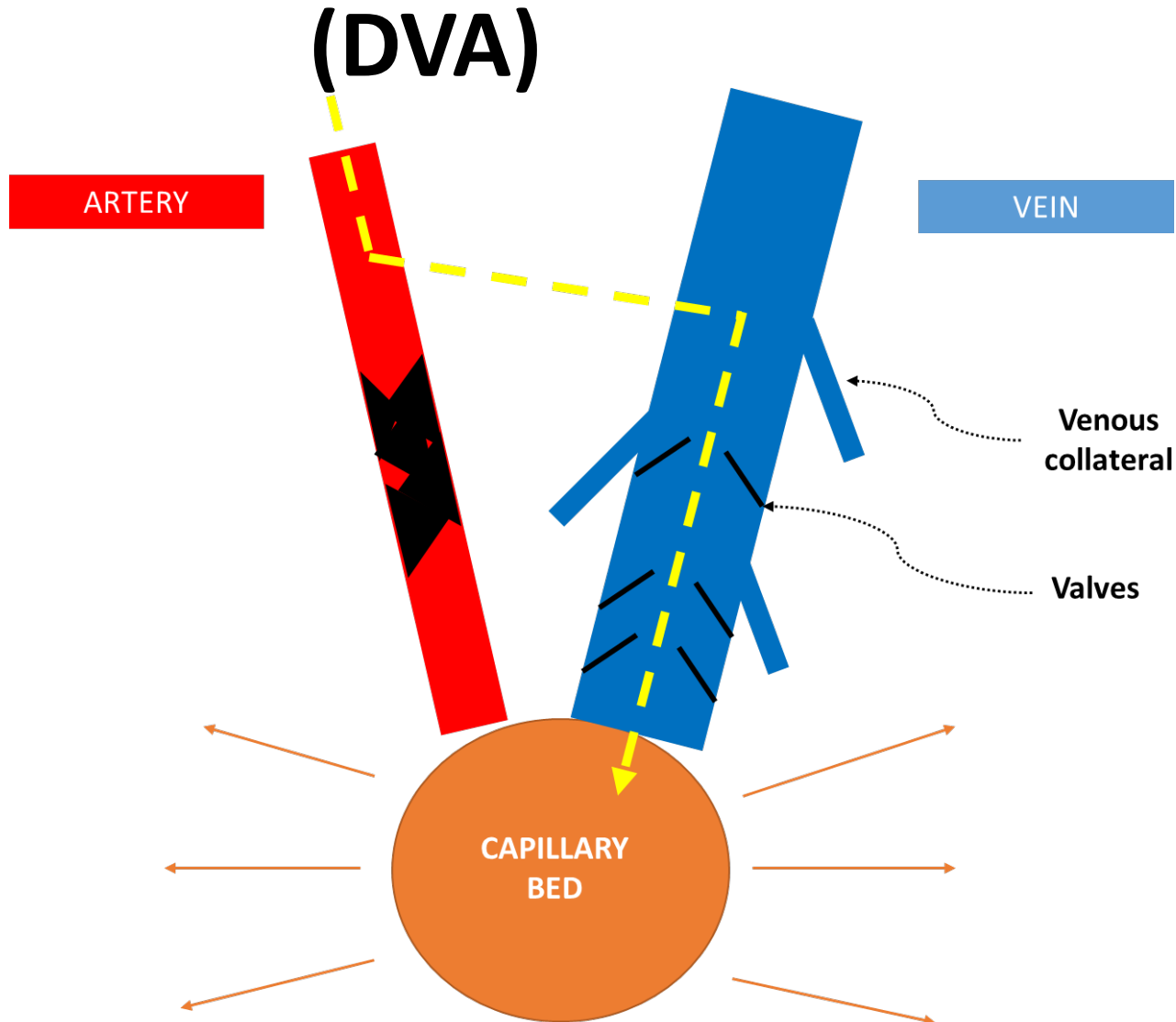
Universitätsklinikum Leipzig
Anstalt öffentlichen Rechts

Disclosure of Interest

Speaker name: Yvonne Bausback

- I do not have any potential conflict of interest

Concept of Deep Venous Arterialization (DVA)

Candidates for Deep-Venous Arterialization

- Desperate situations
  - "Desert foot"
  - Severely calcified distal PAOD
  - No endovascular or surgical option
  - Diabetic patients
  - Patients on hemodialysis

Surgical Technique for Deep Vein Arterialization

- Variable techniques:

    - Destruction of vein-valves, no stenting

    - Saphenous vein, only partially distal anastomosis to the deep vein system

    - Closure of tributary veins to prevent proximal shunting inconsistent

Can we perform this completely percutaneously?
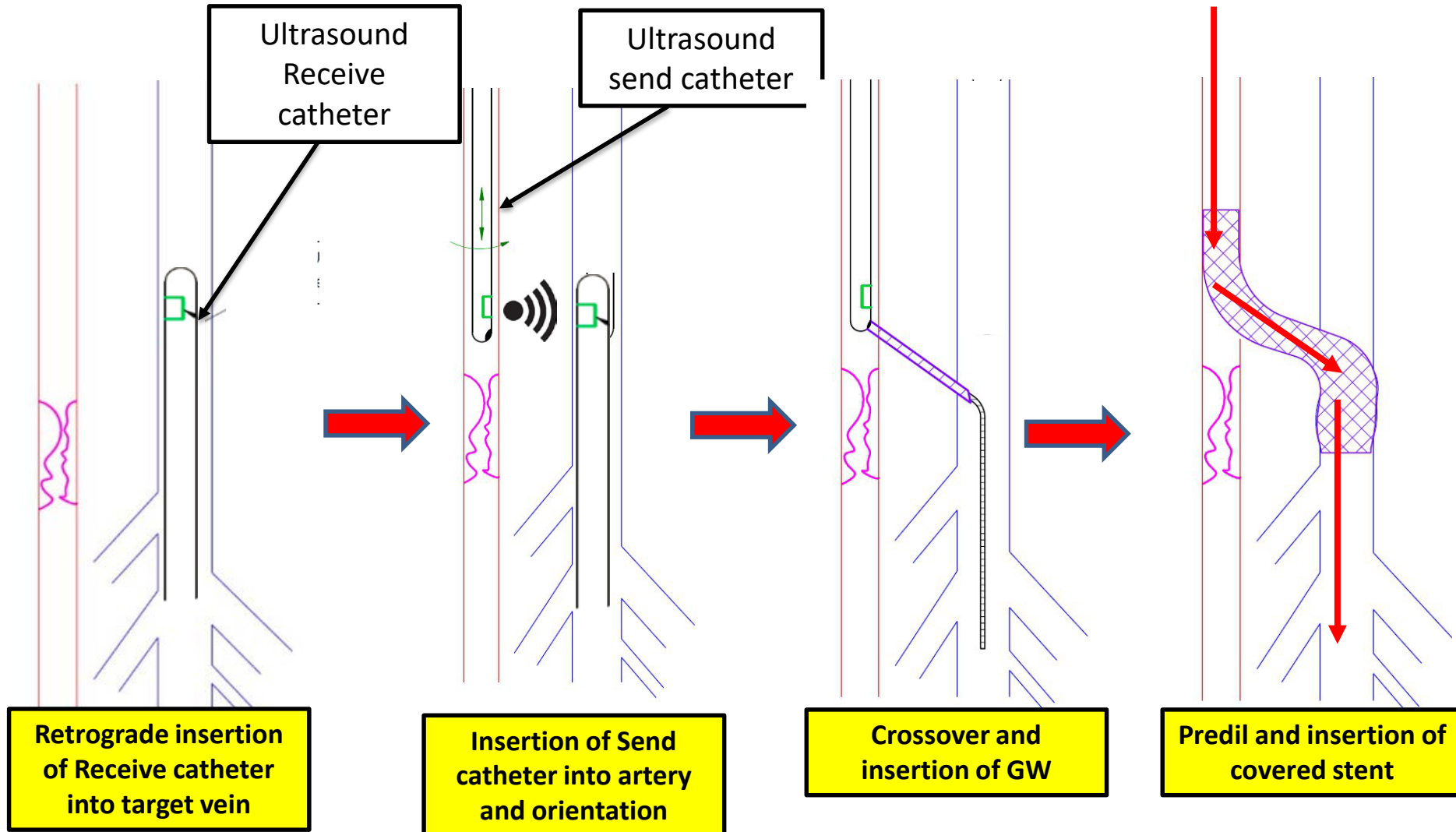
LimFlow
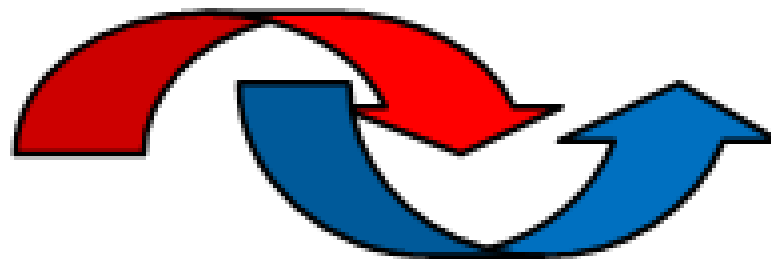
LimFlow - Pilot Study

- Pilot Study in Singapore (Investigators : Steven Kum MD, Tan Yih Kai MD, Tjun Tang MD)

- Rutherford 4, 5 and 6, ***No option CLI***

- 7 Patients , Clinical Follow-up

- Objective and Subjective measures of Perfusion + Wound outcomes
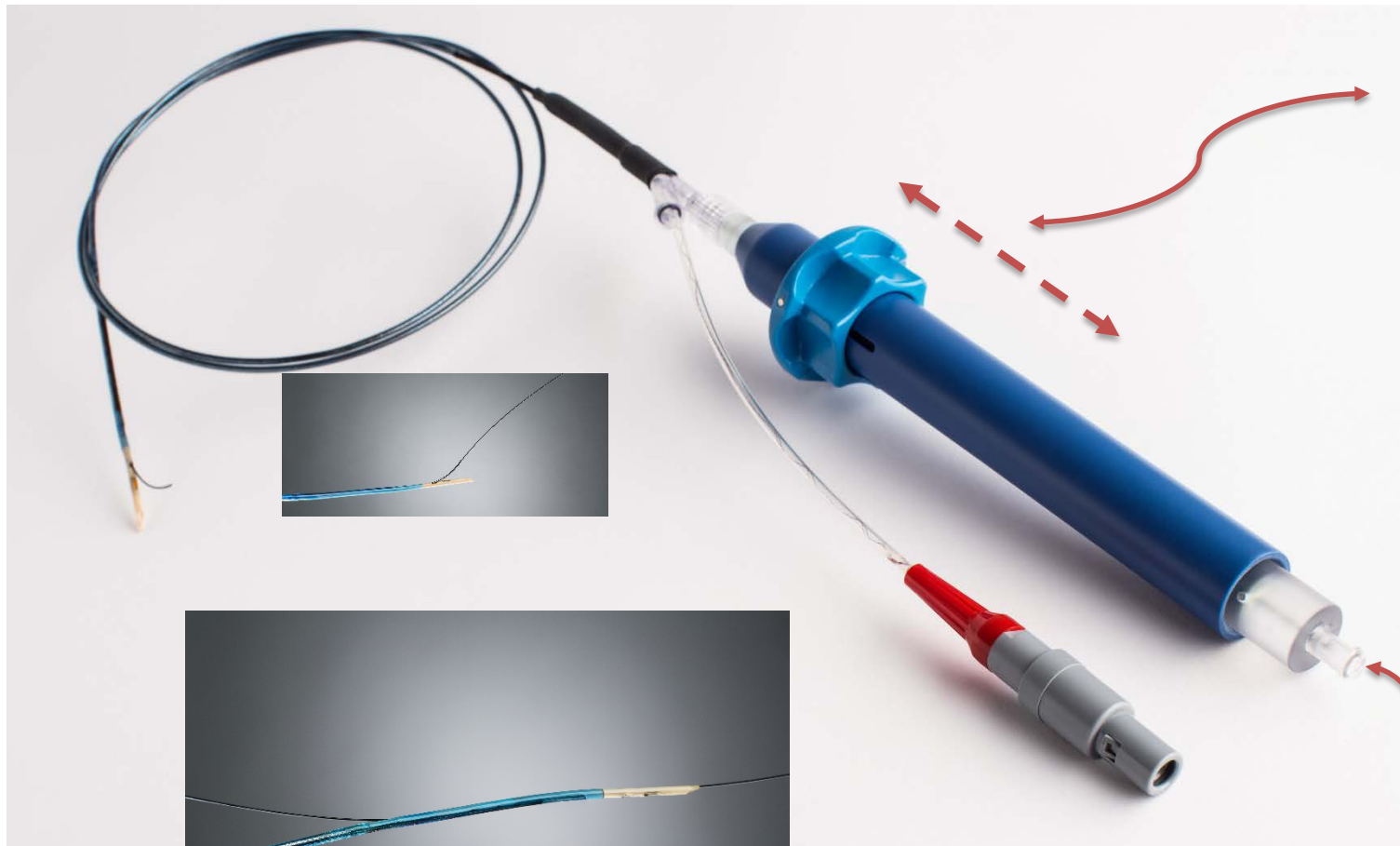
Lim**Flow**: Clinical Experience - CE

- **1st 9 patients** enrolled in 10 patient CE mark study
  - 5 Centers approved & enrolling
    - Leipzig (Dr. Schmidt), Munster (Prof Torsello/Dr. Schwindt), Munster (Prof Reinecke), Arnsberg (Dr. Lichtenberg) and Singapore (Dr. Kum)
  - Expect to complete enrolment by Q2 2016
  - 4 more centers being trained for post-CE registry
    - Dr. Roberto Ferraresi – Italy
    - Dr. Michiel Schreve – The Netherlands
    - Dr. Kim Christian Houlind – Denmark
    - Hamburg – Prof Sebastian Debus
- CE Mark of Full System in Q2 2016
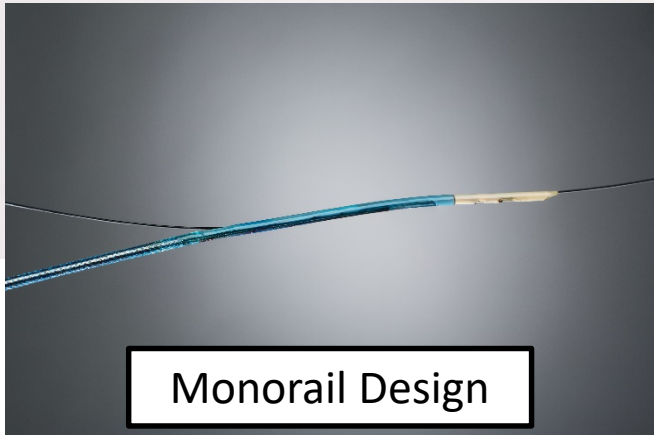
# Percutaneous AVFistula: Review of Procedure

Ultrasound Receive catheter

Ultrasound send catheter

Retrograde insertion of Receive catheter into target vein

Insertion of Send catheter into artery and orientation

Crossover and insertion of GW

Predil and insertion of covered stent

The Arterial "Send" Catheter

Slider pushes needle out

Insertion Port for 0.014 Crossing Wire
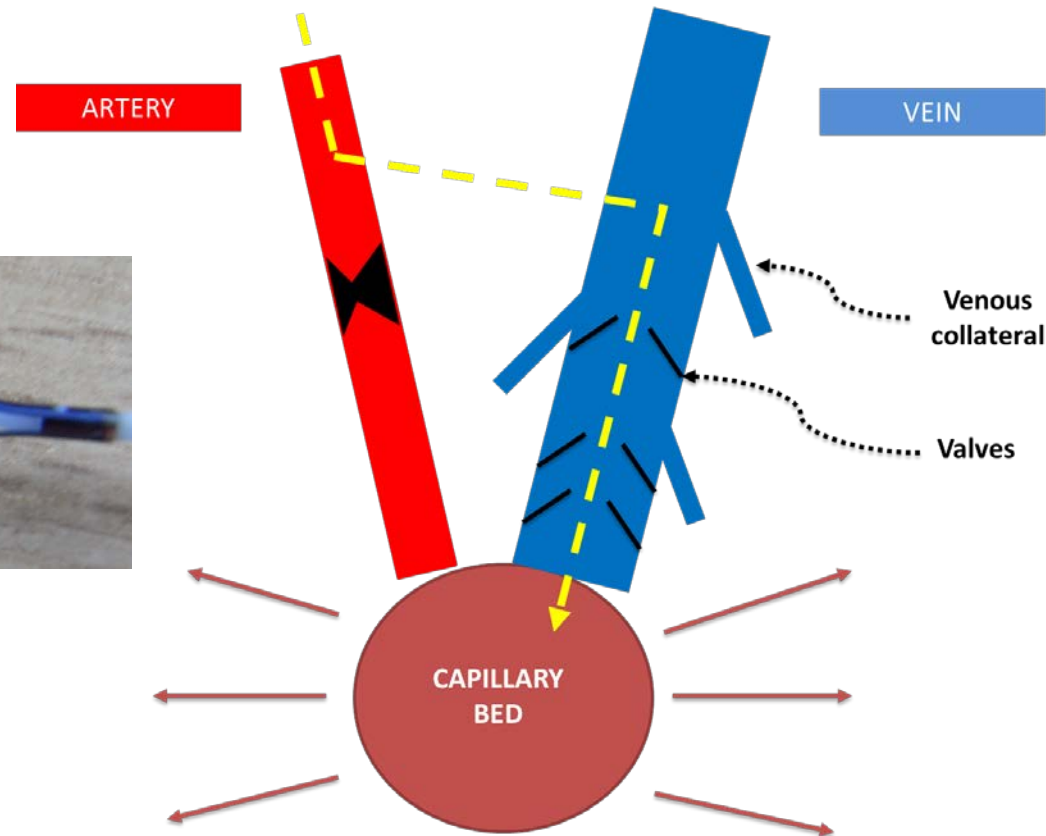
Monorail Design

The Venous "Receive" Catheter

Venous Catheter
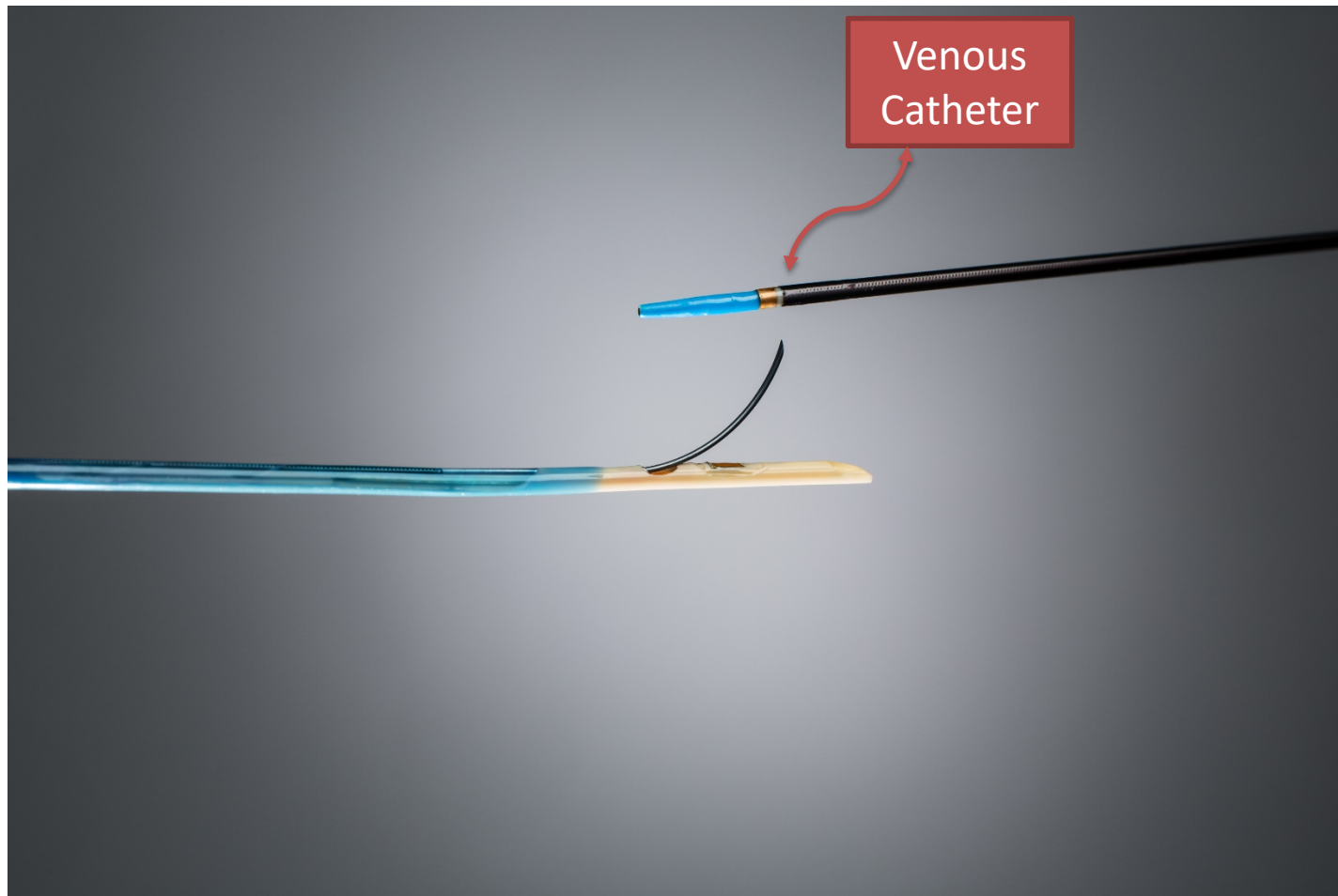
Lim**Flow**
Reversed OTW Valvulotome

OTW Valvulotome with forward facing blades

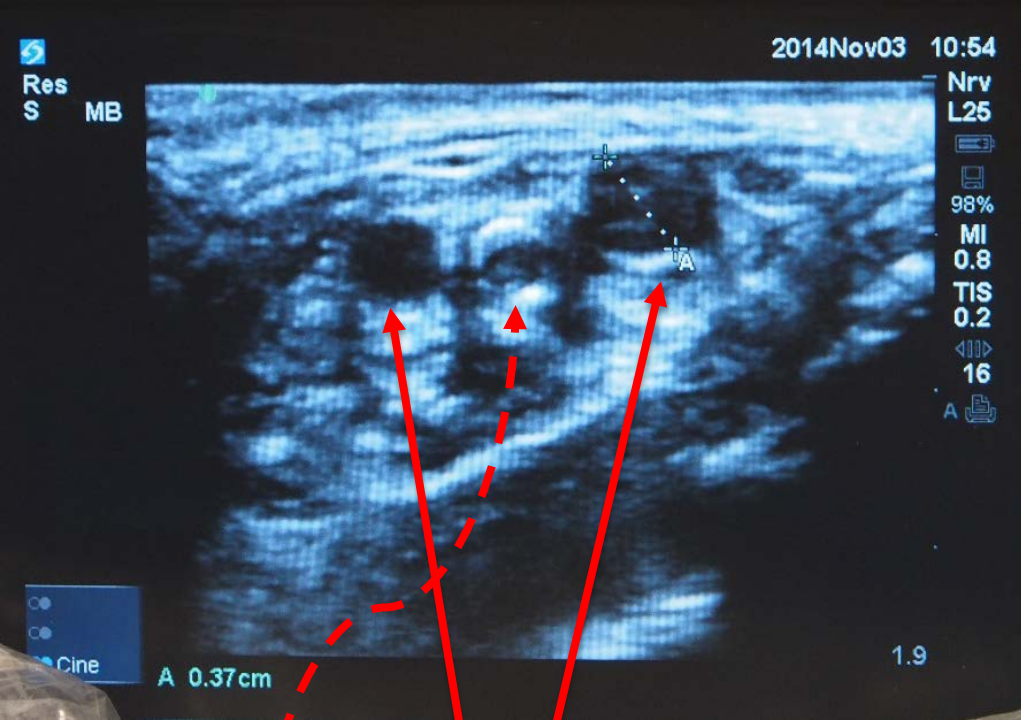ARTERY

VEIN

Venous collateral

Valves

CAPILLARY BED

Case Example

65 years, male

- Renal failure with
  chronic dialysis

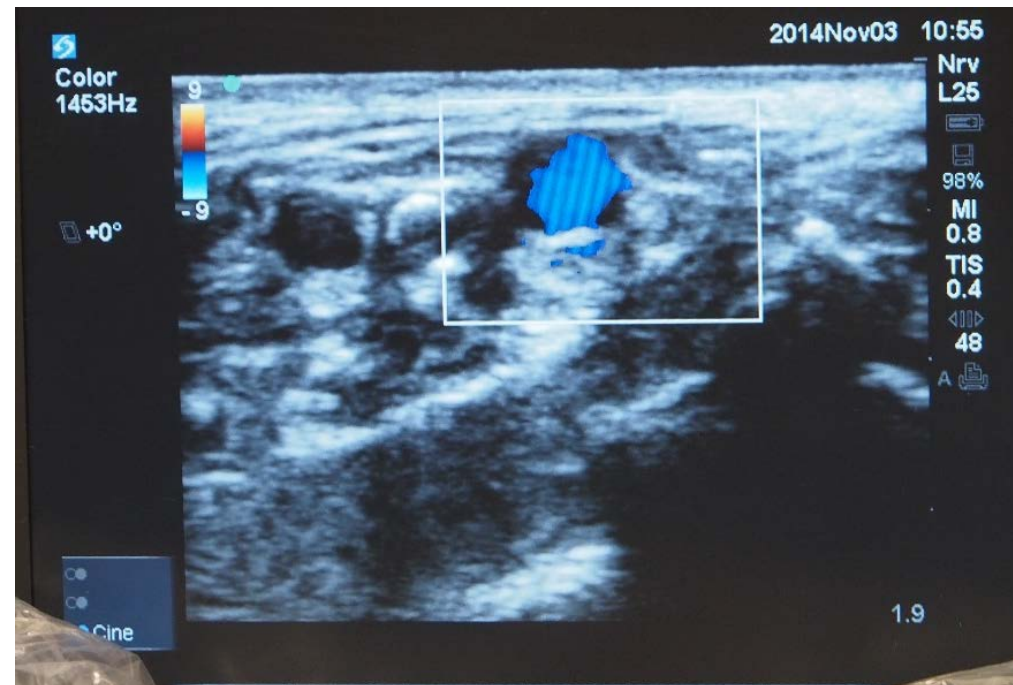- Forefoot gangrene
- Several PTA-attempts
- Calcified foot-arteries
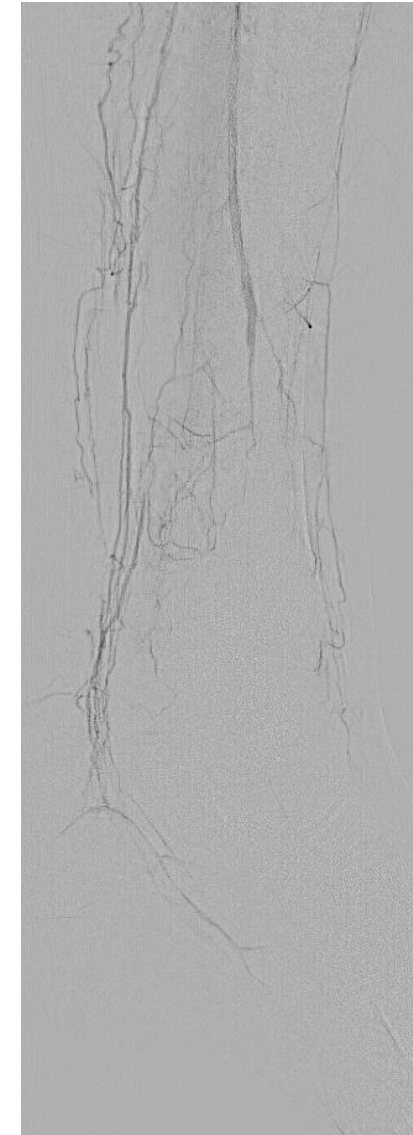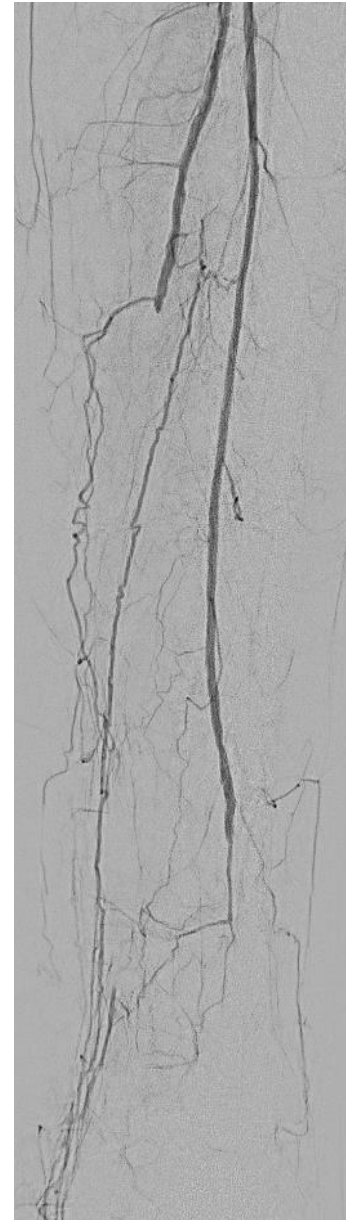
Deep Vein Arteriolization using the LimFlow-system

PT Artery

PT Vein

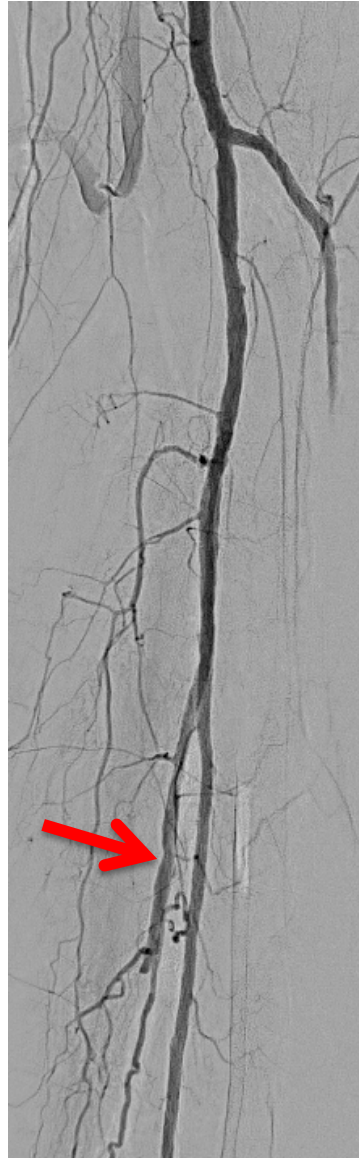# Phlebography
of the posterior tibial vein

Access distal PTV

Phlebography with proximal tornique

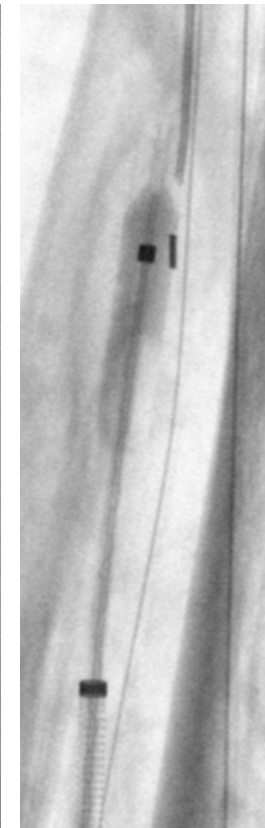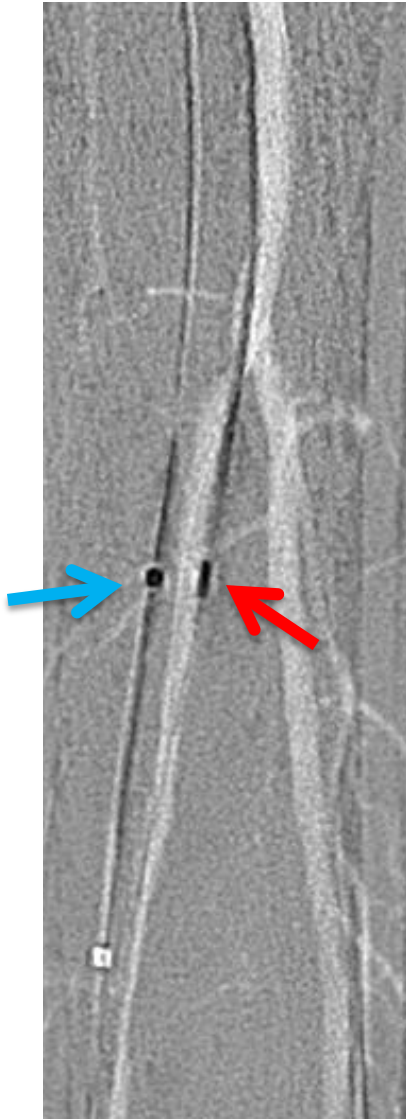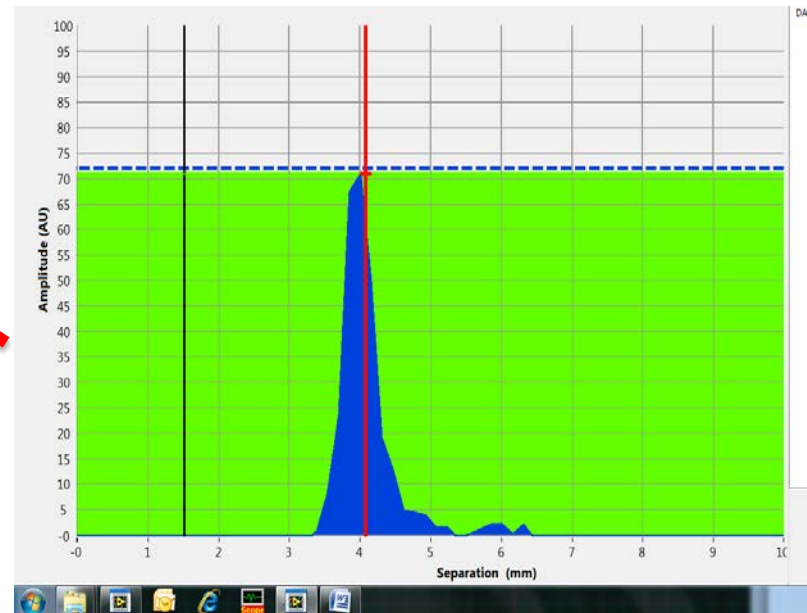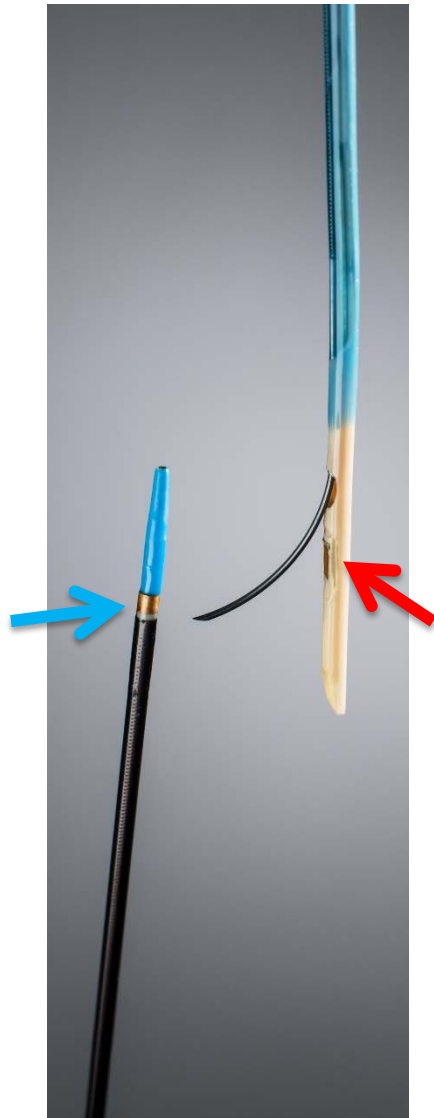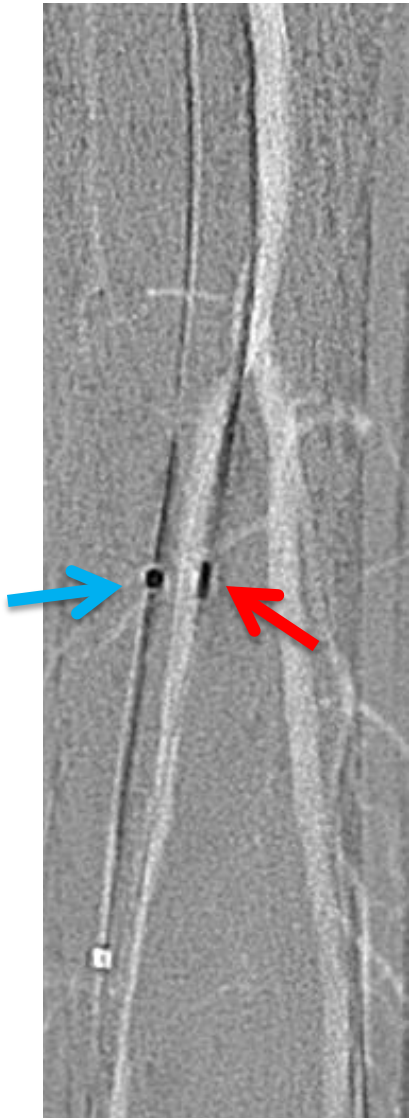# Arteriography and Phlebography
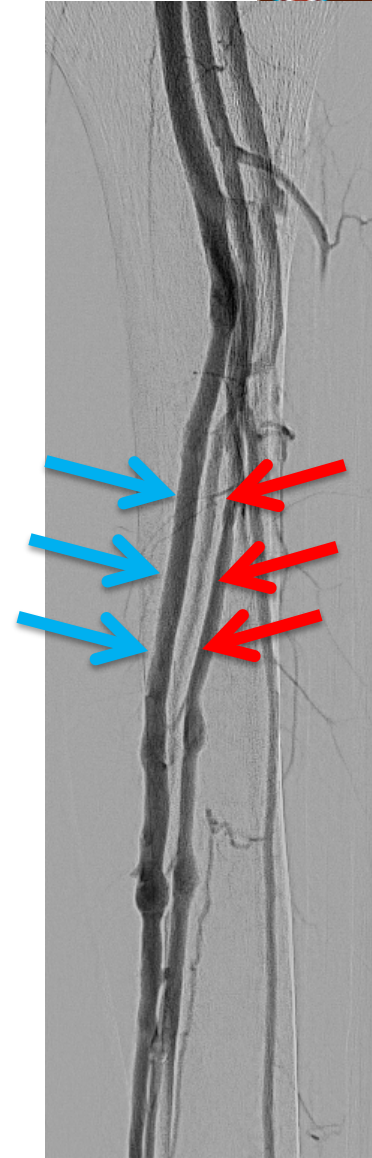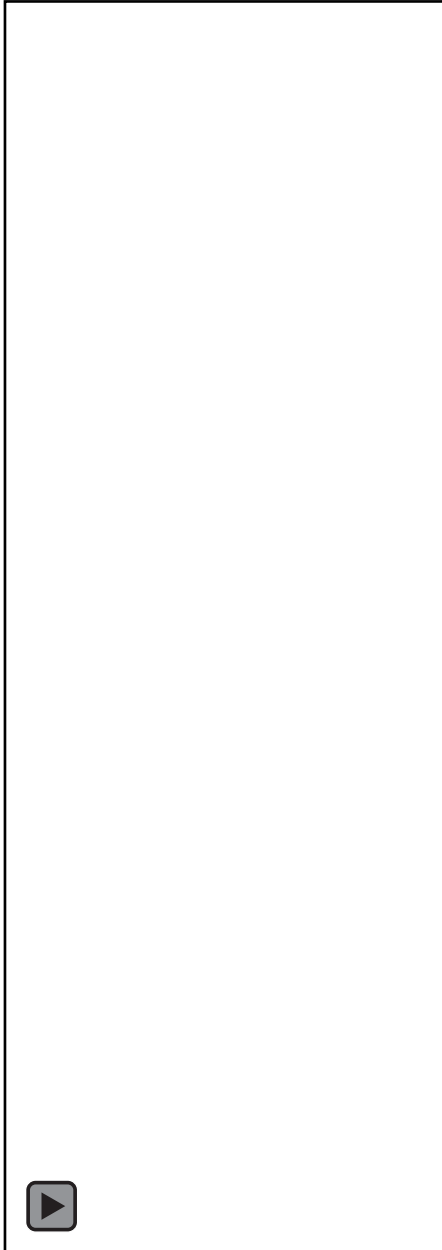

Phlebo   Angio   Simultaneous
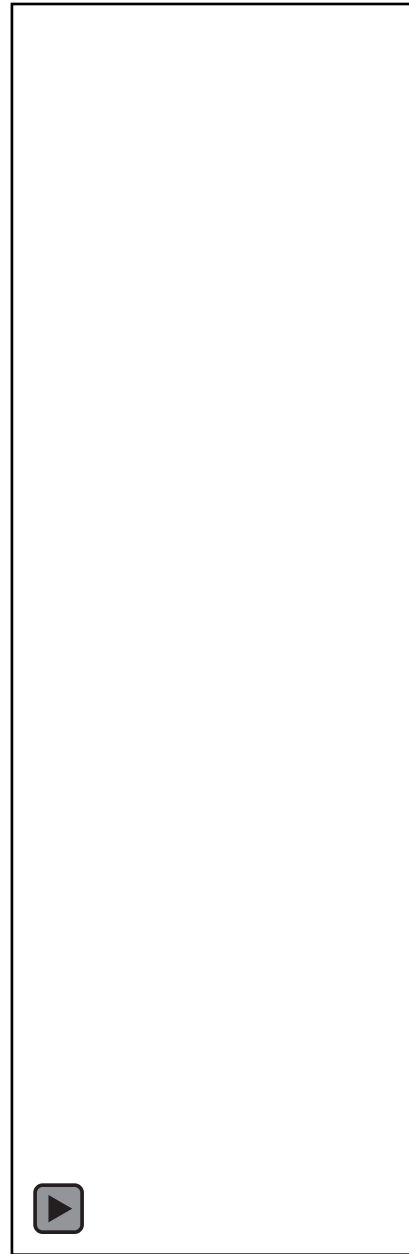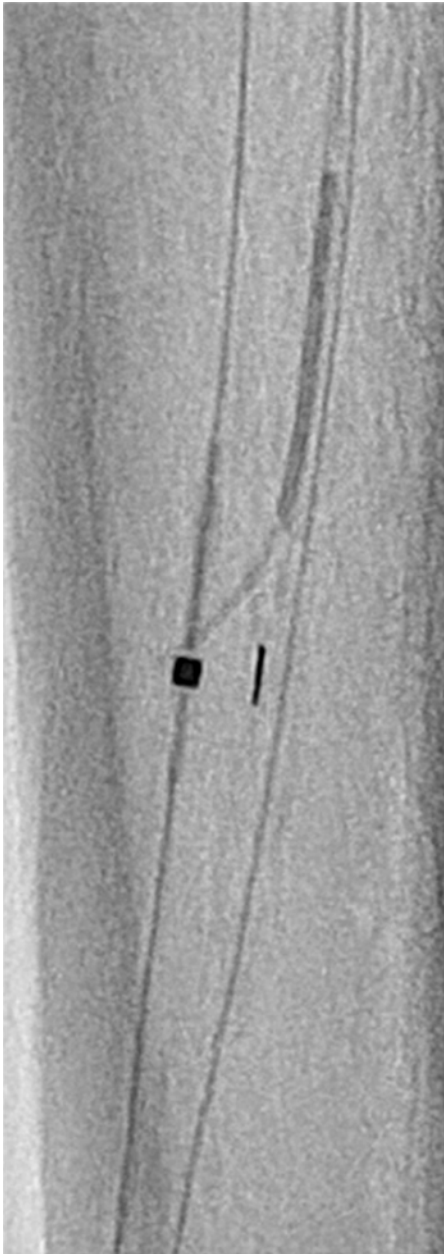
Puncture from Artery to Vein
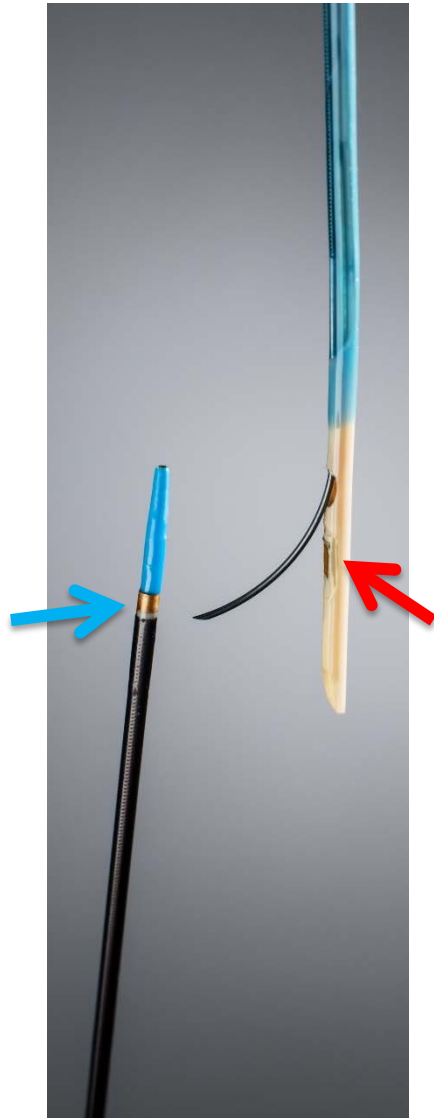
Puncture from Artery to Vein

Puncture from Artery to Vein

Puncture from Artery to Vein

Venous Passage

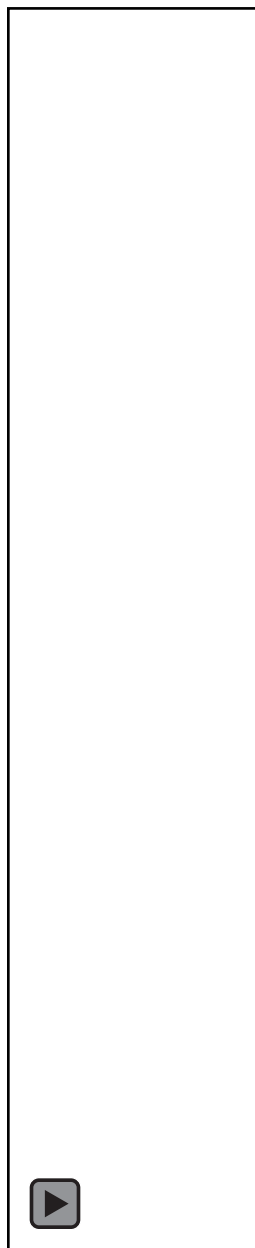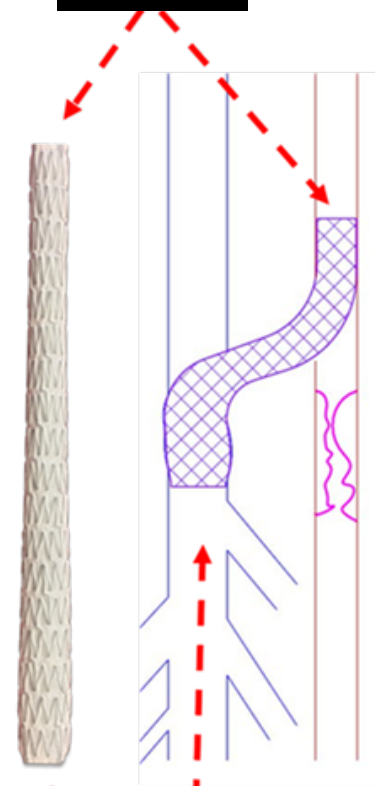Coronary 3.0/20mm balloon

Venous Passage

Tapered
Balloon Mounted
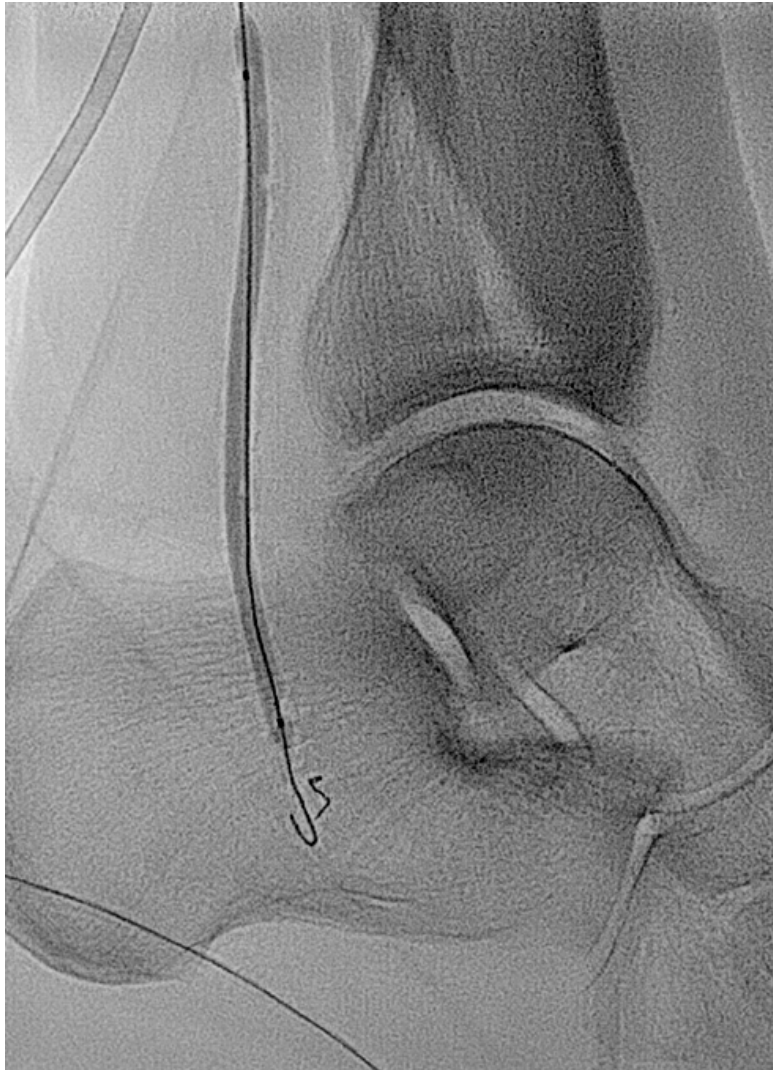Covered Stent

3.5 mm

5.5 mm

Coronary 3.0/20mm balloon

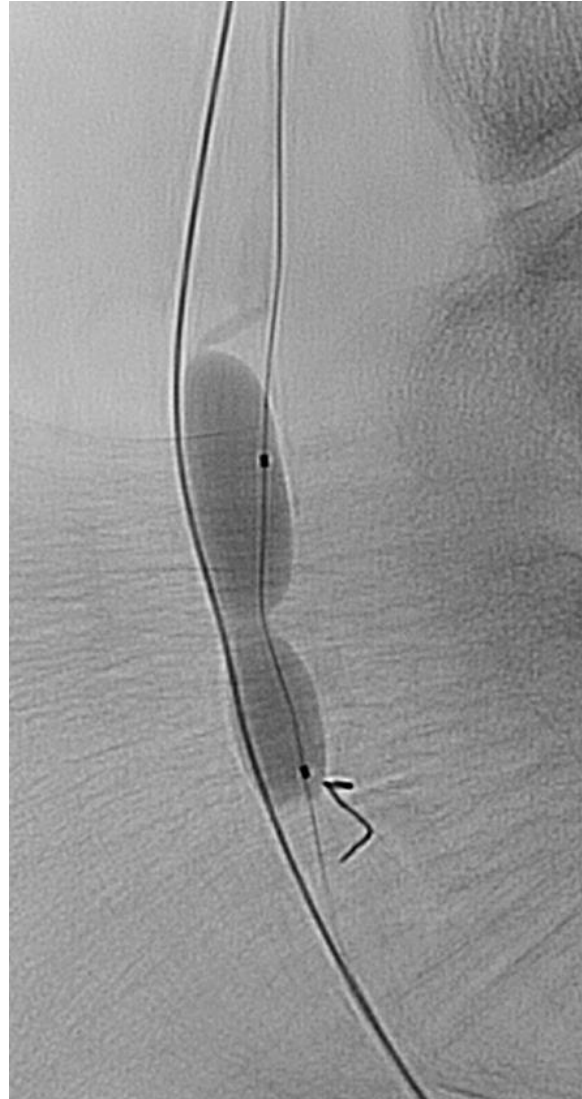# Venous Passage and PTA

3.0 mm low profile balloons

0.018" guidewire (V-18)

Venous Passage and PTA
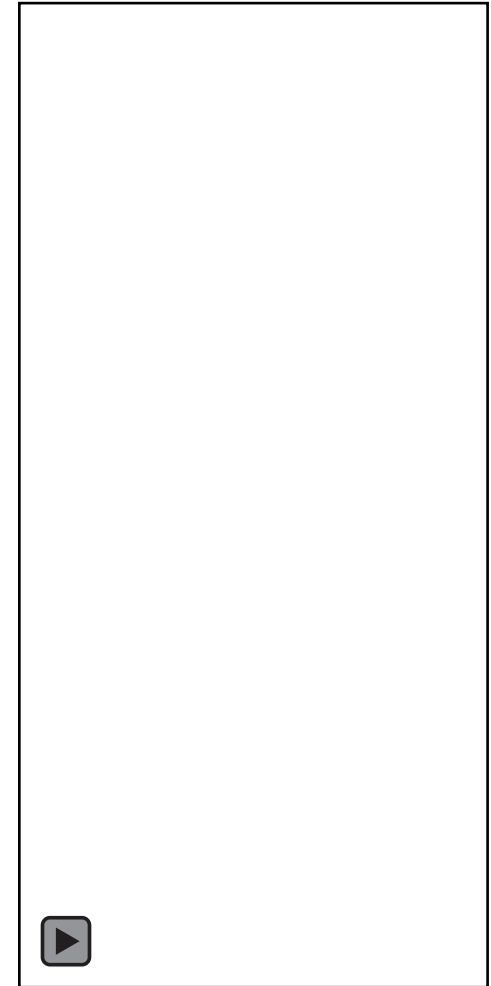

4.0 mm
low profile balloons

5.0 /20 mm VascuTrak

Venous Passage and PTA
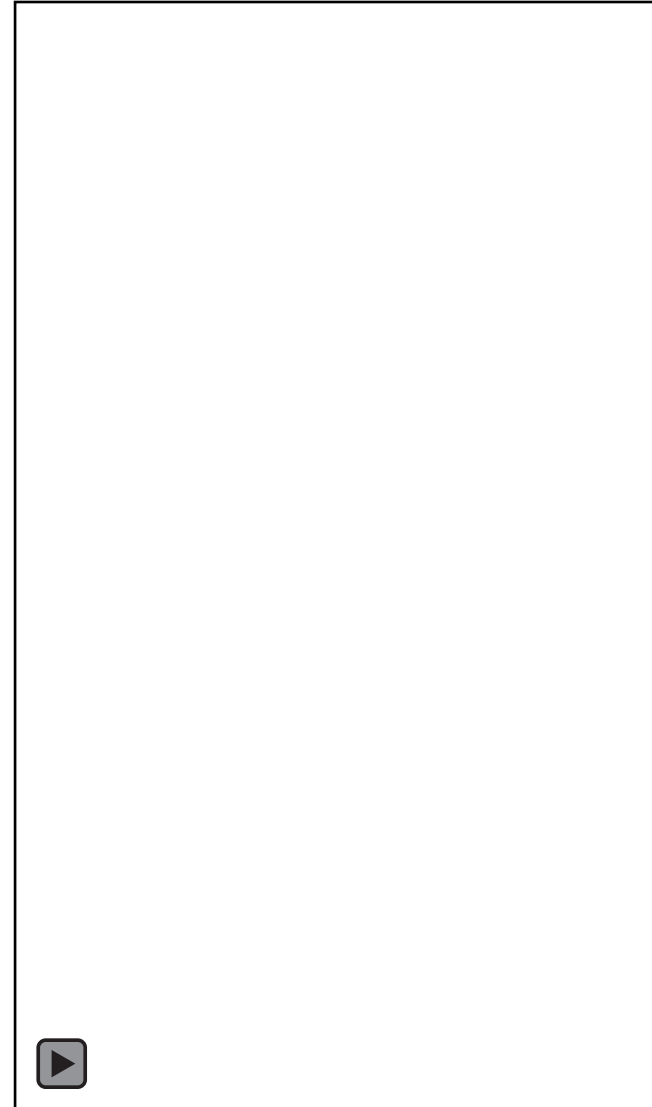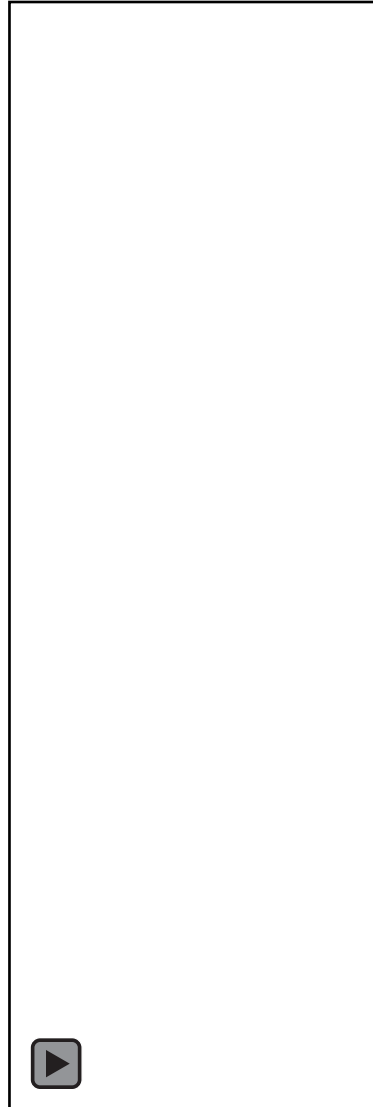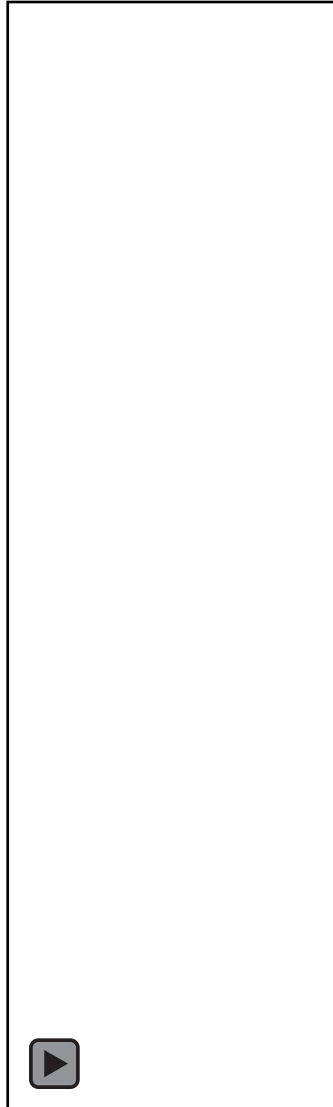
4.0 mm
low profile balloons

5.0 /20 mm VascuTrak

Forward looking
valvulotome

Stentgraft-Implantation

LimFlow
Covered
Stent
or
Viabahn
5/ 250

Final result

Percutaneous DVA : 6 Month Results

	Results	%
Freedom from 30 Day MALE	9/9	**100%**
Freedom from 30 Day MACE	7/9	**78%**
Survival	6/7	**86%**
Limb Salvage	6/7	**86%**
Resolution of Rest Pain	2/2	**100%**
Wound Healed	4/5	**80%**
Secondary Graft Patency	5/6	**83%**

- Mean time to graft occlusion was 109 days (42 to 205 days)
- Mean time to wound healing was 145 days

Percutaneous DVA : 12 Month Results

	Results	%
Survival	4/7	57%
Limb Salvage	3/4	75%
Resolution of Rest Pain	1/1	100%
Wound Healed	5/5	100%
Secondary Graft Patency	1/3	33%
Persistent Doppler signal despite graft occlusion	3/3	100%

Summary

- The Percutaneous AV fistula is an emerging way to treat "End Stage no-option CLI"

- The difficult part starts after the procedure:

  - toes may worsen, slow healing

  - convince partners not to amputate and wait