Complex CTO Interventions

The Latest Technique in Endovascular CTO in Japan

Hiroyoshi Yokoi M.D.,
Yoshimitsu Soga M.D., Masakiyo Nobuyoshi M.D.

Kokura Memorial Hospital
Kitakyushyu, Japan

CCT Meeting @ TCT-AP 2011

Progress of CTO-EVT in Japan

Factors contributing to progress in CTO-EVT

- Digital angiography
- Development of Japanese stiff-wire and taperd wire technology

(Treasure wire, Aatato wire, Filder-XT, Wizard family)

- Retrograde Approach

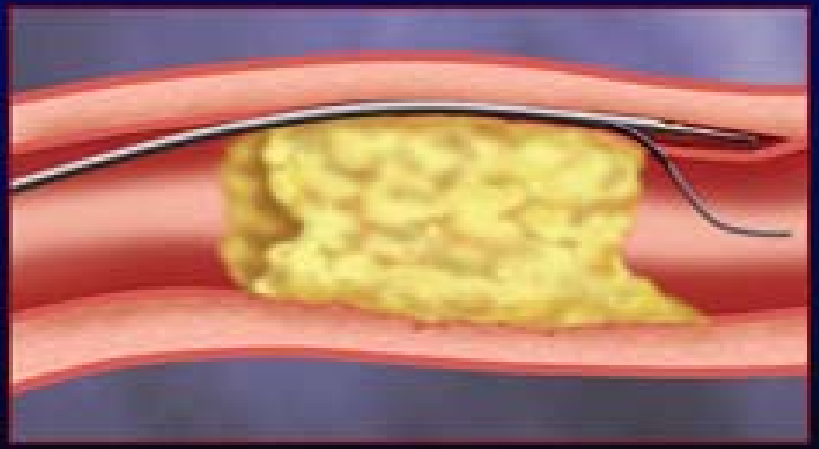
(Popliteal punvture,Trans-collateral,Tibial puncture)

- Ultrasound Guided (Surface Echo, IVUS)
- CTO wiring techniques from CTO-PCI

How to get the true lumen for CTO lesion ?

True Lumen Return by Cross Point - Pass Guide Wire -

Pass 0.014" extra-support guide wire (300cm) through CrossPoint needle into vessel lumen.



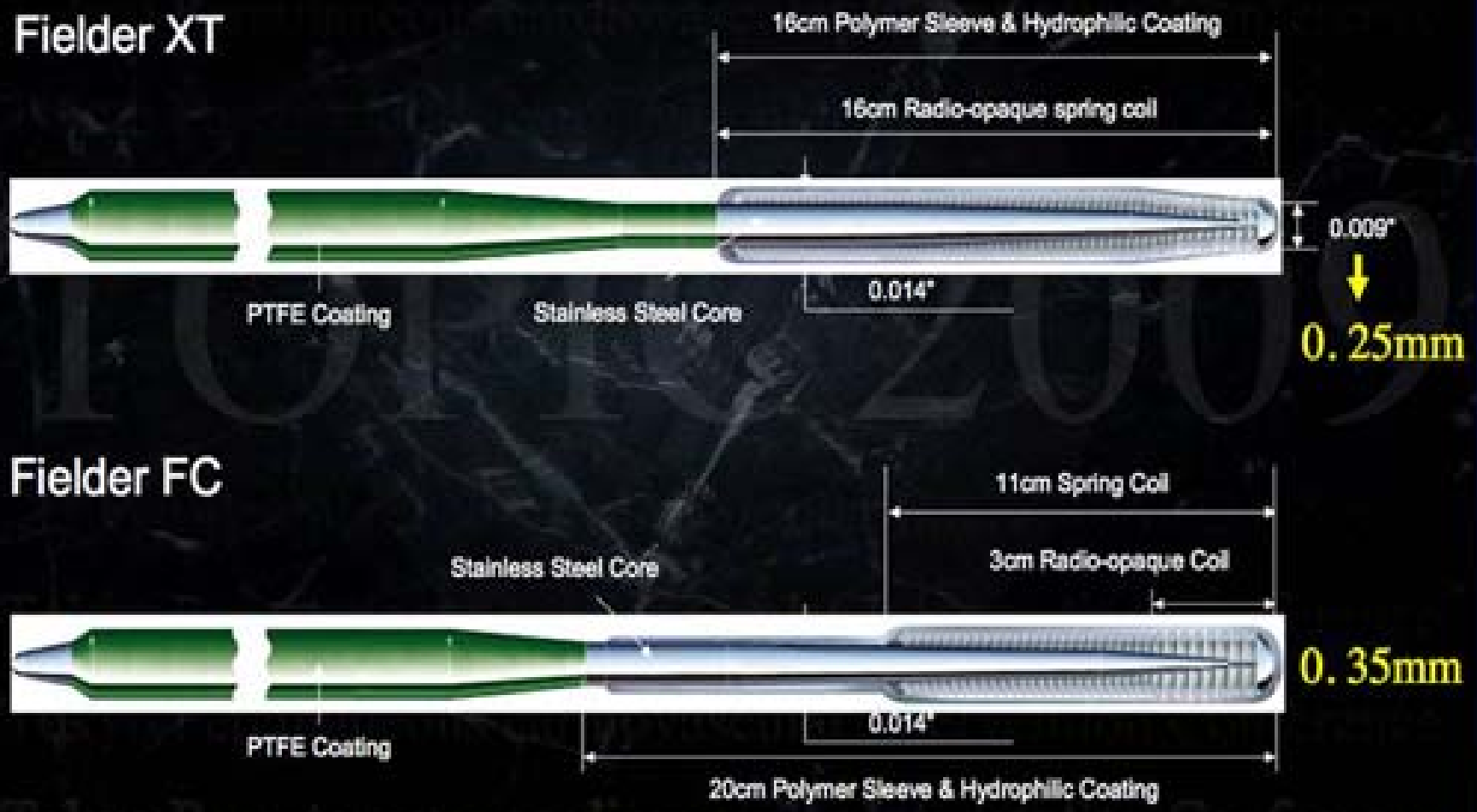
Penetration of the Proximal Cap With a Stump

A Stump is a sign of antegrade micro-channel

Antegrade Micro-channels

- Pathological antegrade micro-channels are frequently invisible by the angiography.
- Antegrade micro-channels are not always continuous to the distal true lumen. They are sometimes connected to vasa vasorum.
- It is very difficult to distinguish antegrade microchannel and bridging collateral
- The tapered wire can track antegrade micro-channels with in few minutes. (0.014 Filder XT-1g,0.014 Wizard-3g)

Fielder XT and Fielder FC

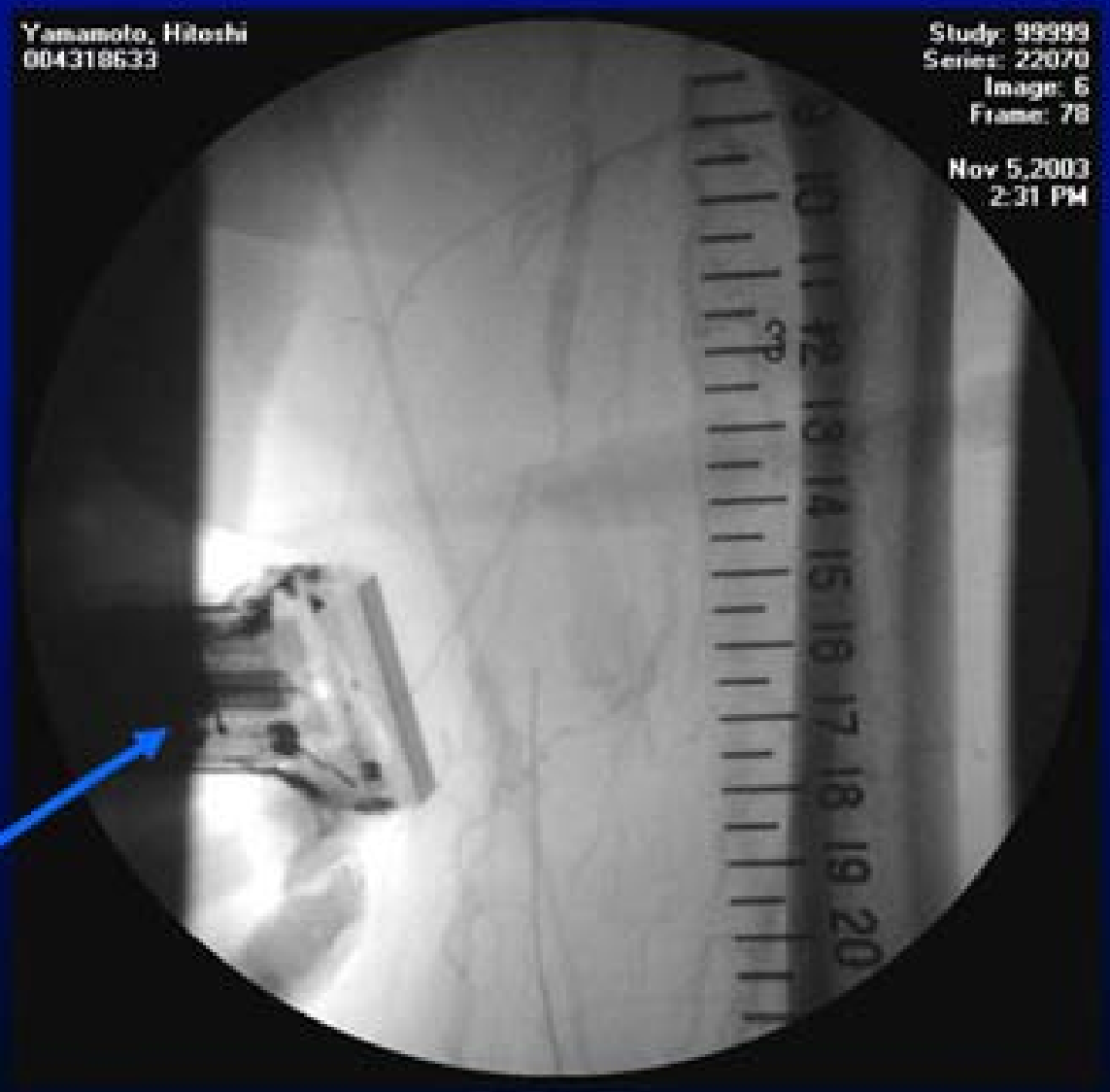


Penetration of the Proximal Cap Without a Stump

Proximal Cap without a Stump

- Entry into CTO is the place where a wire easily migrates into the false lumen.

- At that situation, surface ultrasoud guided stiff wire (0.018 Treasure, 0.018 Astato) manipulation is essential.



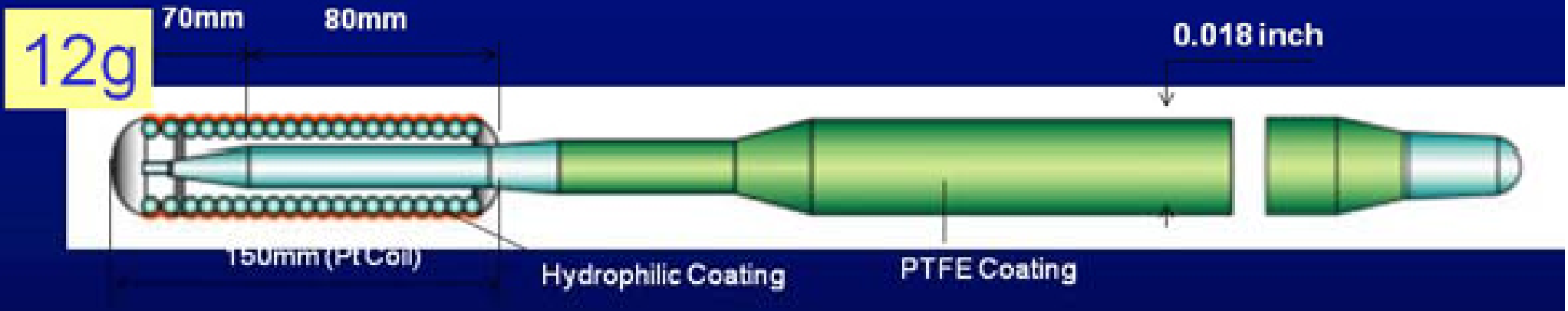
Vacular Ultrasound Guided GW Manipulation


TOSHIBA
BK:- -
O
SAPPORO HIGASHI MC
- -
PV Arterial1
0:04:29
2005/09/03
3:14:49 PM
13.9
13.9
cm/s
0
1
2
3
4
T
11L5
T8.4
CF 4.4
14 fps
2DG
81
DR
65
CG
38
PRF
9.4k
Filter
7
HDD 64% Free
Raw Memory:#0(0%)
SELECT

Treasure

From June 2004

12g

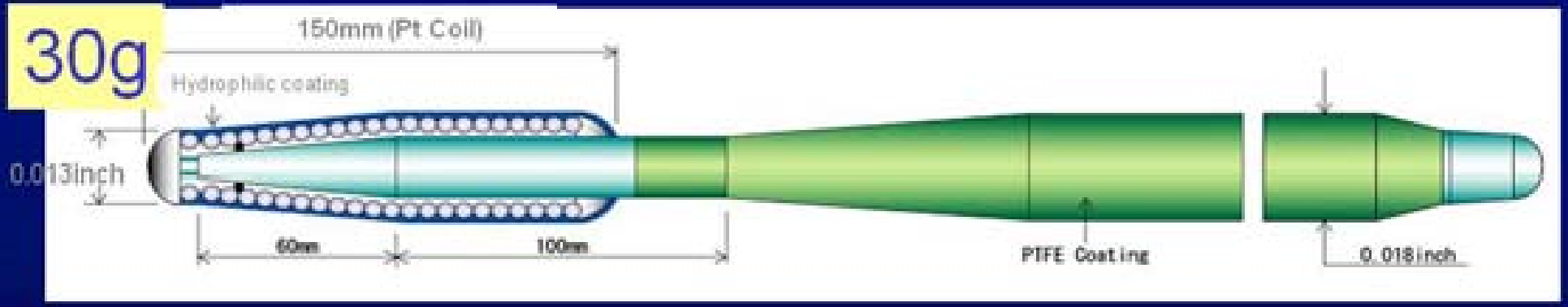


Treasure is a hydrophilic coated 0.018" PTA guidewire, which possesses superior torqueability due to its structure using thick stainless steel wires for the spring coil.

High torque performance
Good for controlled drilling

Astato

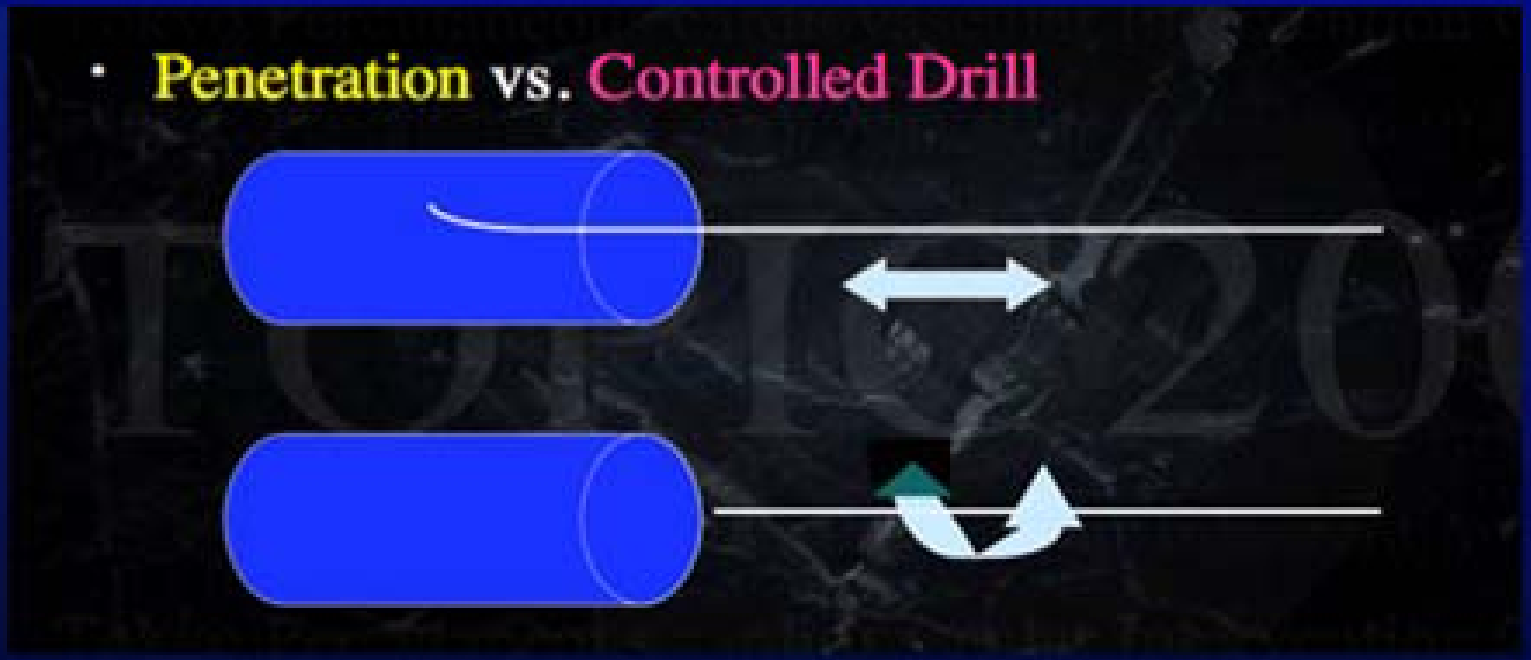
From August 2006



Astato is a 0.018" hydrophilic coated PTA guidewire, which possesses high penetration power with its 30g tip load and tapered design down to 0.013".

High penetration force
Good for penetration

Technique of the Wire Manipulation



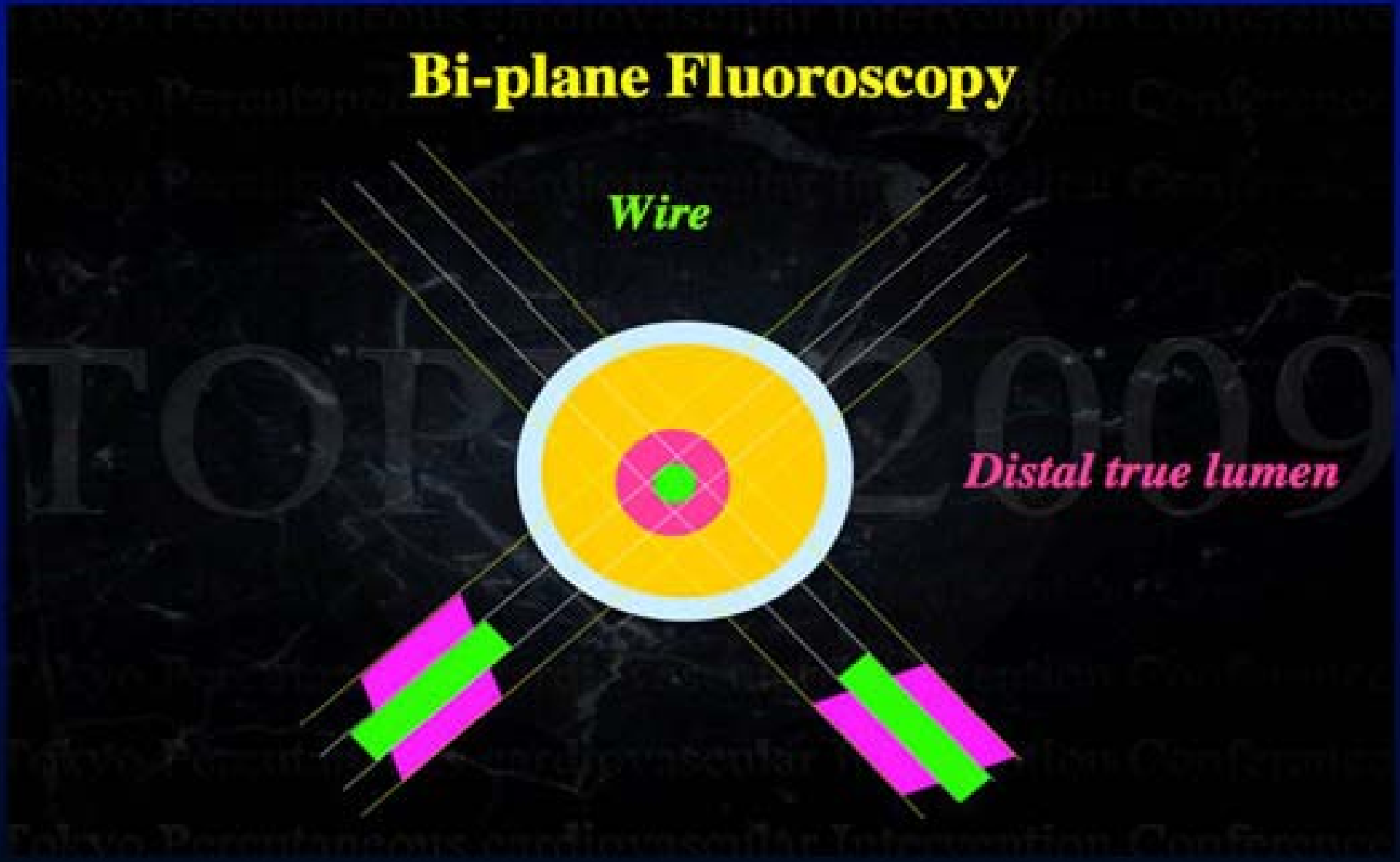
- Directional control of the wire tip is more precise in Penetoration.
- Advancement of the wire tip is easier in Cotrolled Drill.

When to Start Parallel Wire Technique ?

- If the 1st 0.018 Treasure wire migrates into the false lumen, it is time to start parallel wire technique with 0.018 Astato Wire.

- At that situation, bi-plane fluoroscopy or surface ultrasoud guided stiff wire (0.018 Treasure, 0.018 Aatato) manipulation is essential.

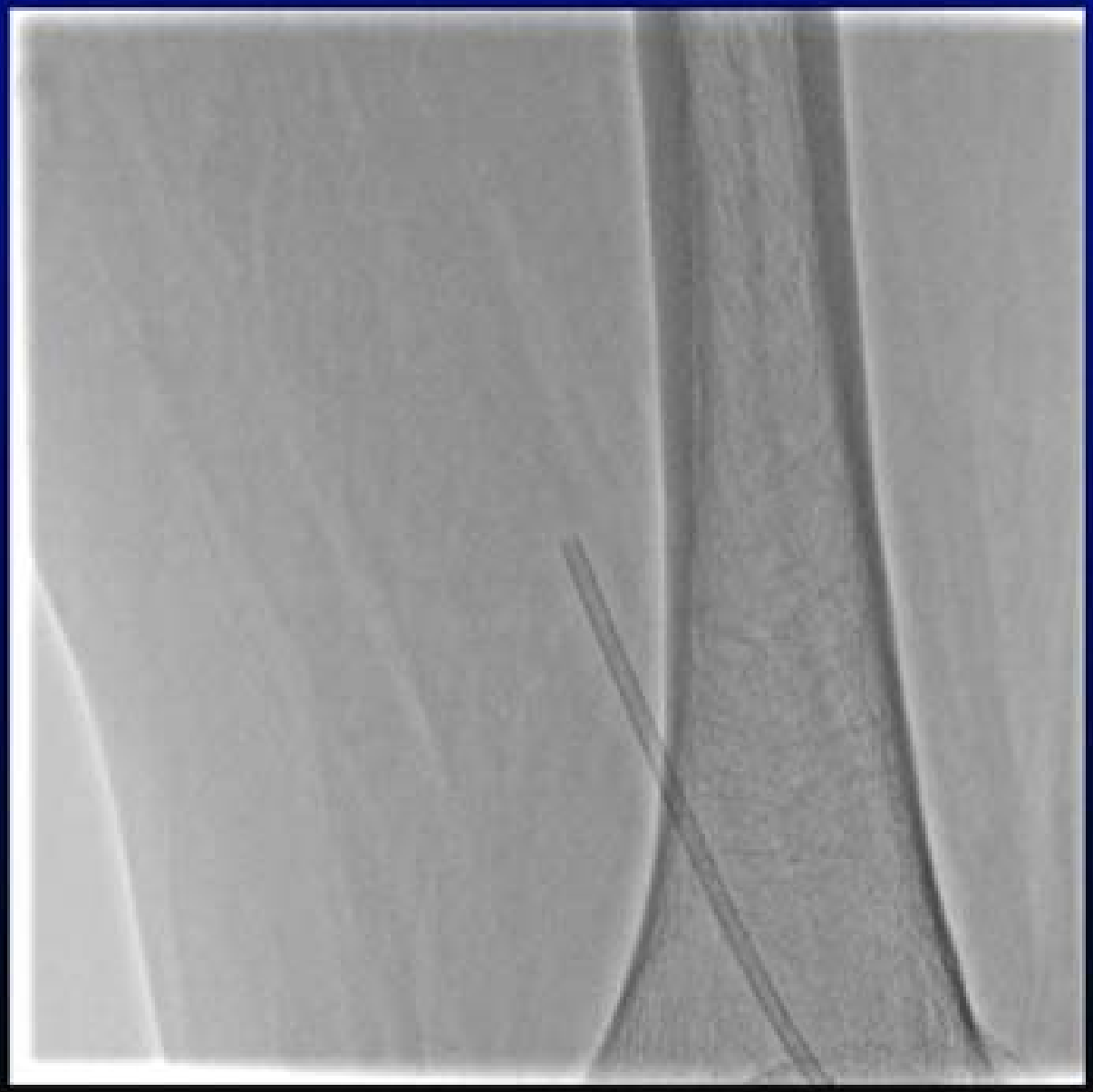
Bi-plane Fluoroscopy

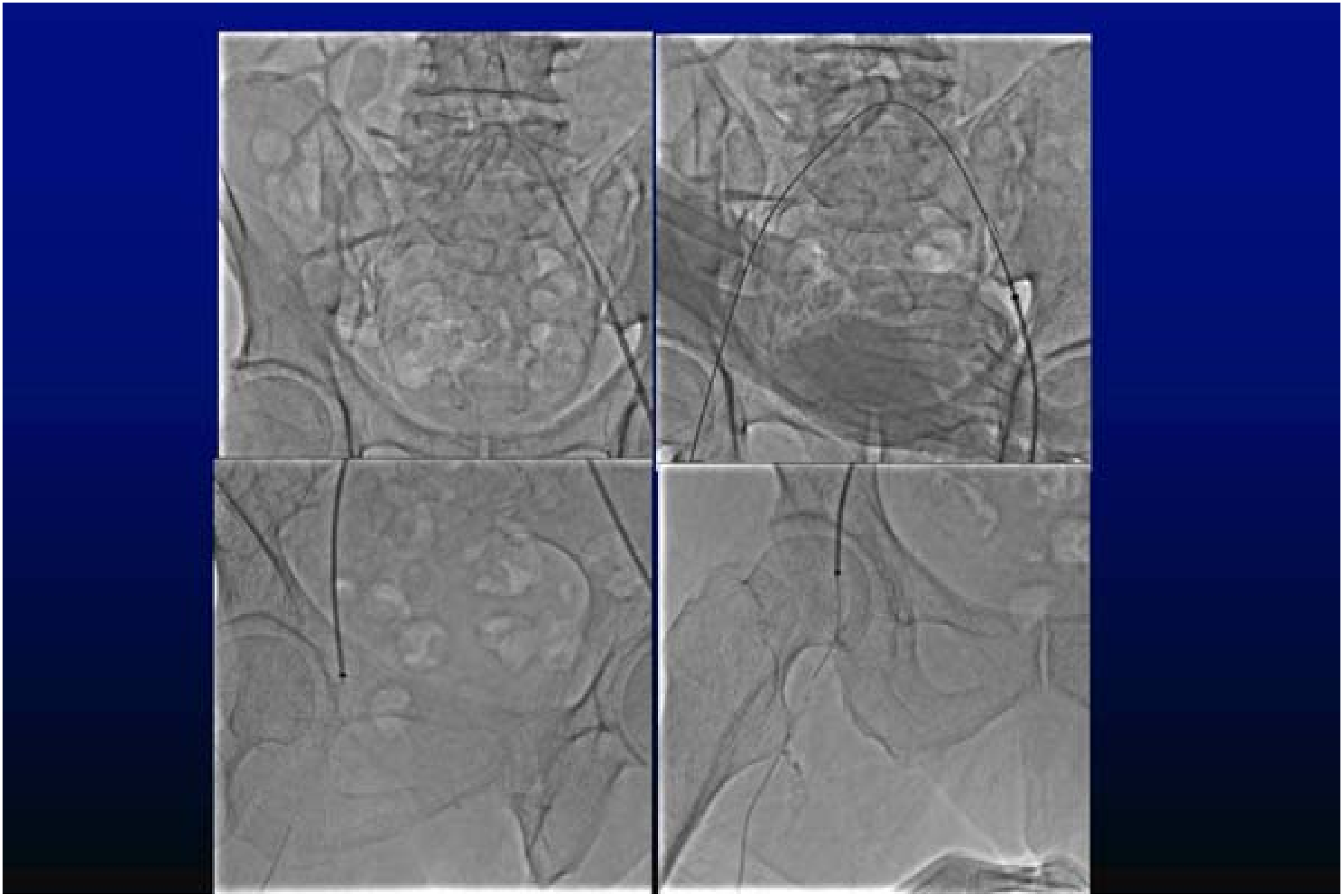


Penetration of the Distal Cap

- If there is no stump and the occlusion is long and severe calcified, parallel wire technique is sometimes not enough, retrograde approach (popliteal or tibial artery puncture by ultrasound guide) may be required.
- At that situation, surface ultrasoud or IVUS guided, bi-directional stiff wire (0.018 Treasure, 0.018 Aatato) manipulation is essential.

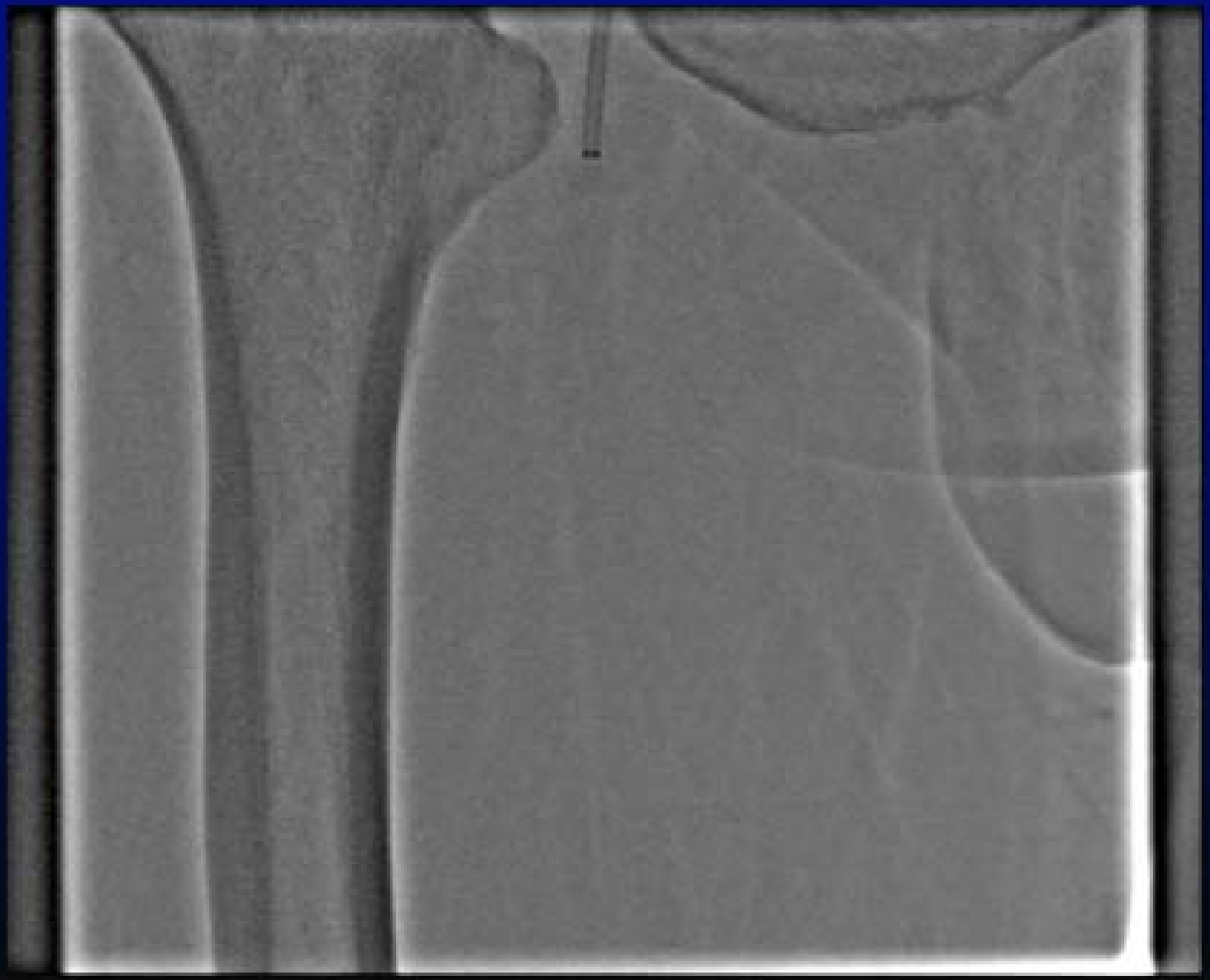
SFA-CTO



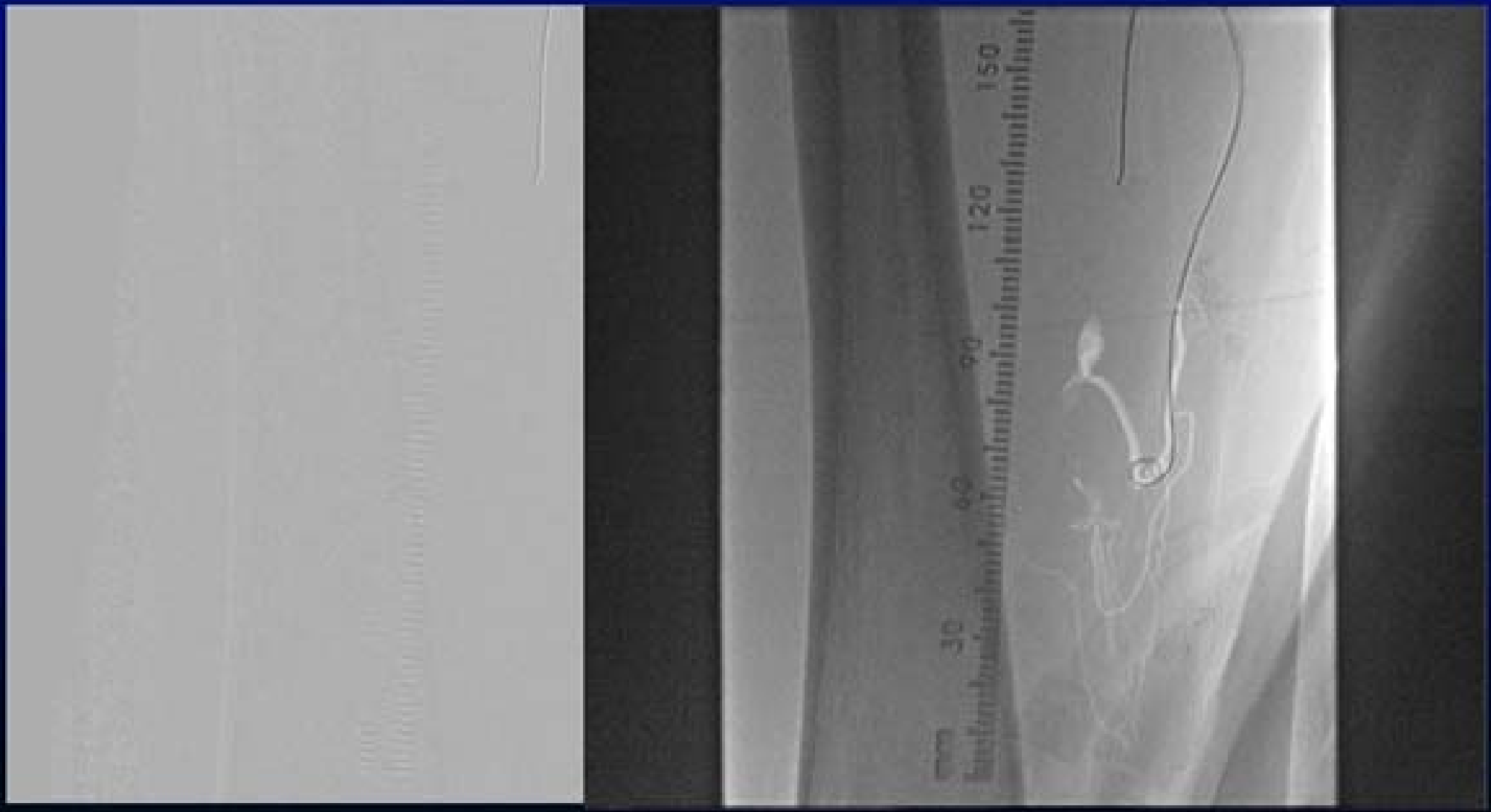


Ultrasoud Guided,
Bi-directional Stiff Wire Manipulation

IVUS Guided Tapered Wire Manipulation

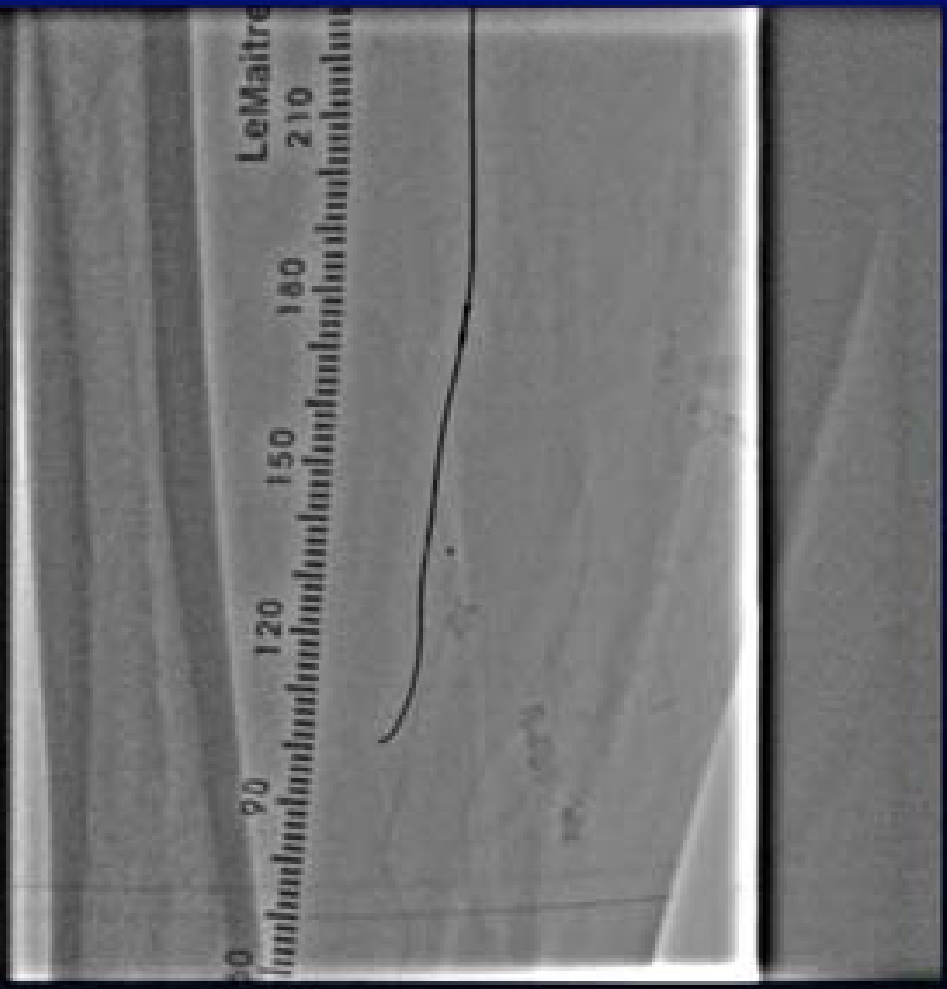


Filder FC wire with Corair micro catheter crossing collateral artery

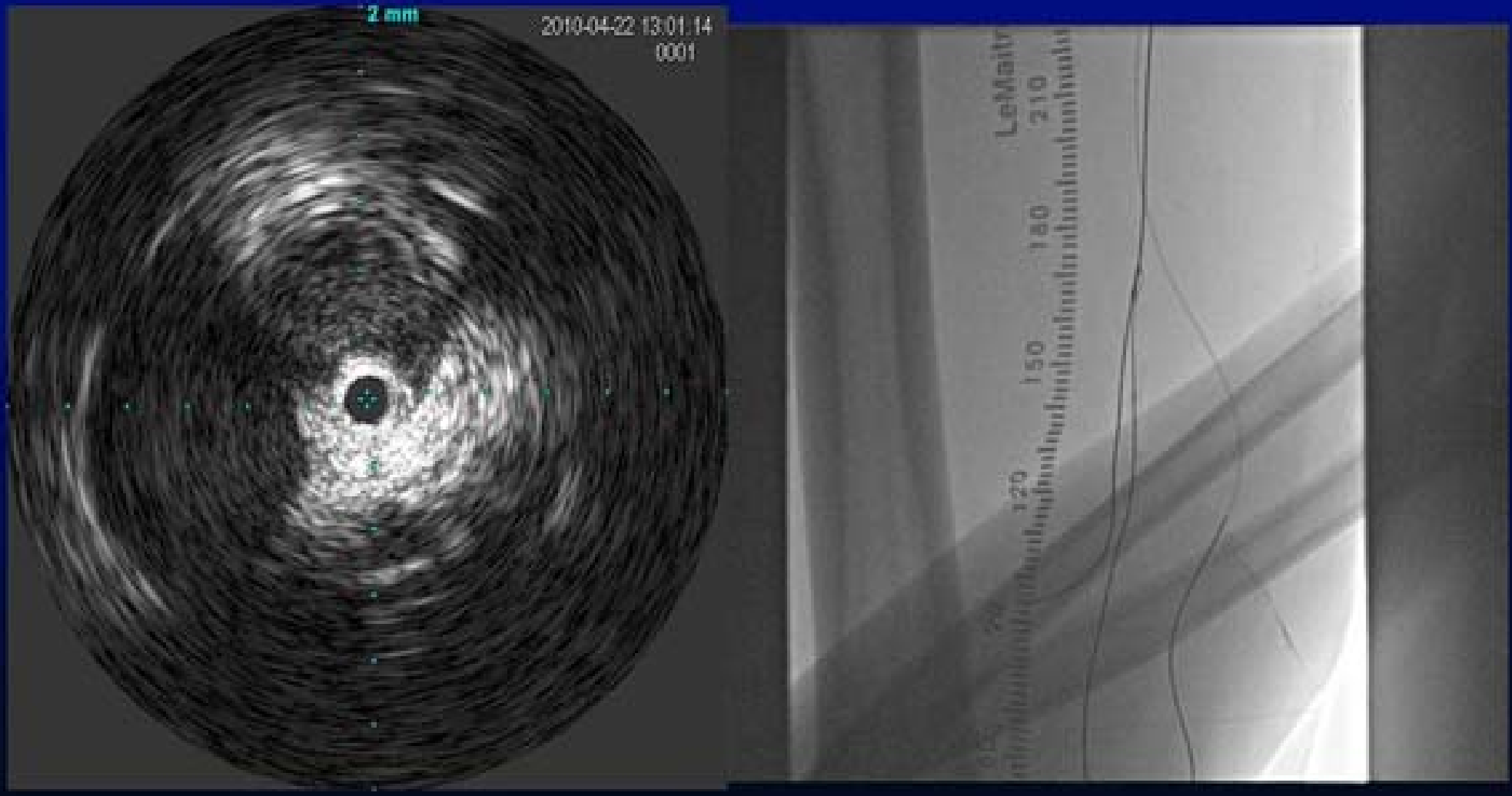


Advanced Filder XT Wire

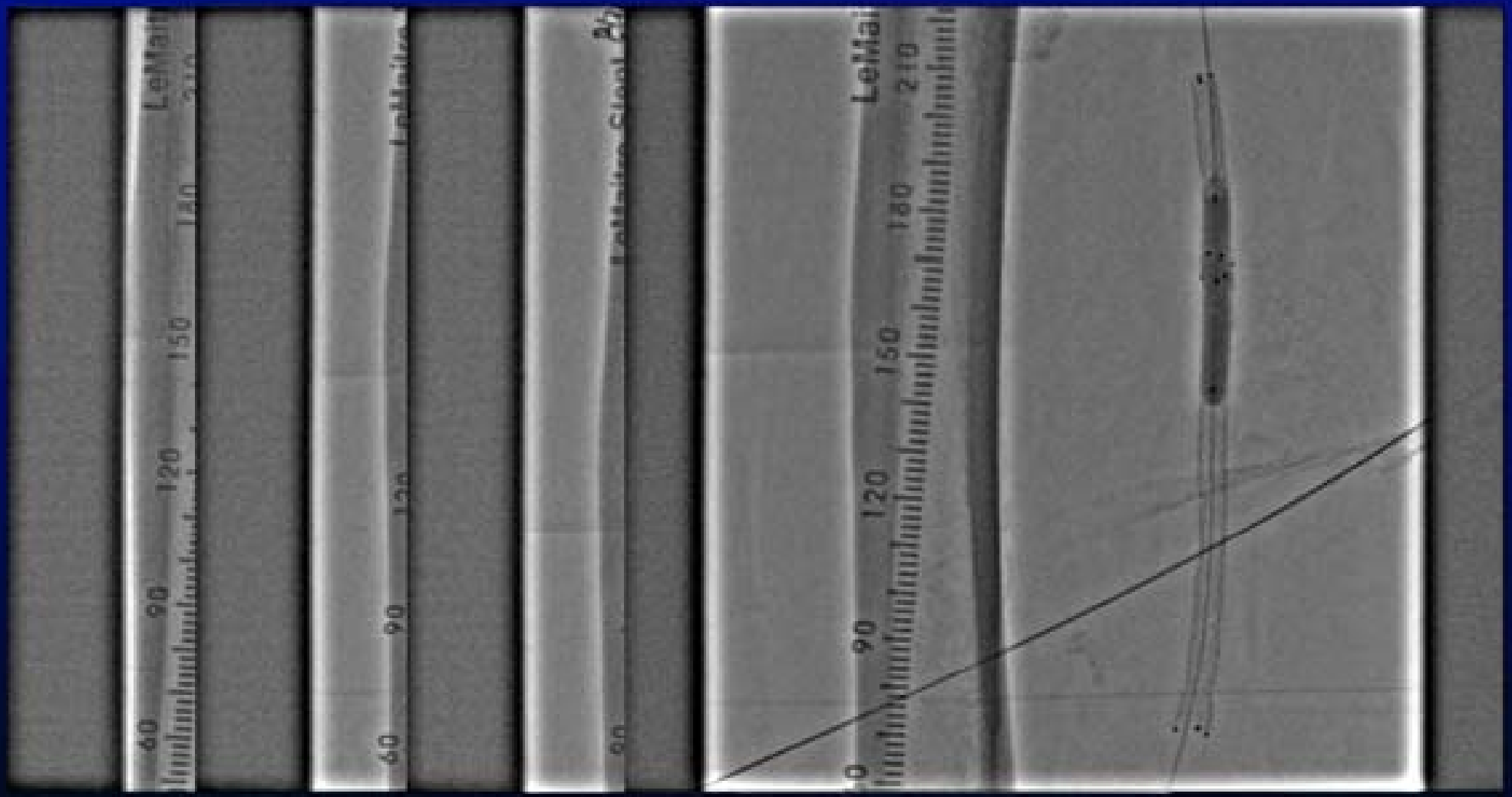
IVUS advaned with Antegrade Wire



Retrograde wire crossing true lumen using IVUS



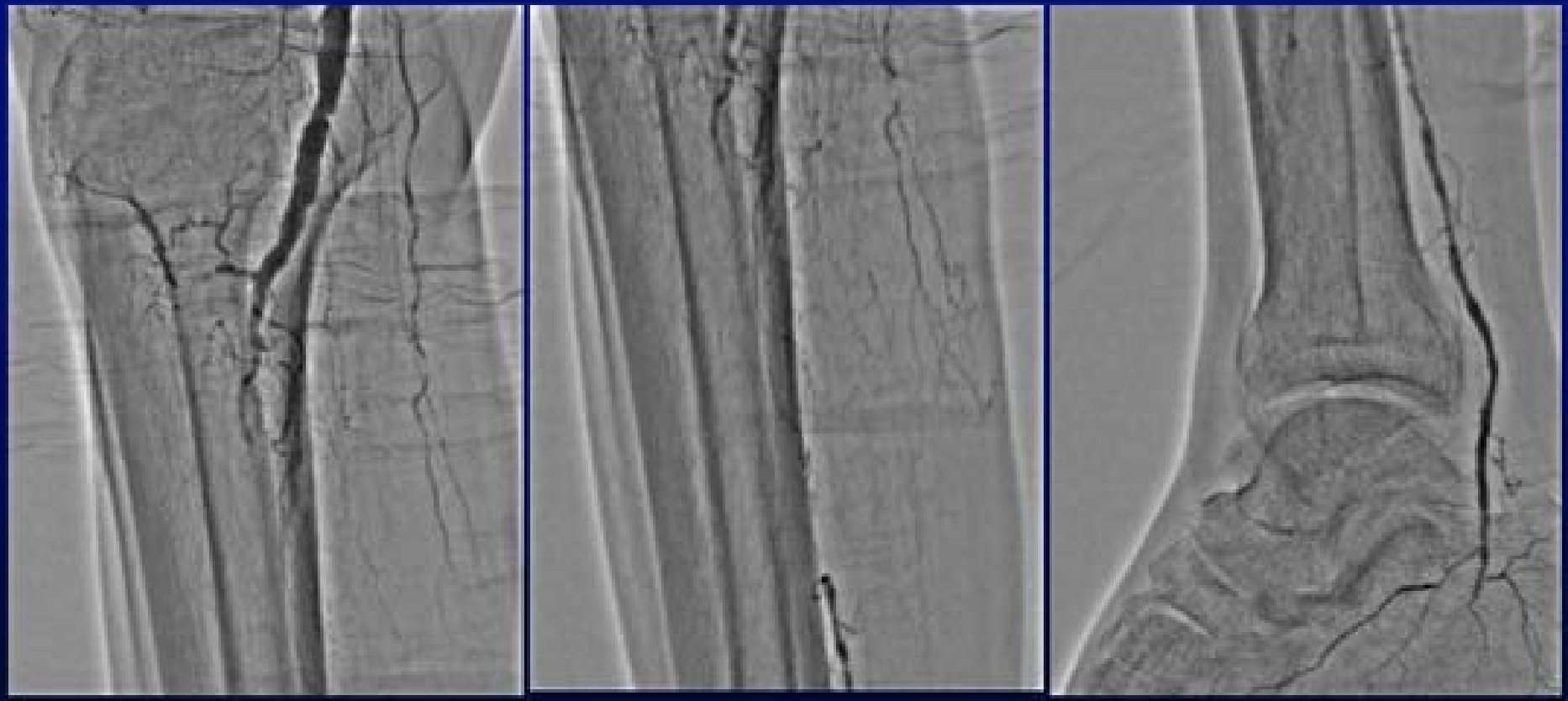
Misago Stent



Final

Tibial Puncture
Bi-directional Wire Manipulation

Cyanosis at rt toe with rest pain

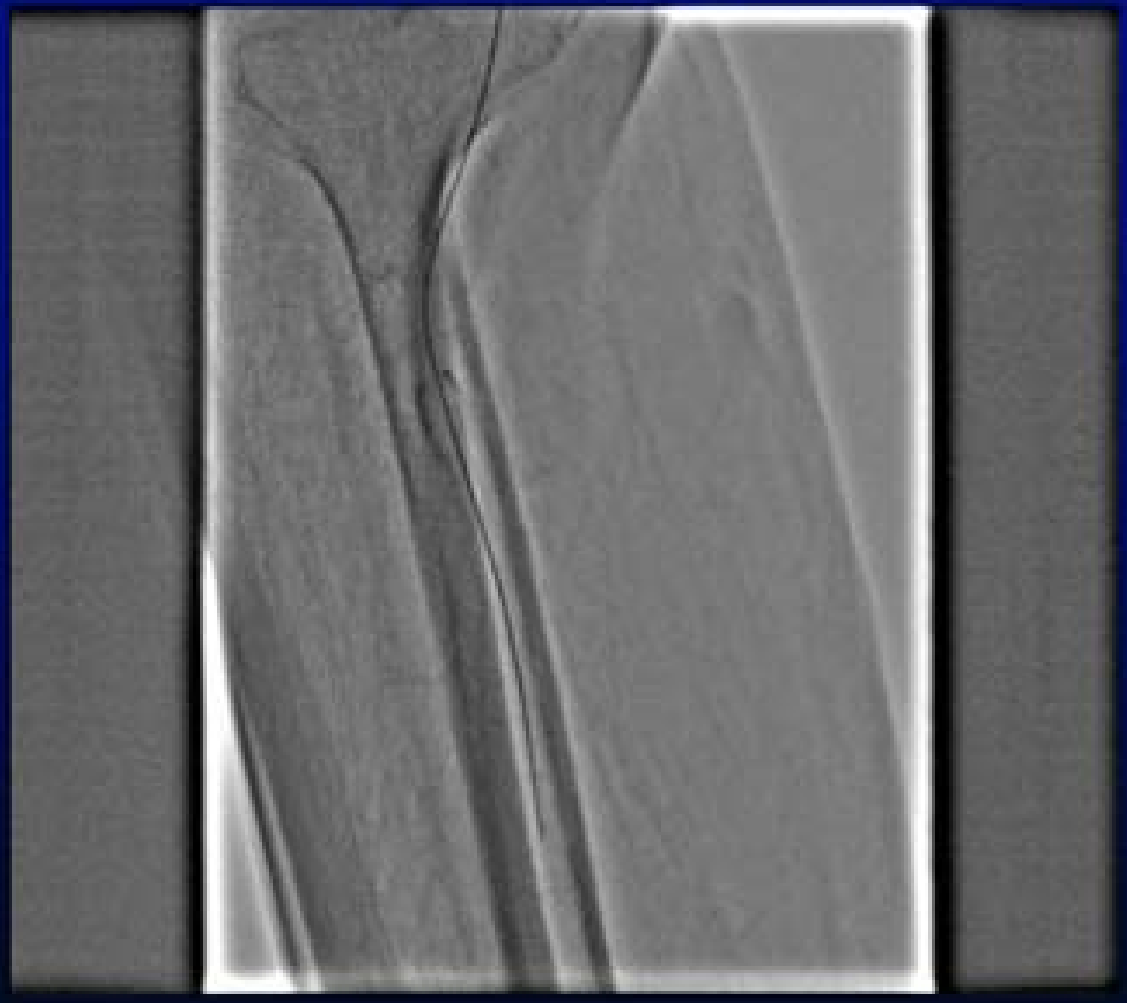


Angio: ATA 100%, PTA 100%, PA 100%

Antegarde Approach

GW (Filder XT) manupulation by vascular echo

Antegarde Approach



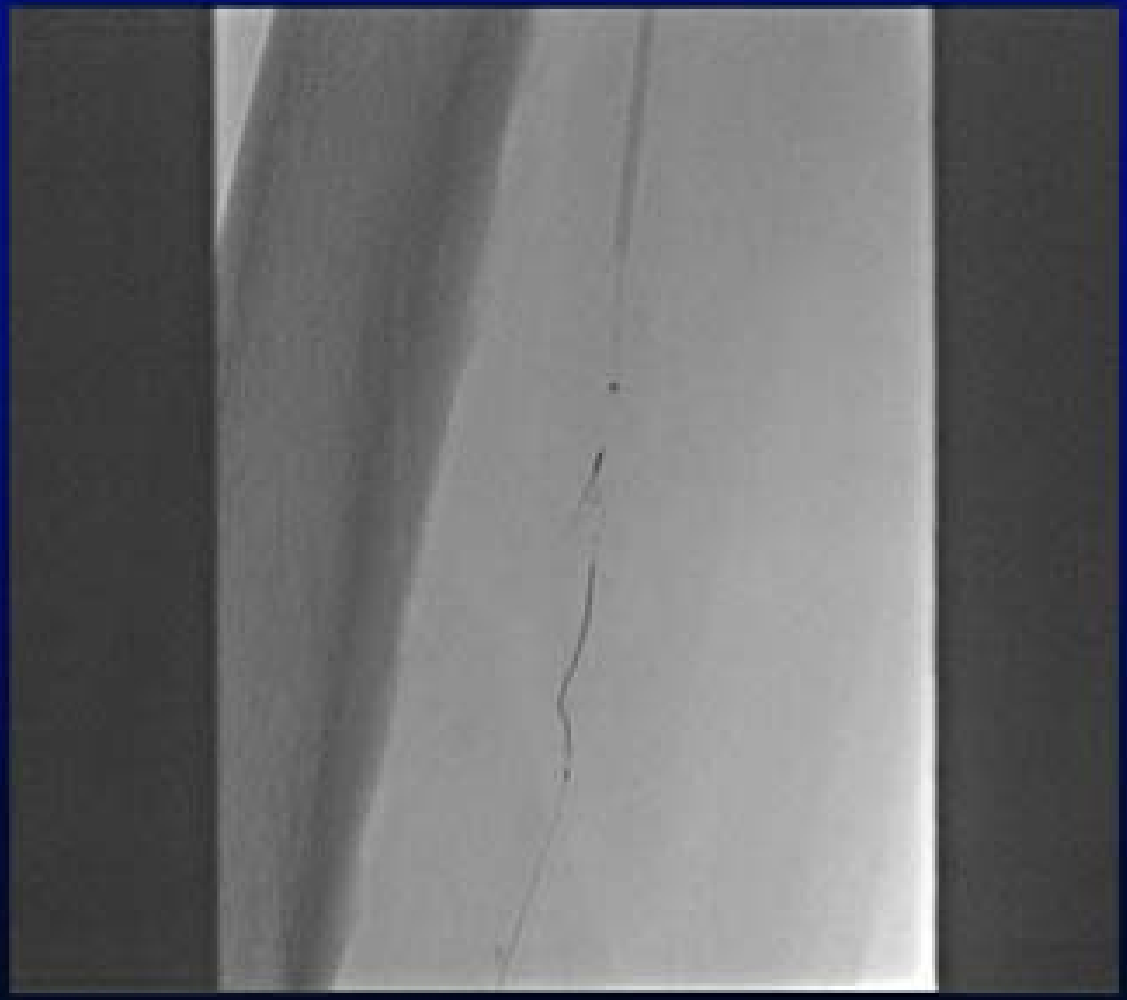
GW (Treasure, Astato) manupulation

Tibial Puncture

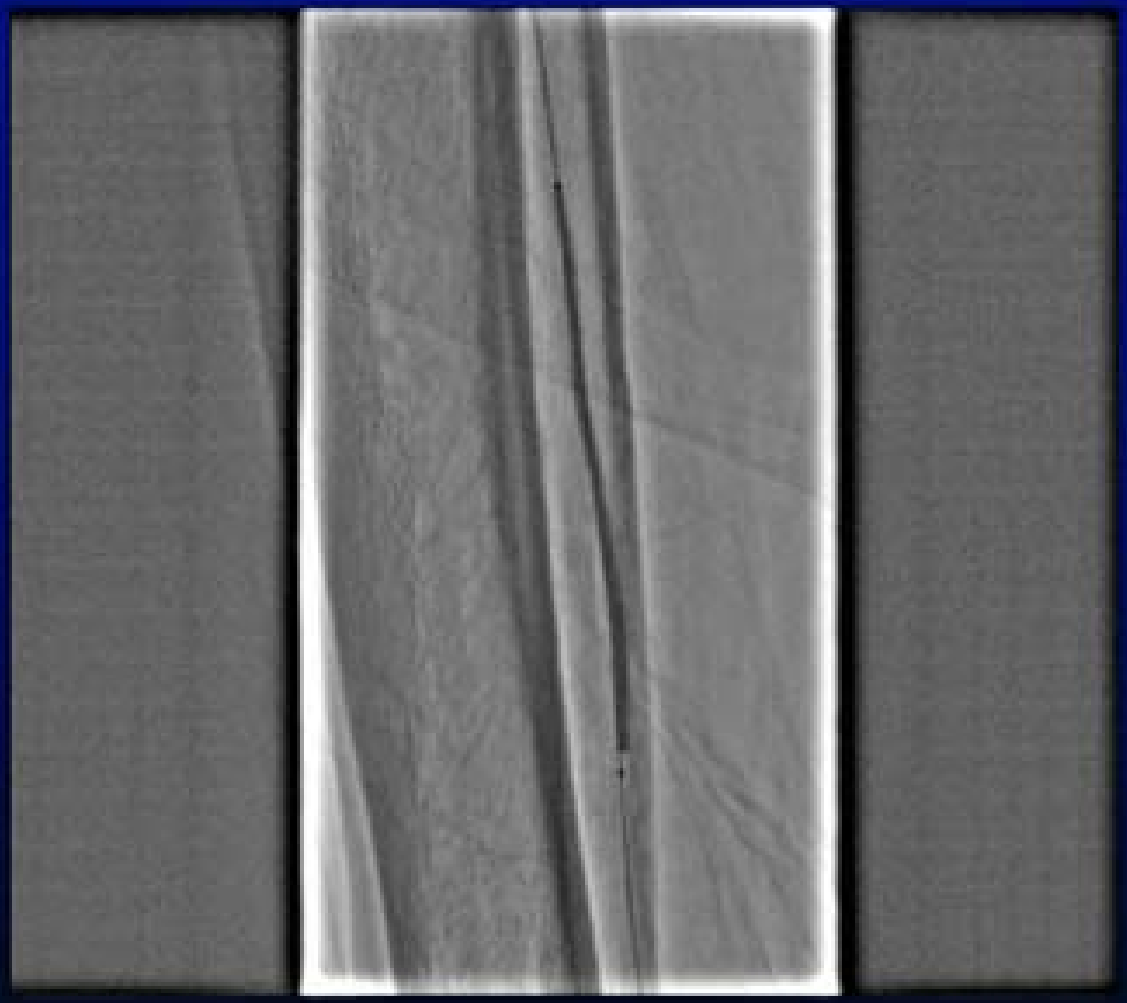
Retrogarde Approach

GW (Filder XT) manupulation with ichiban-Yari micro catheter

Snare Catch

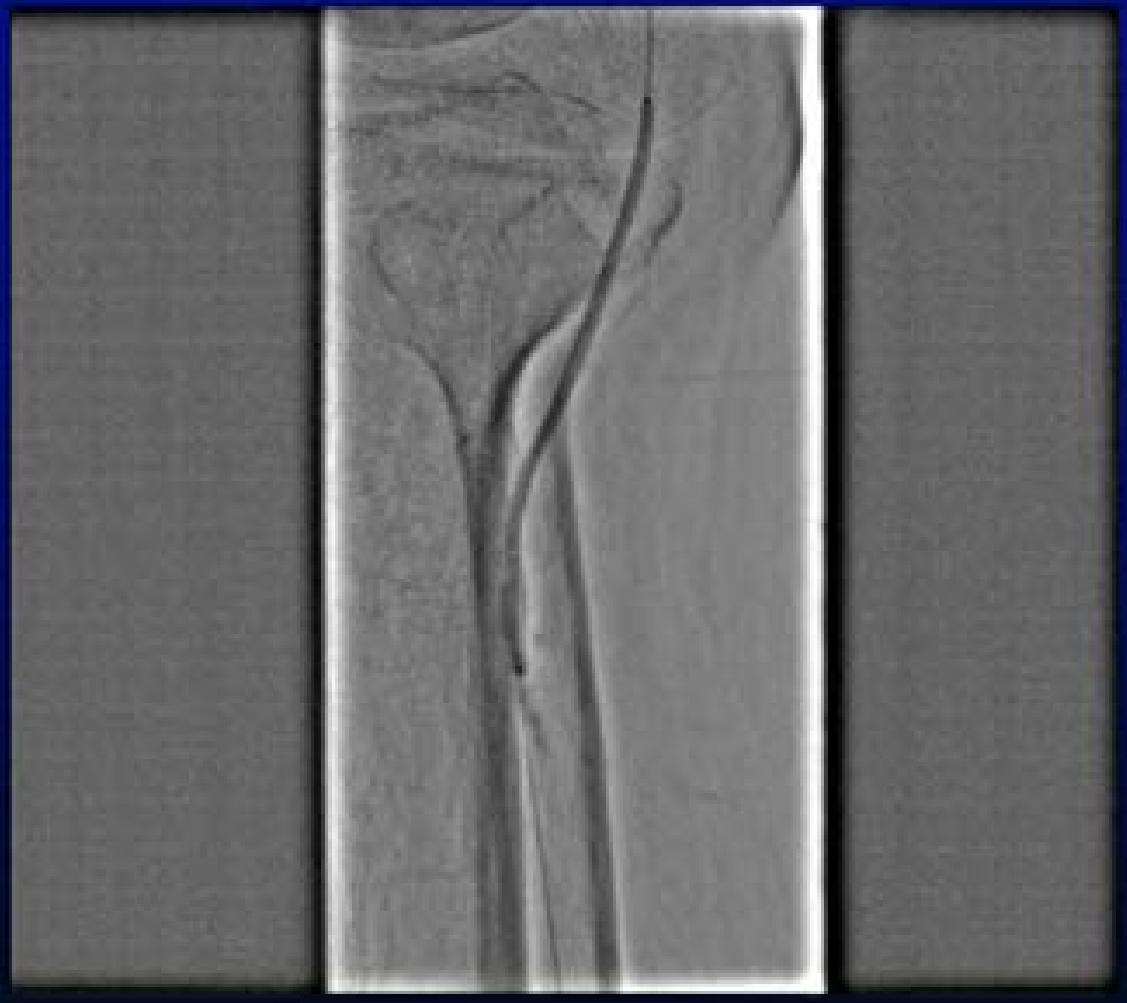


Balloon Dilatation

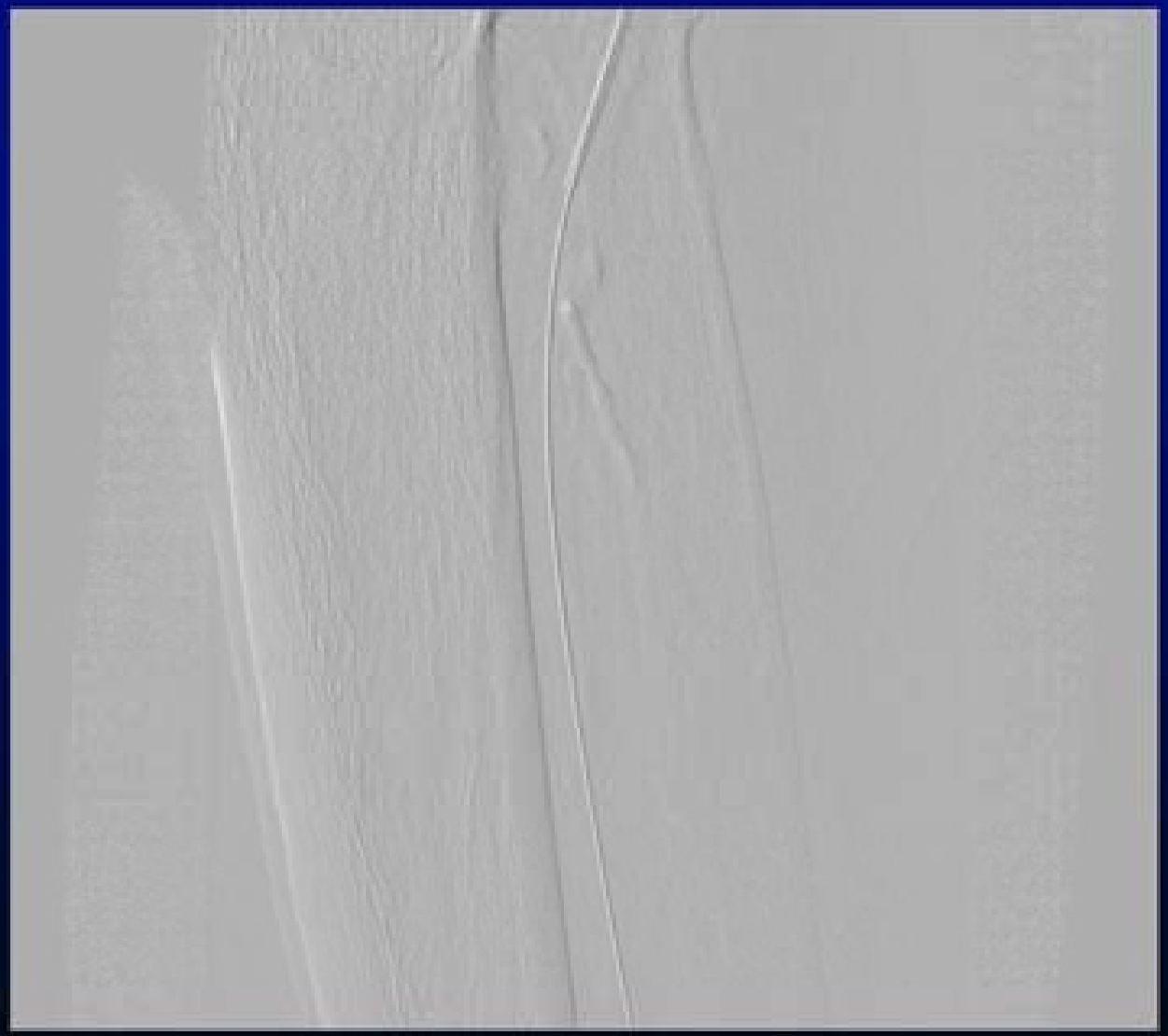


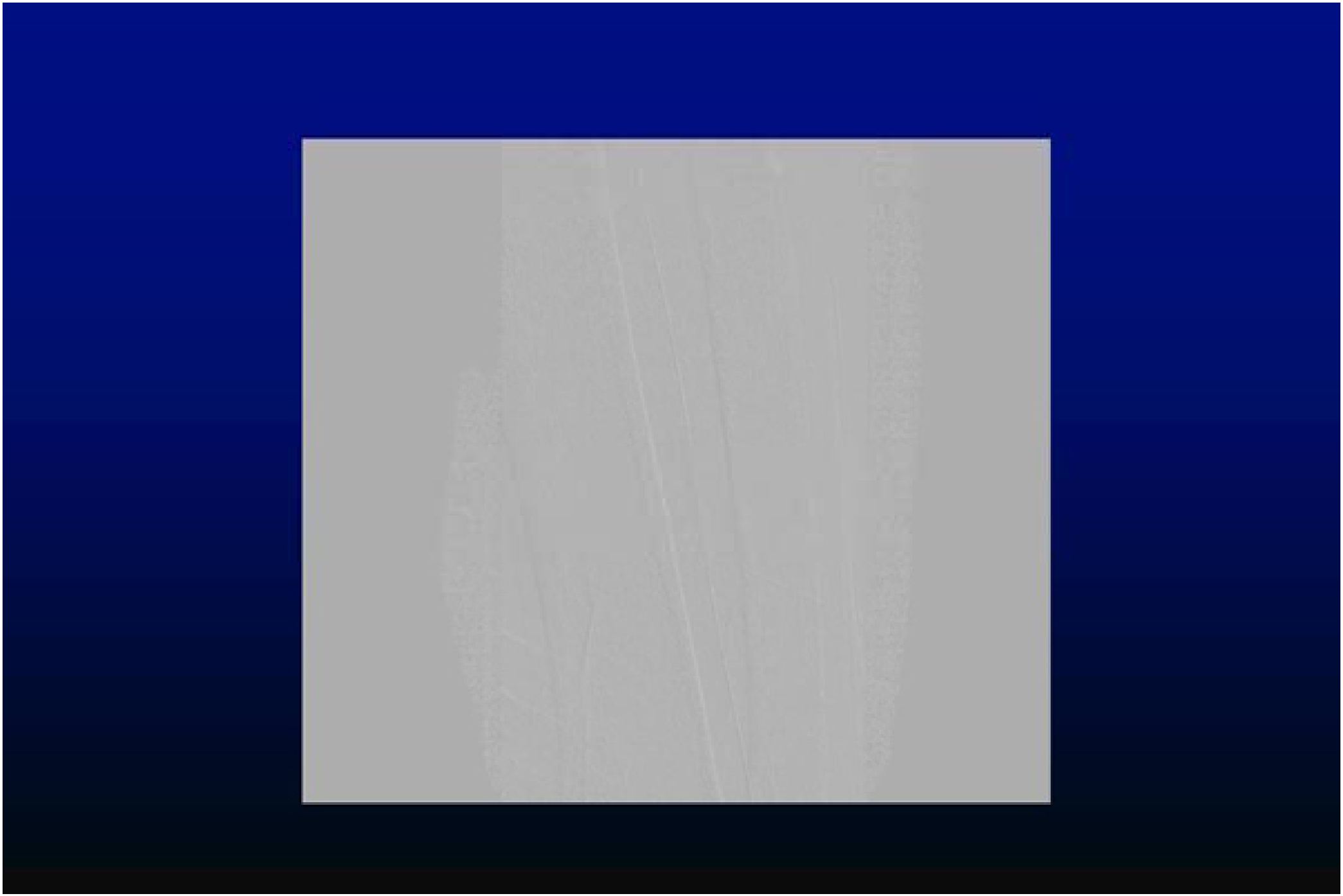
2.5mm-100mm Balloon

Balloon Dilatation



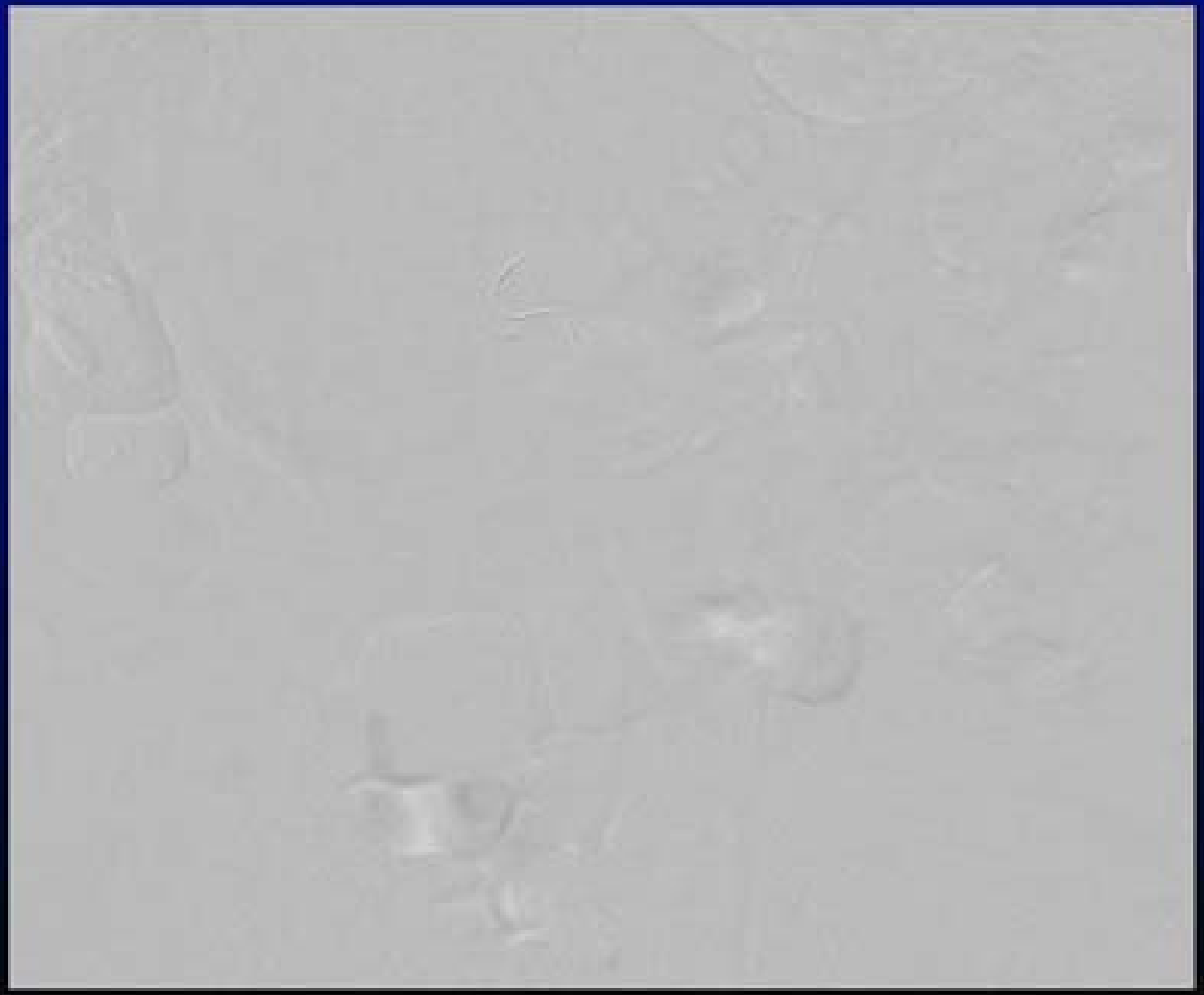
2.5mm-100mm Balloon



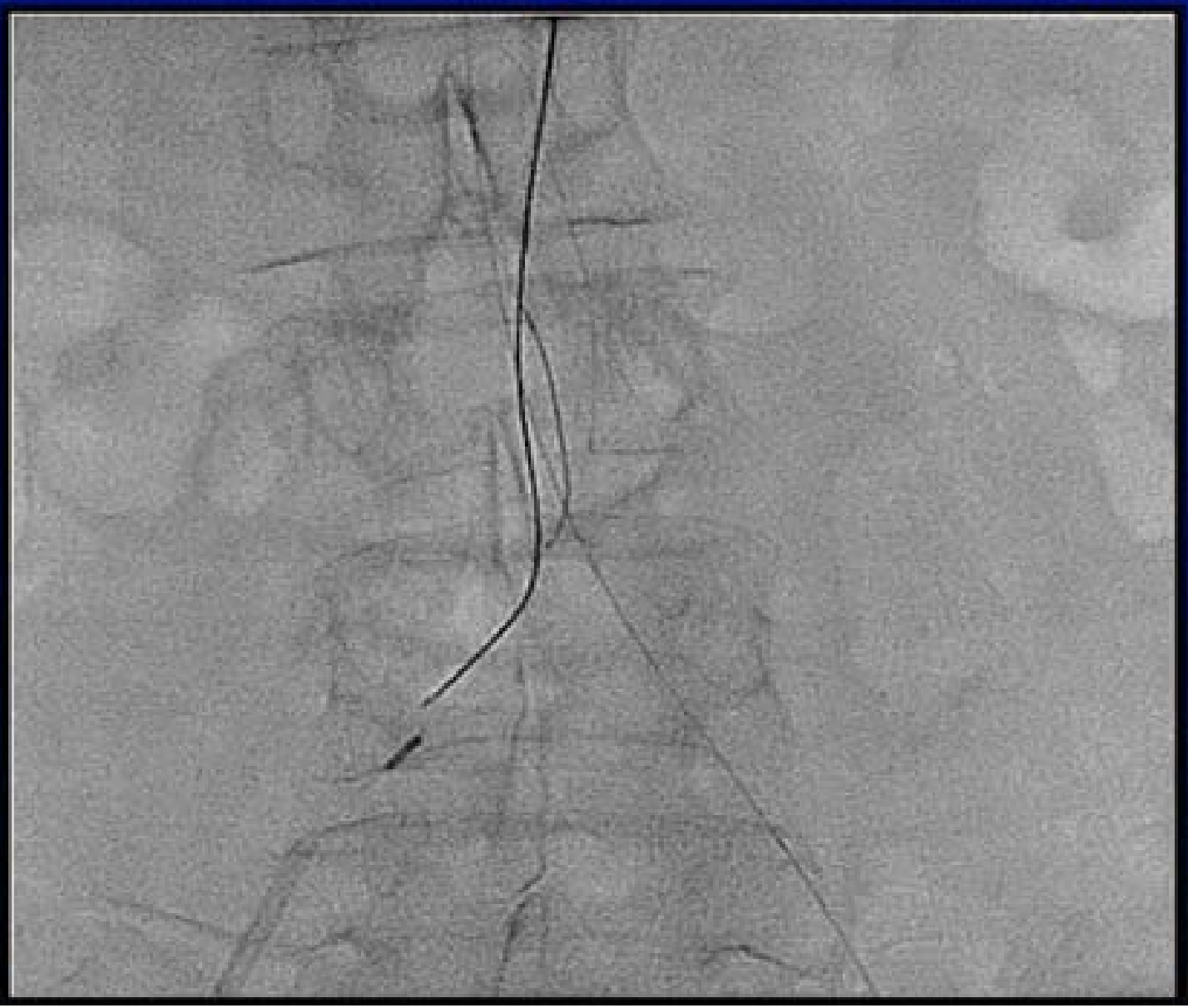


Leriche Syndrome

Retrograde GW advanced to subintimal space

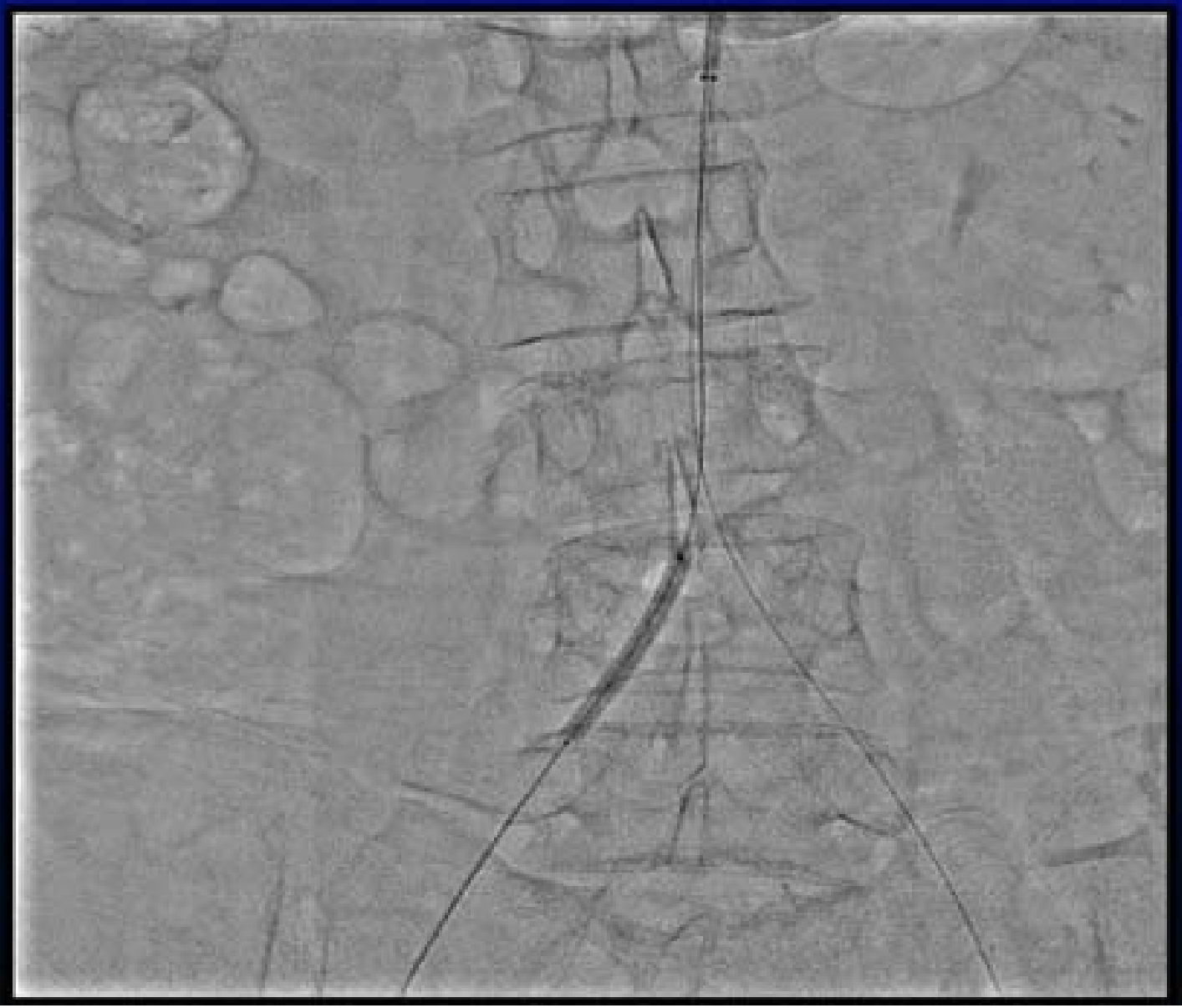


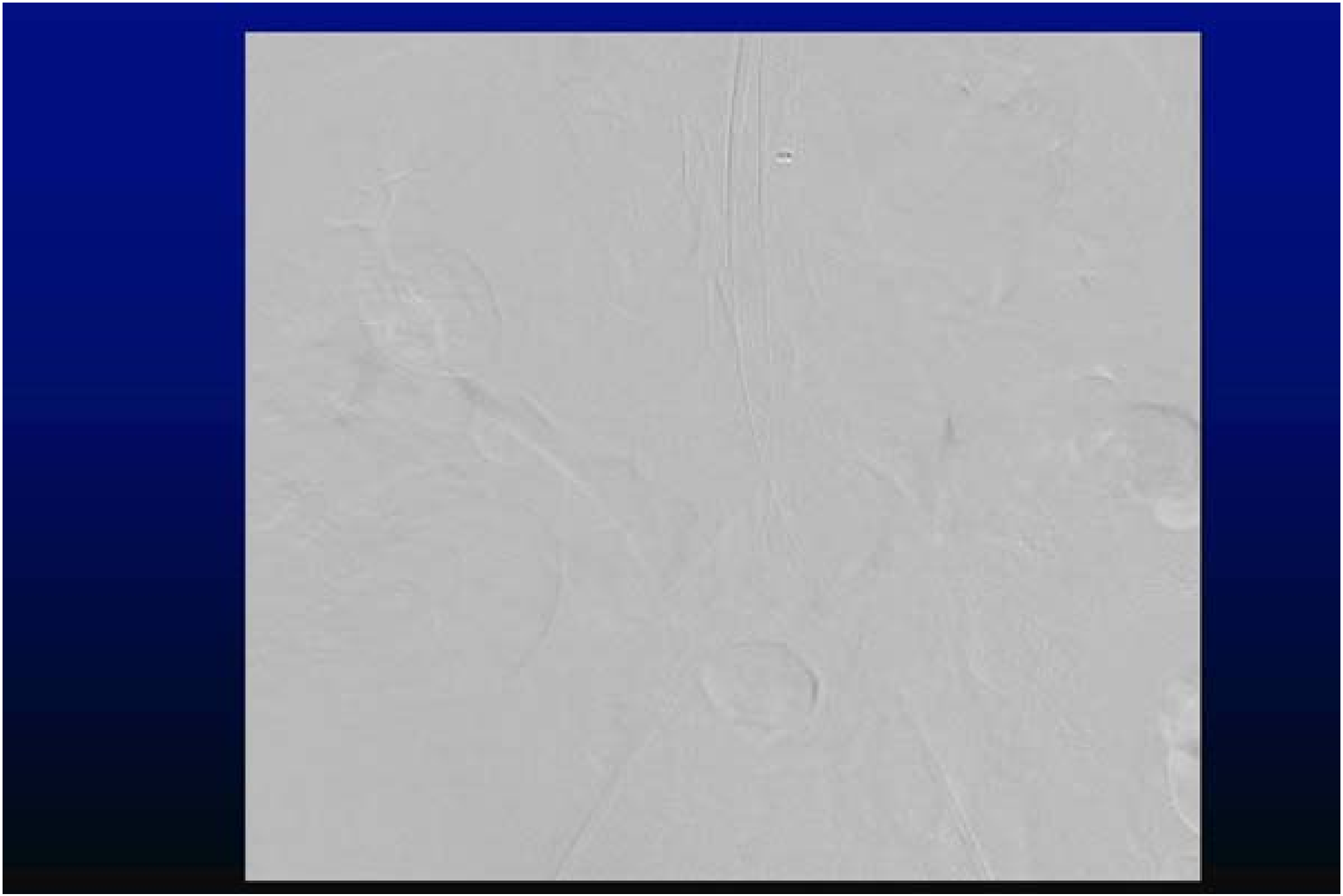
IVUS Guided Antegrade GW Manipulation



Snare

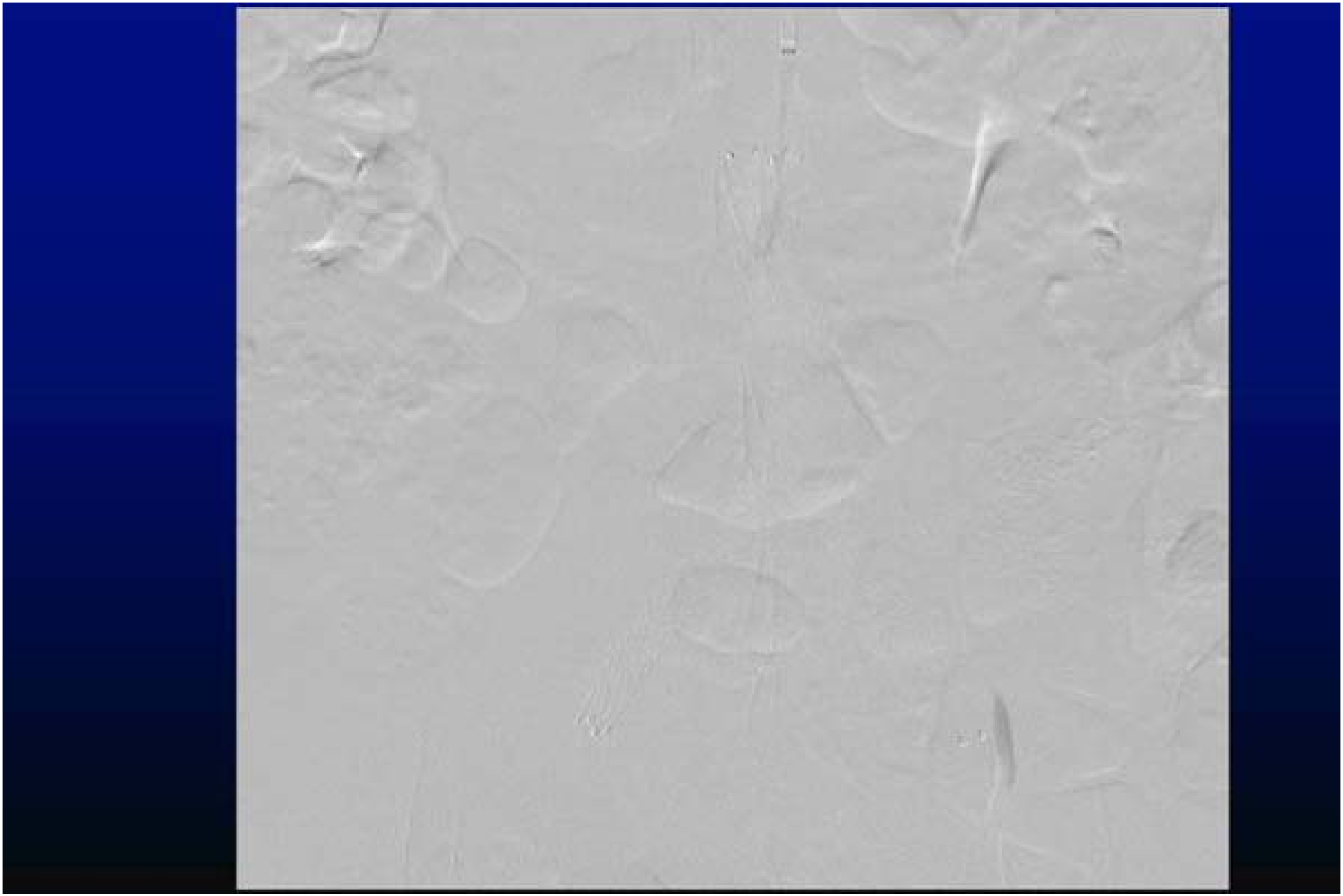
Balloon





Kissing Stent

KBT



Take Home Messages

- EVT for PAD Patients with CTO -

- Endovascular treatment using a new generation stent by ultrasound guided tapered or stiffer wire manipulation with bidirectional approach is feasible for PAD-CTO.
- Coronary intervention technique is very useful for EVT-CTO
- Endovascular therapy may be an attractive alternative therapy to bypass surgery for PAD patients with CTO