Crossing the Long SFA CTO
Techniques and Variables You need to Know

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Back ground

Superficial femoral artery (SFA) CTO intervention has high success rate and widely developed.

SFA is relatively straight vessel, and possible to do bidirectional approach.

Only difficult case is severe calcification which could not be crossed by the wire. The other one is post bypass occlusion because serious fibrosis occurred at anastmosis site.

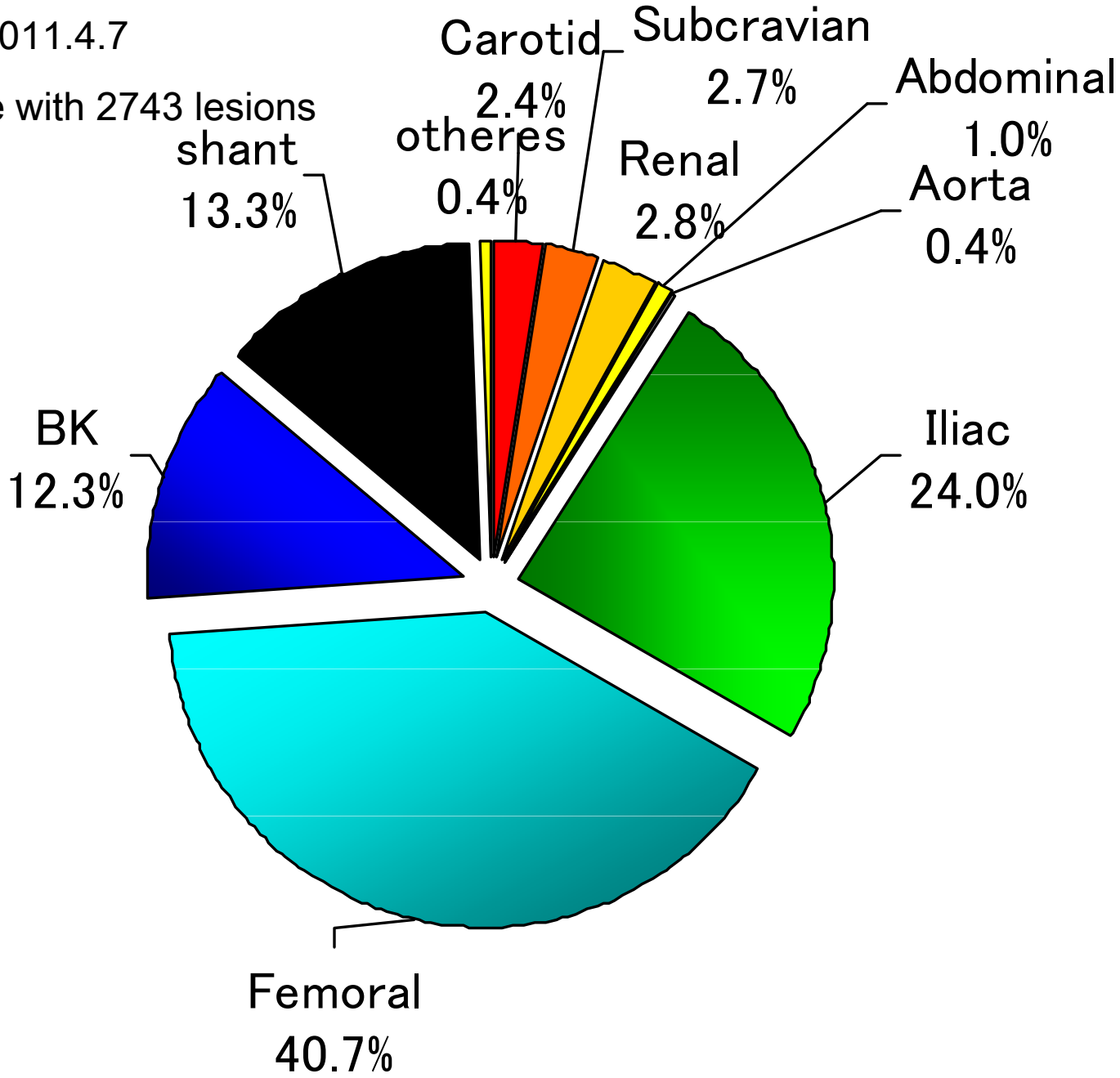
Peripheral CTO strategy

There is no standard method for CTO intervention, especially for wire selection. Interventional cardiologist prefer slender wires. To aim 100% success, you need to do bidirectional approach. Usually, retrograde approach is from popliteal artery.

Kyoto Katsura Cardiovascular Center

1998 to 2011.4.7

2024case with 2743 lesions



Key of the CTO treatment

Don’t perforate：

Ballooning and compression

Don’t emblize

Distal protection in high risk lesion. Suction

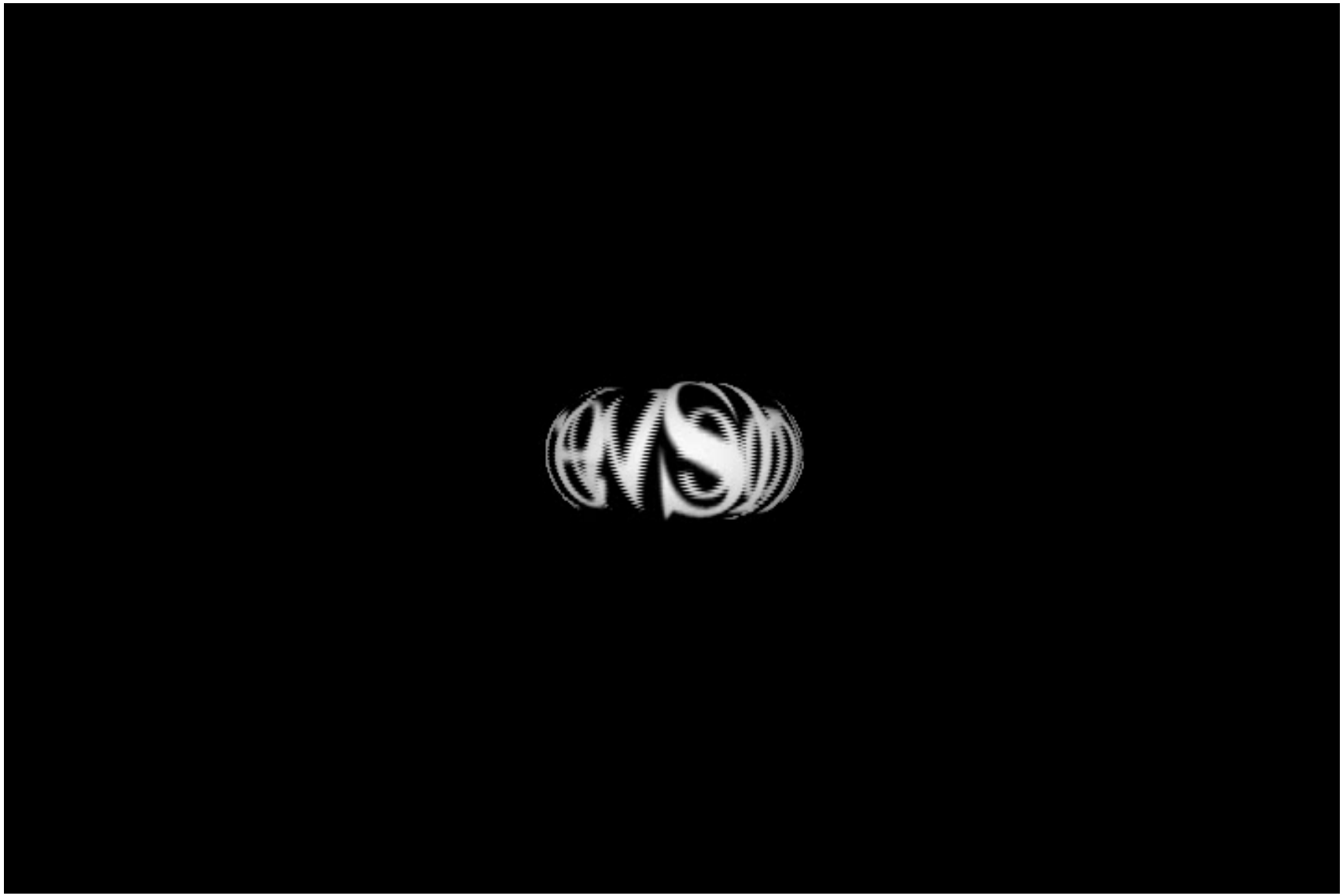
Superficial Femoral artery

	SFA
Lesion	1061
CTO	227(21%)
CTO Success (recent 3Y)	95% (97% 87/90)
Stent used (recent 3Y)	(44%)

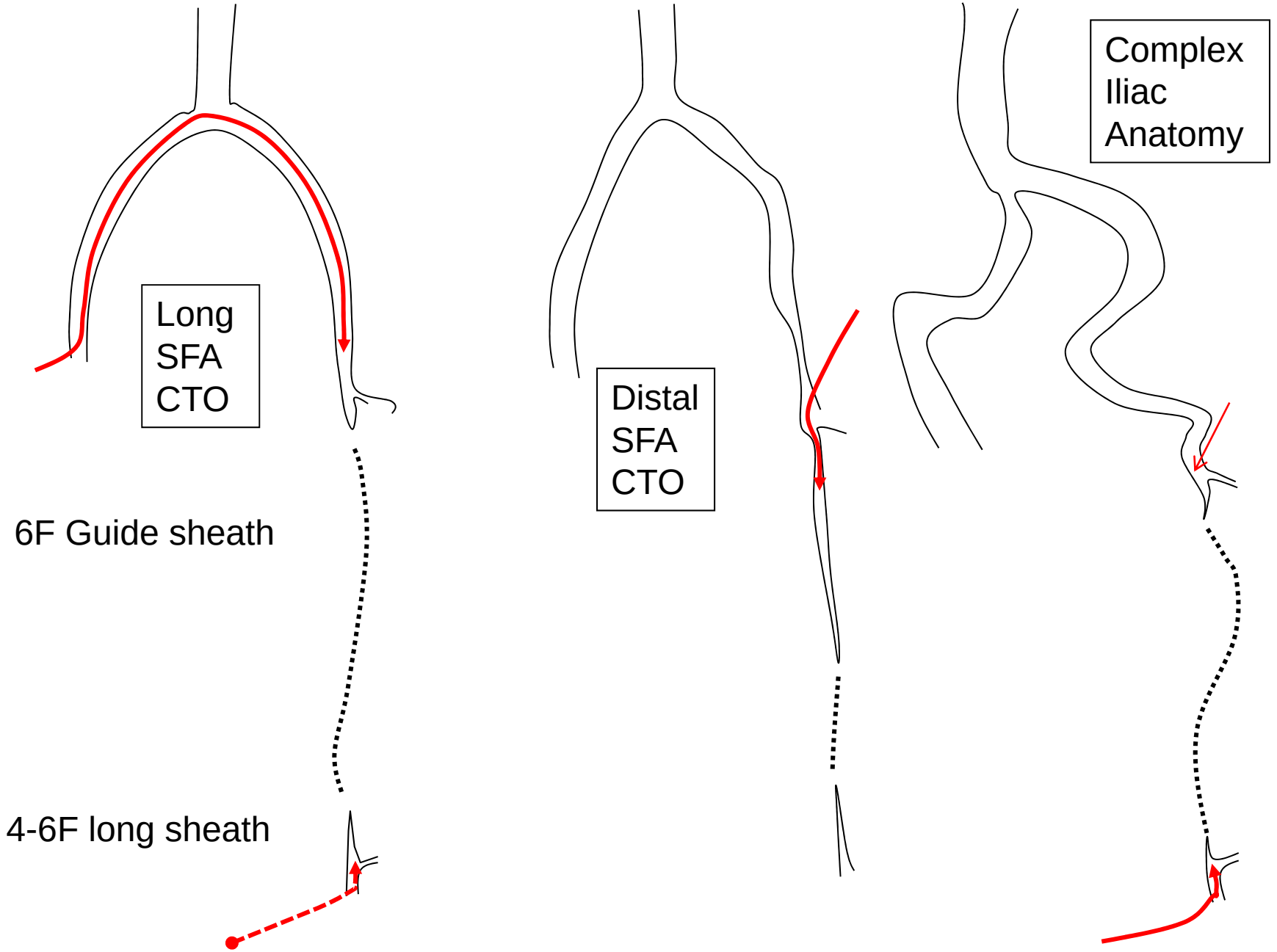
1998 to 2011.4.7

Wire characteristics for CTO

Size	0.014	0.018	0.035
Manipulation	Similar to coronary	Similar to coronary	Knuckle
advantage	Less perforation	Controllable	Shorten wire cross time
Disadvantage	Easy to broken	Chance of perforation	Difficult re-enter from false to true lumen
Stent need	Not always	Not always	Mandatory to entire lesion
Where	BK lesions Unexpected curve	First choice	Perforation by 0.018 inch wire



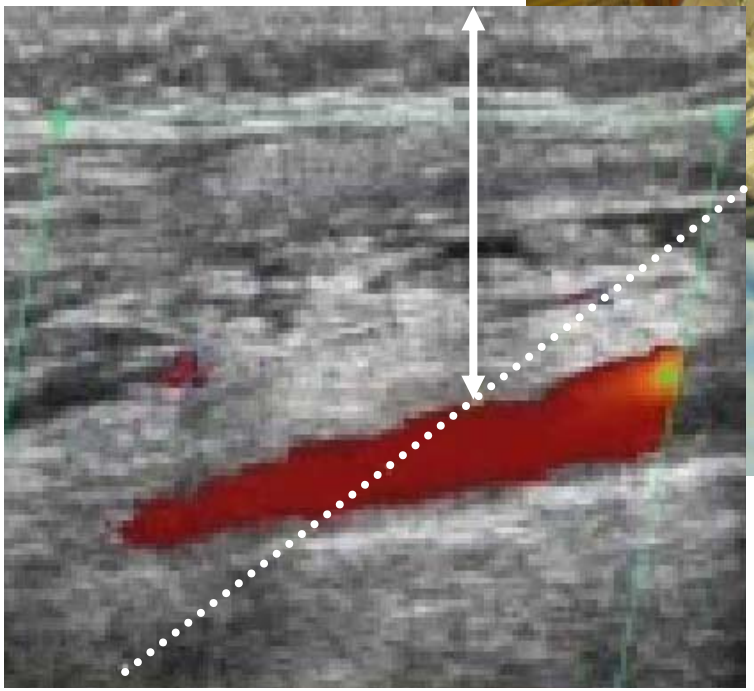
Approach to SFA CTO



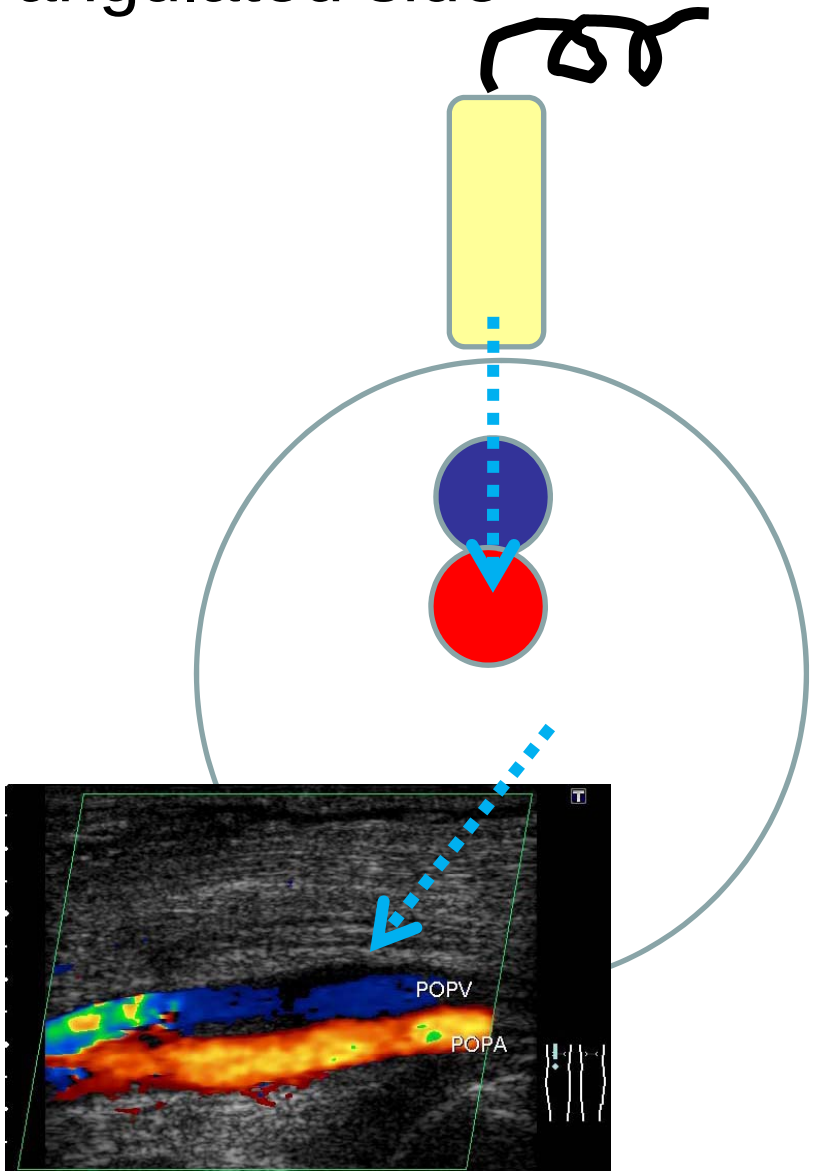
How to puncture the popliteal artery

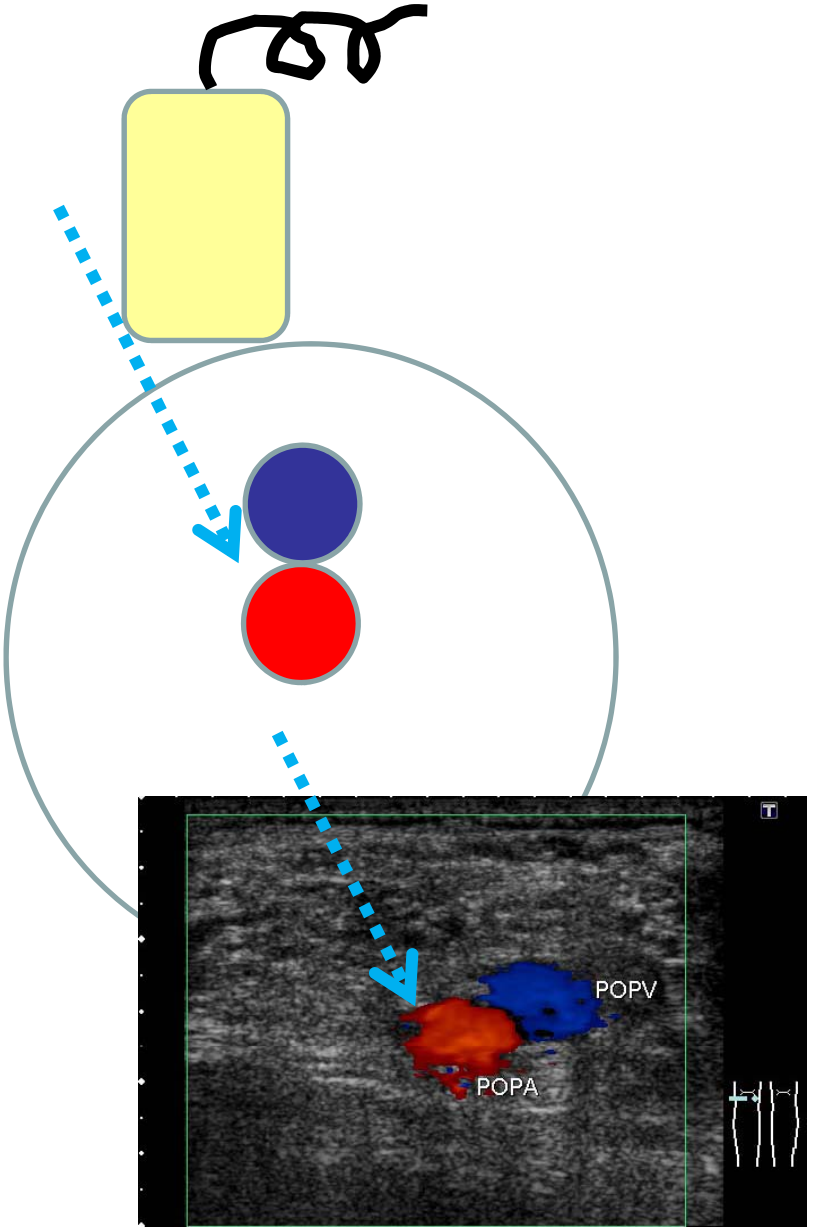
Needle guide bracket on Echo probe (18G needle)

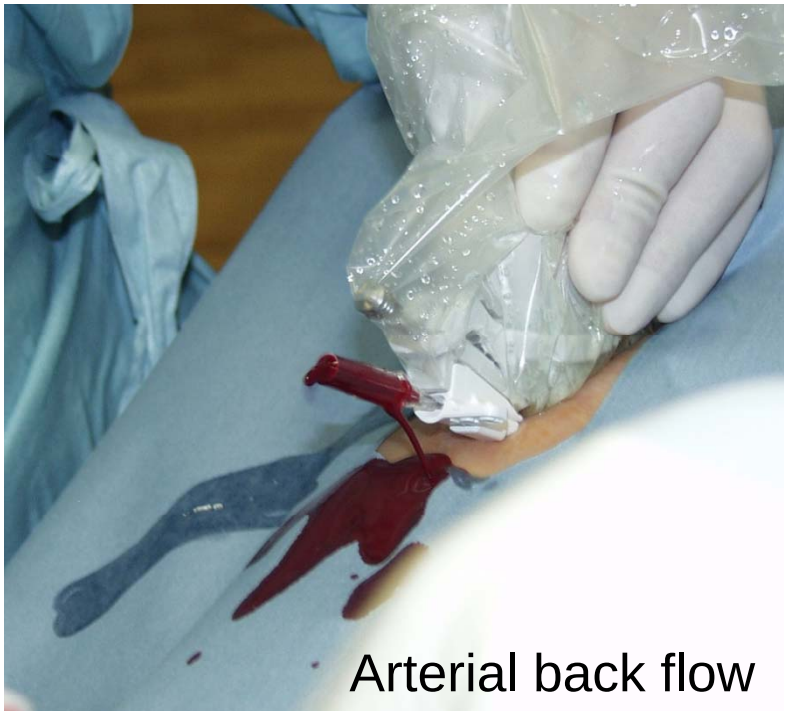
White dots indicate needle route



If popliteal vein is running over the artery, aim to the angulated side



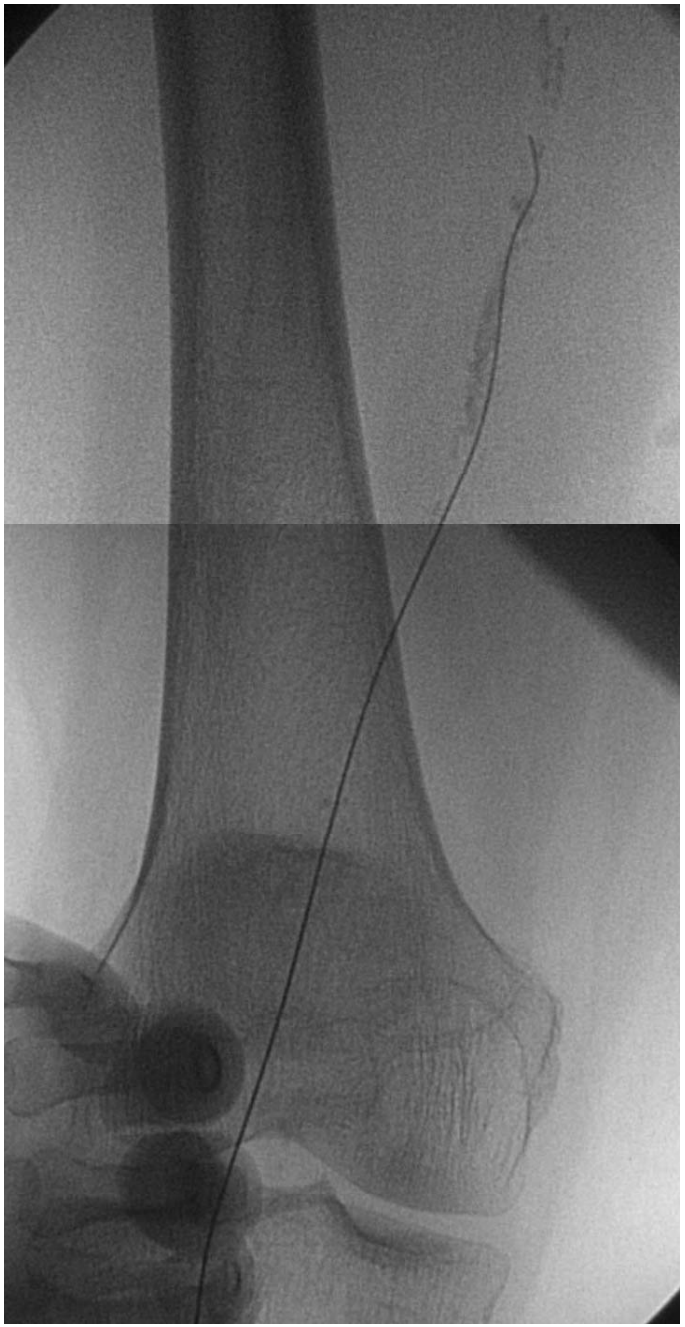




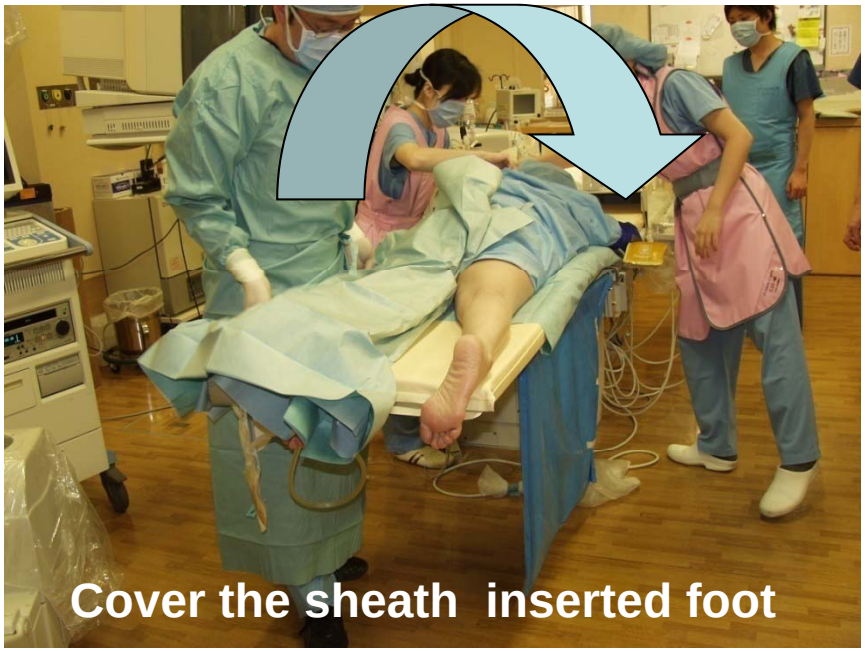
Arterial back flow

Advance a 0.035 wire

Left leg




Insert the 6F long sheath


Cover the sheath inserted foot


Cover with sterilized sheet


Turn the patient to supine position

Antegrade femoral puncture

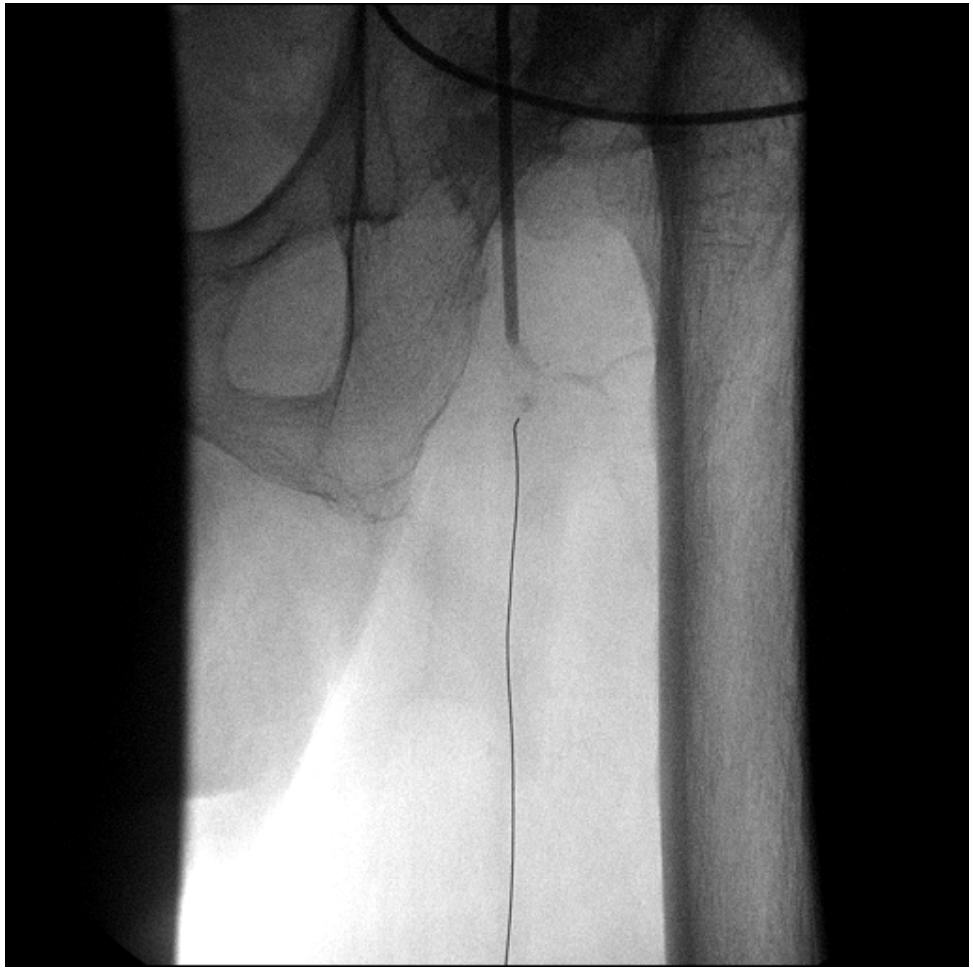
Toe

Retrograde wiring from popliteal artery

Antegrade puncture

Asahi 0.018 :12g and Transit

Successful reentry to the proximal artery and IVUS



Reentry

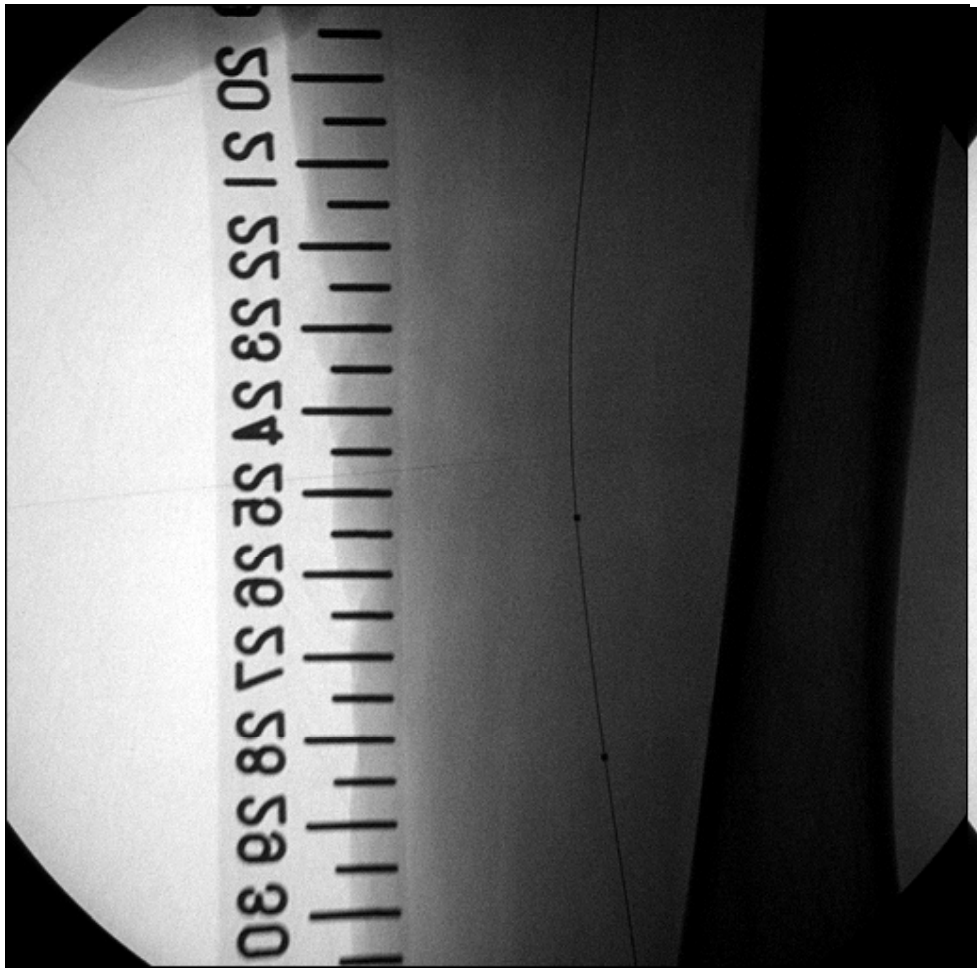
IVUS after wire crossing
Mobile plaque was seen in the CTO section by IVUS

When you need distal protection (IVUS findings)

① poorly-echogenic plaque
② mobile plaque
③ homogeneous plaque of mildly raised echogenicity
④ plaque with small blood flow channels

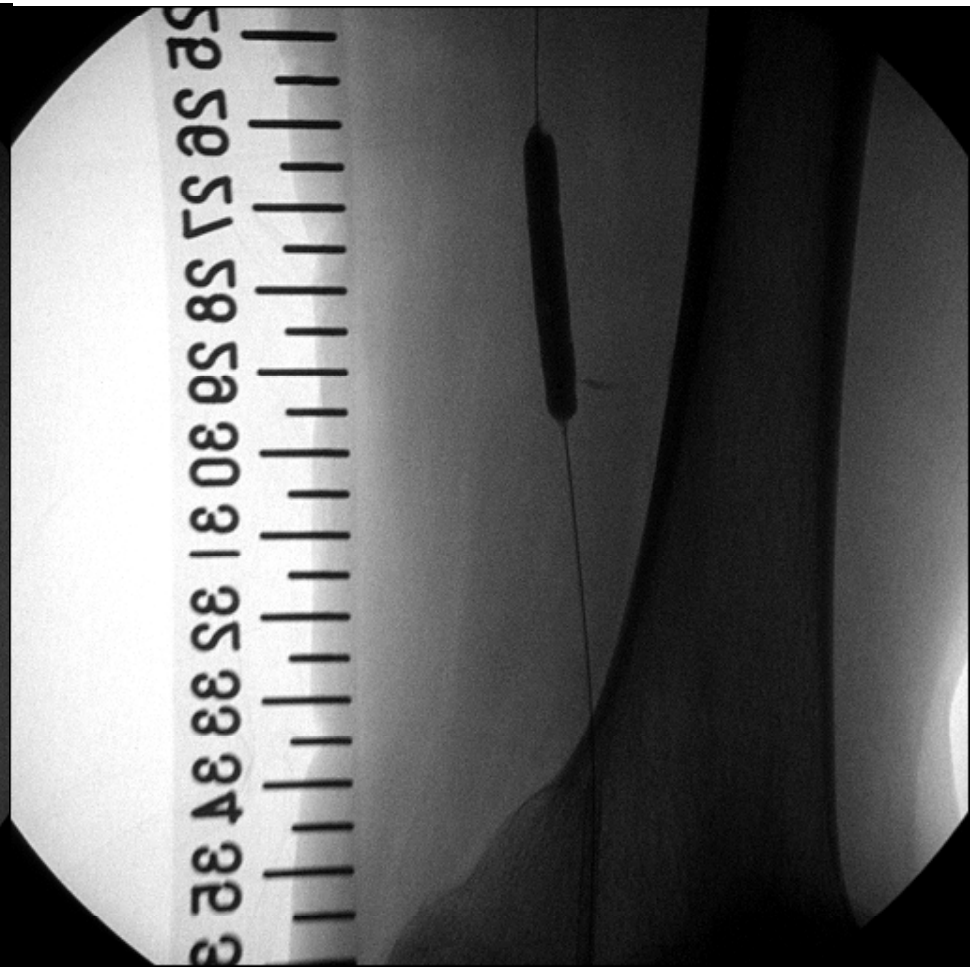
Easy to cross by the wire

How to do distal protection



A protection balloon from popliteal sheath

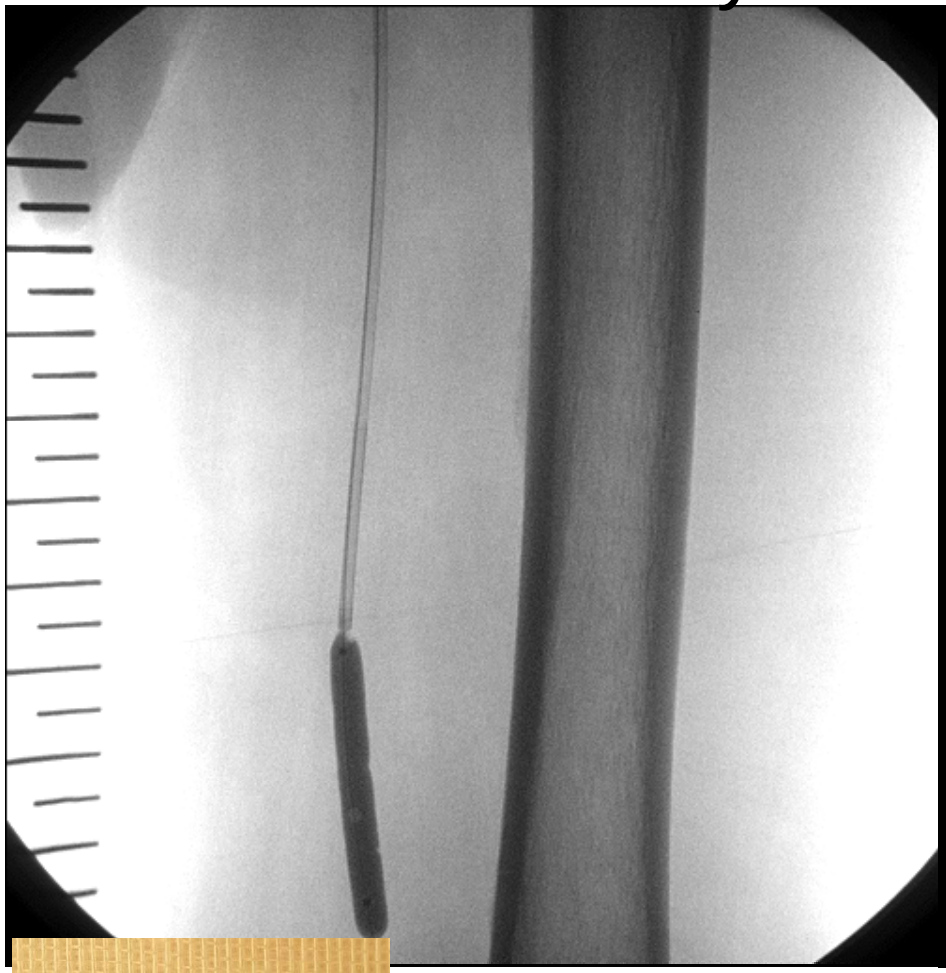
Distal 6.0x40mm 3 atm

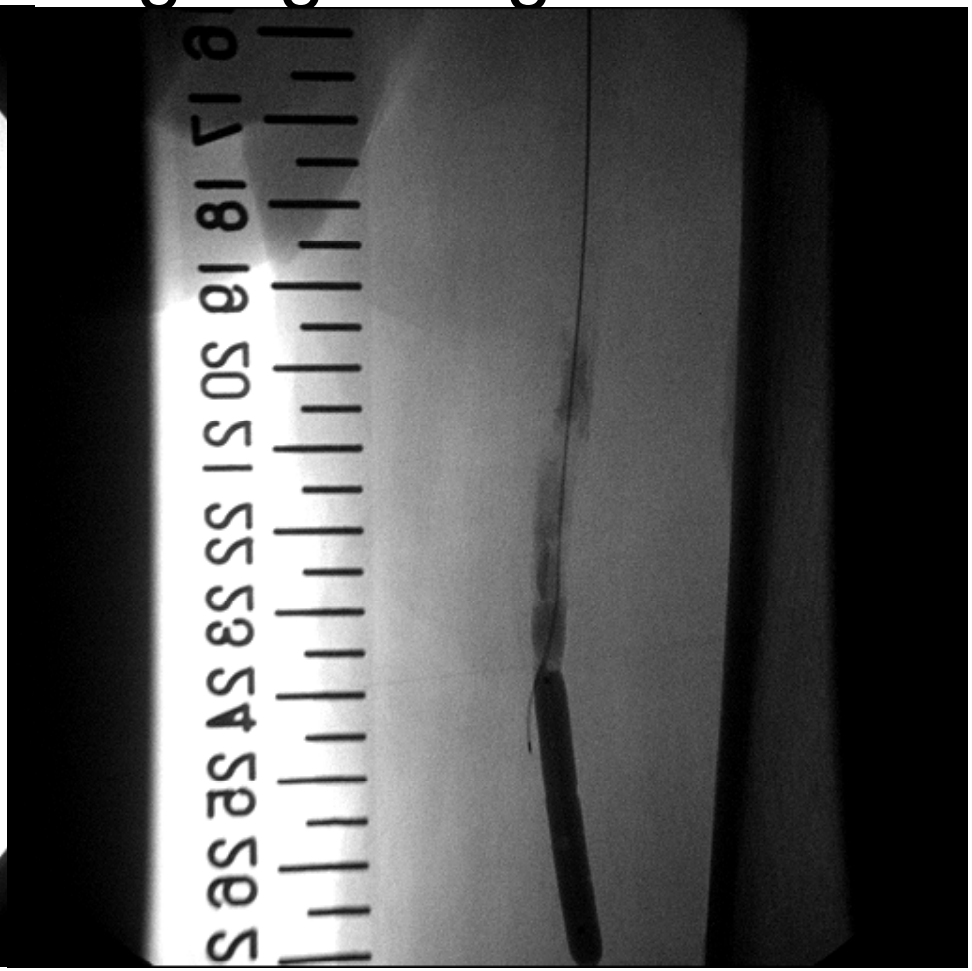


Lesion dilatation antegradelly

Proximal 6.0x80mm 4atm

Debris removal by 6F straight guiding catheter

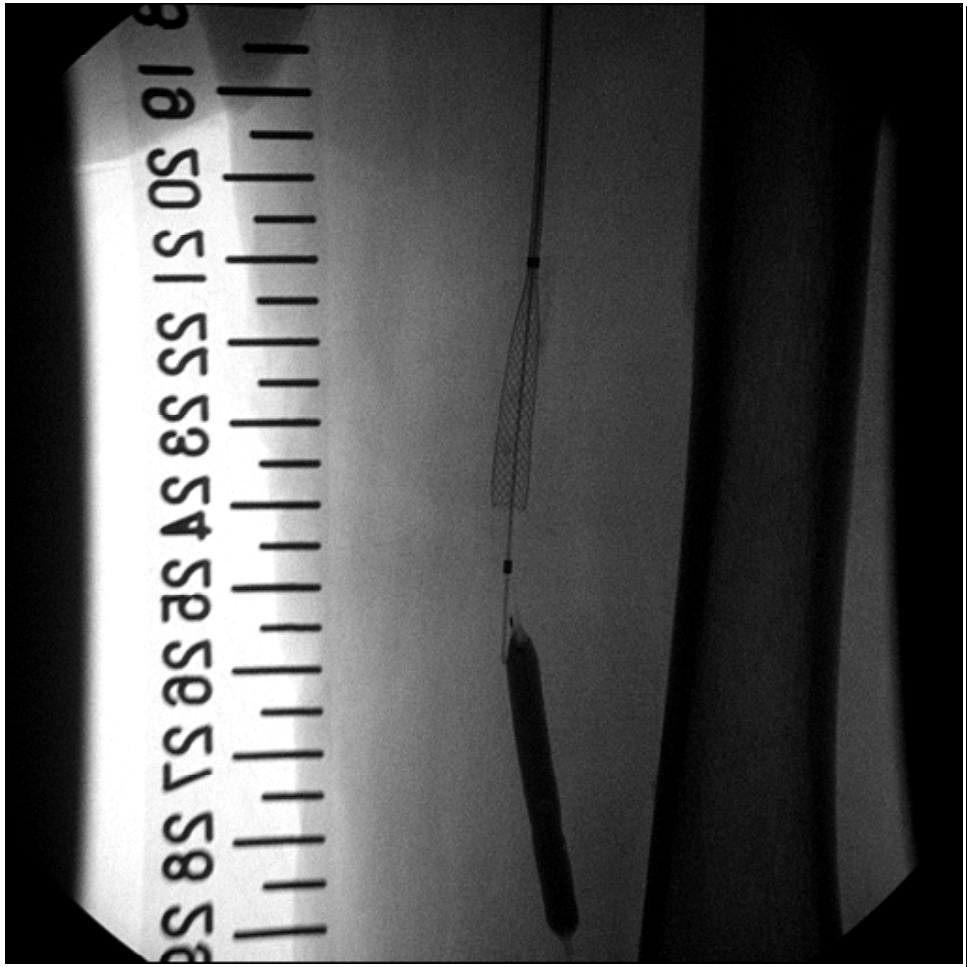




Removed thrombus

Contrast injected via retrograde balloon wire lumen to check the residual plaque.

Wall stent deployment



Stent distal position was checked by contrast through the retrograde balloon

No distal embolization

Distal protection in SFA CTO

In series of 126 consecutive SFA CTO lesions, bi-directional approach was performed in 92 lesions (73%).

In 9 of 92 (9.8%) cases, distal protection was applied based on IVUS findings and successfully removed some thrombus.

Echo guide antegrade wiring
(New approach for SFA CTO)

To set up bidirectional approach takes time about 40minutes.

We have started echo guide antegrade wiring April 2009.

Total SFA CTO　32 lesions

　　Echo guide　　22 (68%)

　　Angio guide　　10(32%)

Bidirectional　3/32　(9%)

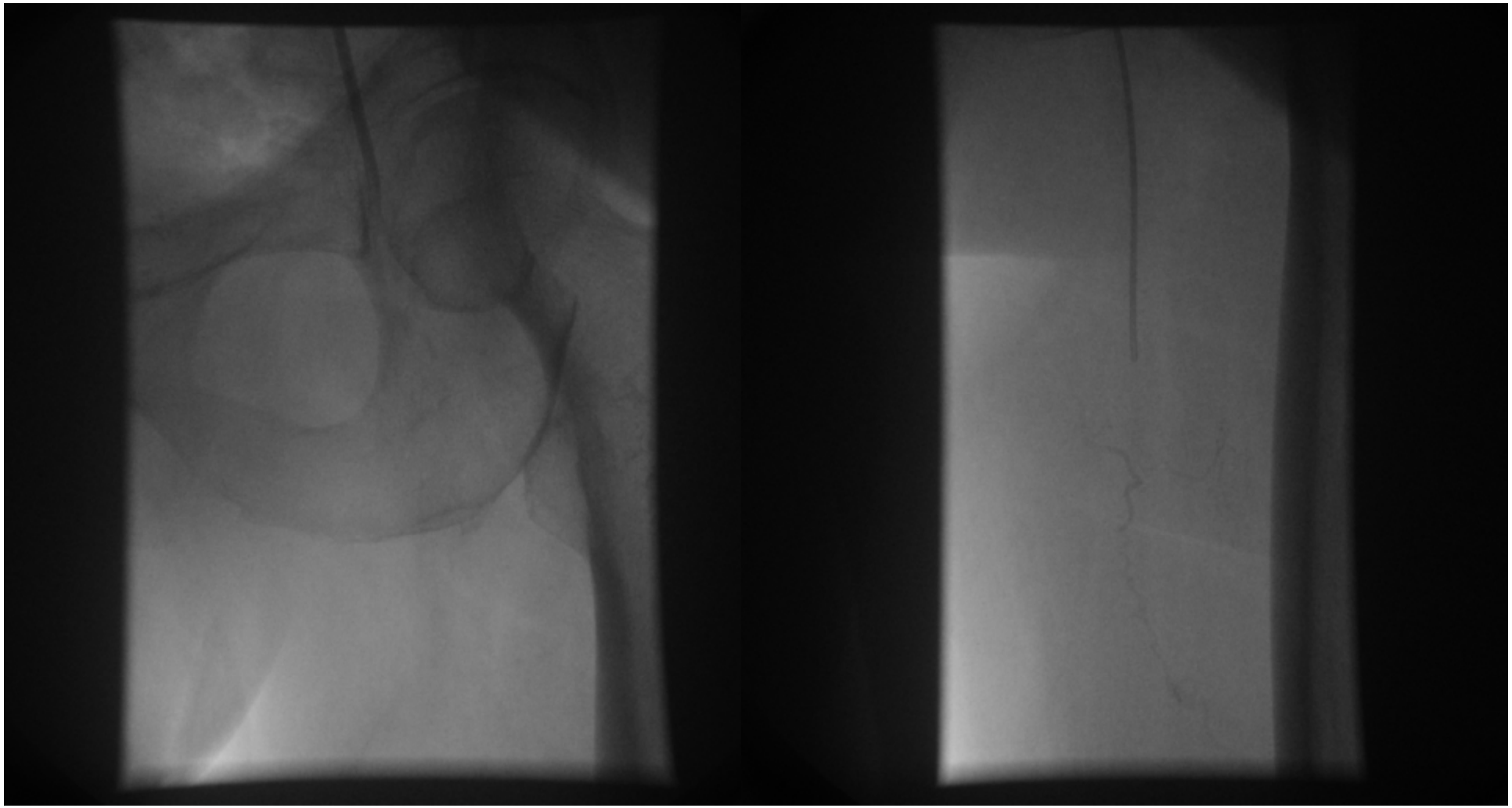
　　severe calcification　1

　　Stent occlusion　　2

Echo guide antegrade wiring

Toshiba Xario 7.5Mhz

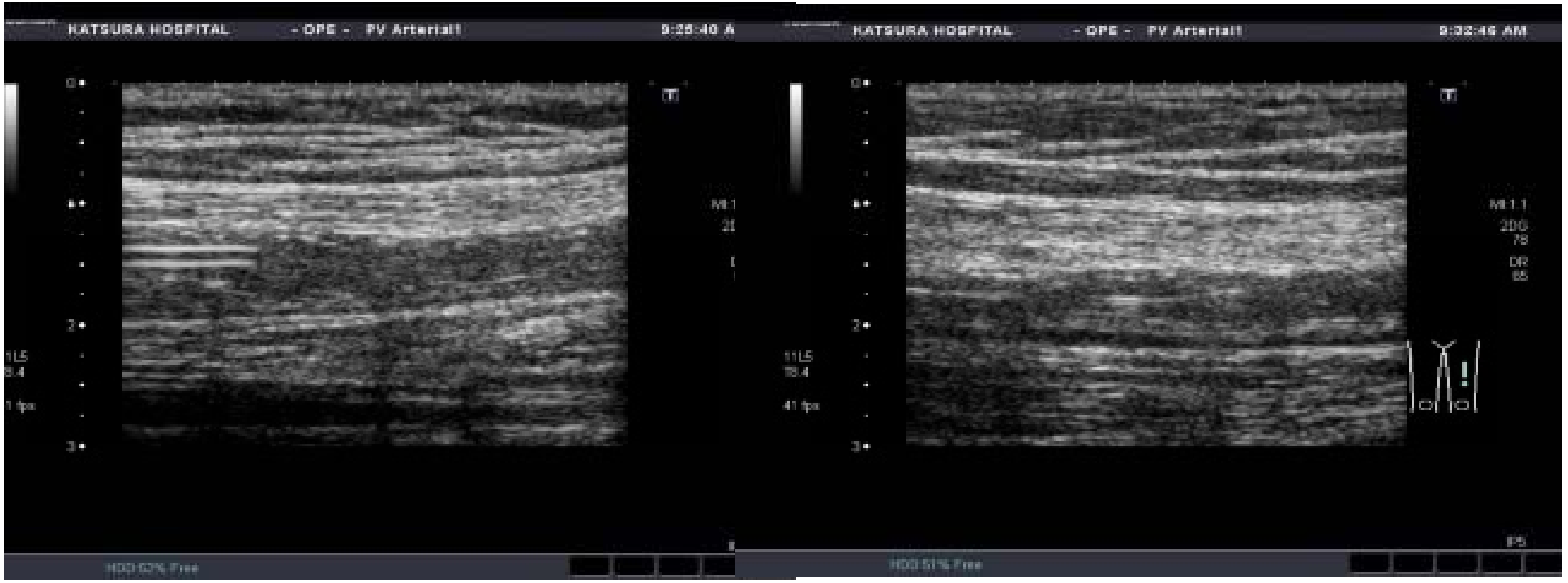
Case Example



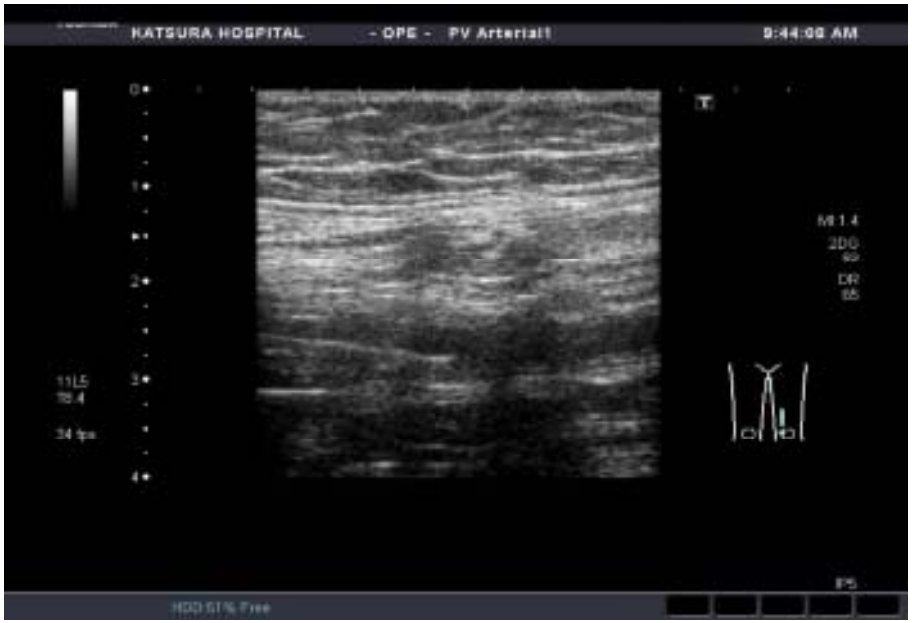
6F Guidesheath

4F 80cm catheter

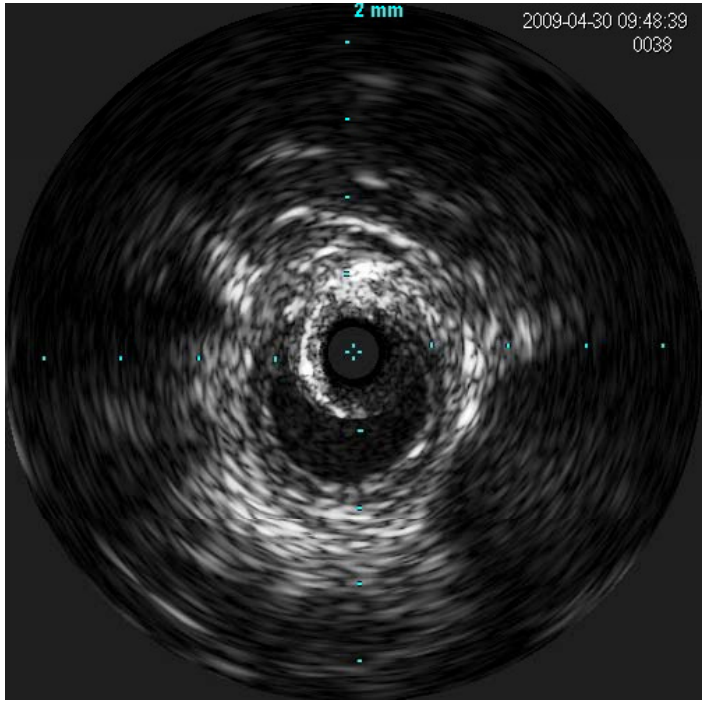
Echo Guide CTO SFA PTA



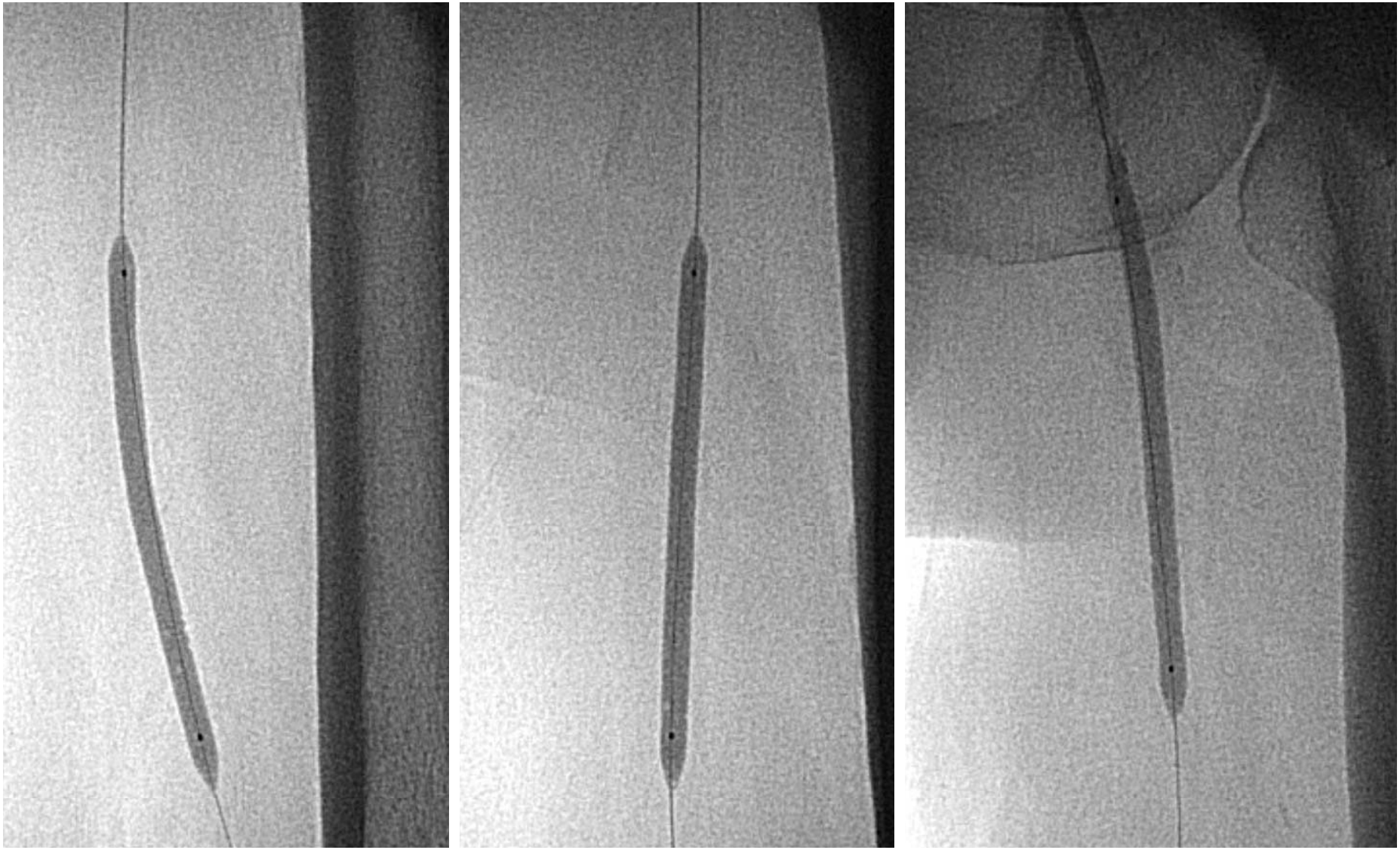
0.018 inch 12g
(Asahi)



Directory push by the
0.018inch wire

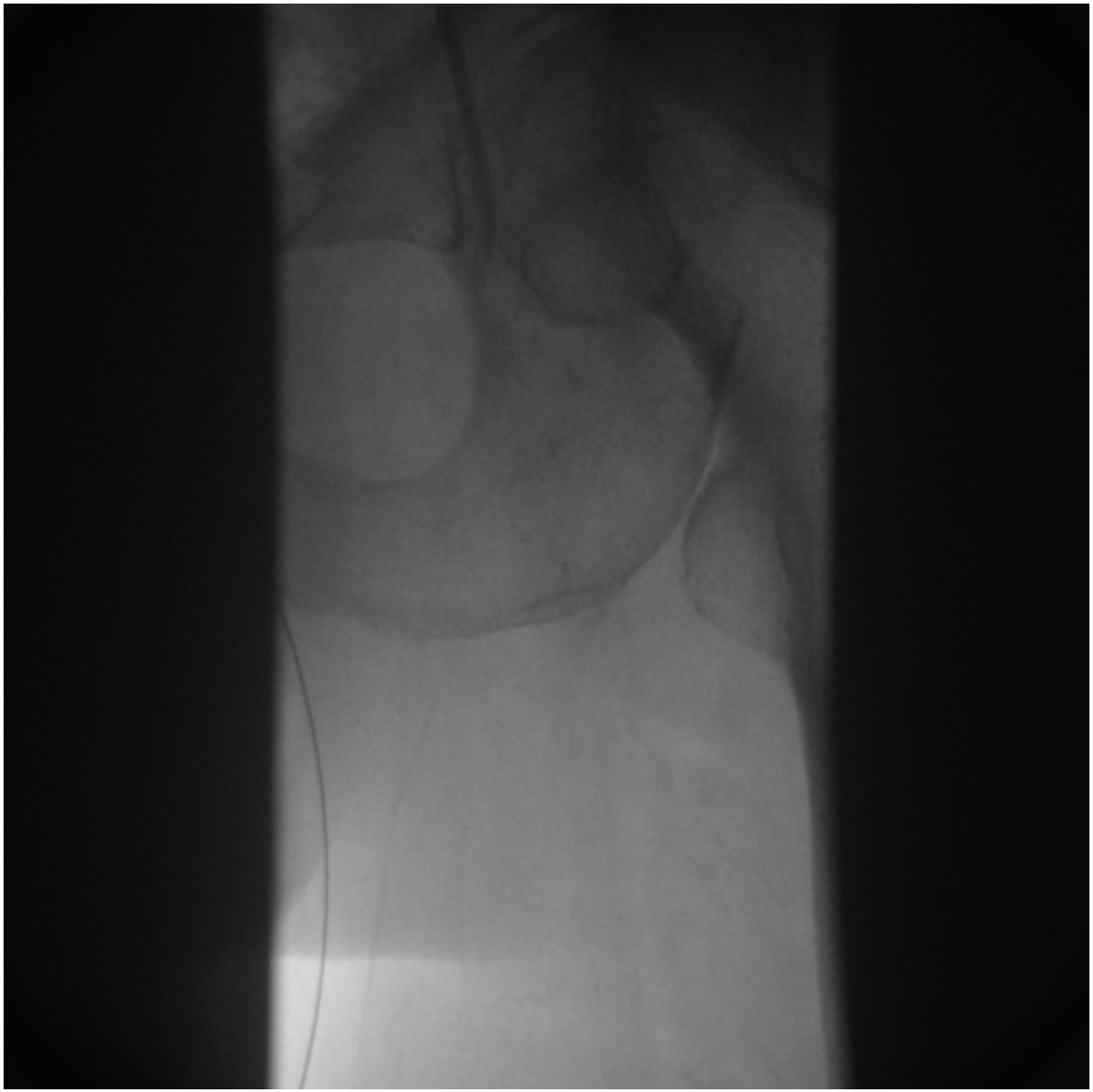


PTA



5.0 x 80mm 4 atmospheres

Final and angiogram



Advantage of ECHO guide SFA-CTO

- Reduce fluoro time
- Can start with stiff wire, because we can see the CTO vessel.
- Contrast is not necessary

Trend in SFA CTO

- Bi- Directional approach is key to success.
- Interventional cardiologist prefer 0.018 inch wire try to go center of the CTO plaque.
- IVUS is useful to get feed back from the invisible situation in the vessel.

Thank you