UCDAVIS HEALTH SYSTEM

A HEALTHIER WORLD THROUGH BOLD INNOVATION

Aortoiliac Occlusions: Approach and Treatment Considerations

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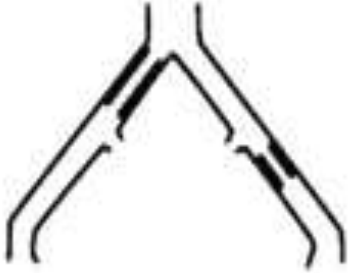
Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship	Company
▪ Grant/Research Support	▪ WL Gore, Medtronic
▪ Consulting Fees/Honoraria	▪ Abbott Vascular, Bard Peripheral Vascular, WL Gore, Boston Scientific, Medtronic

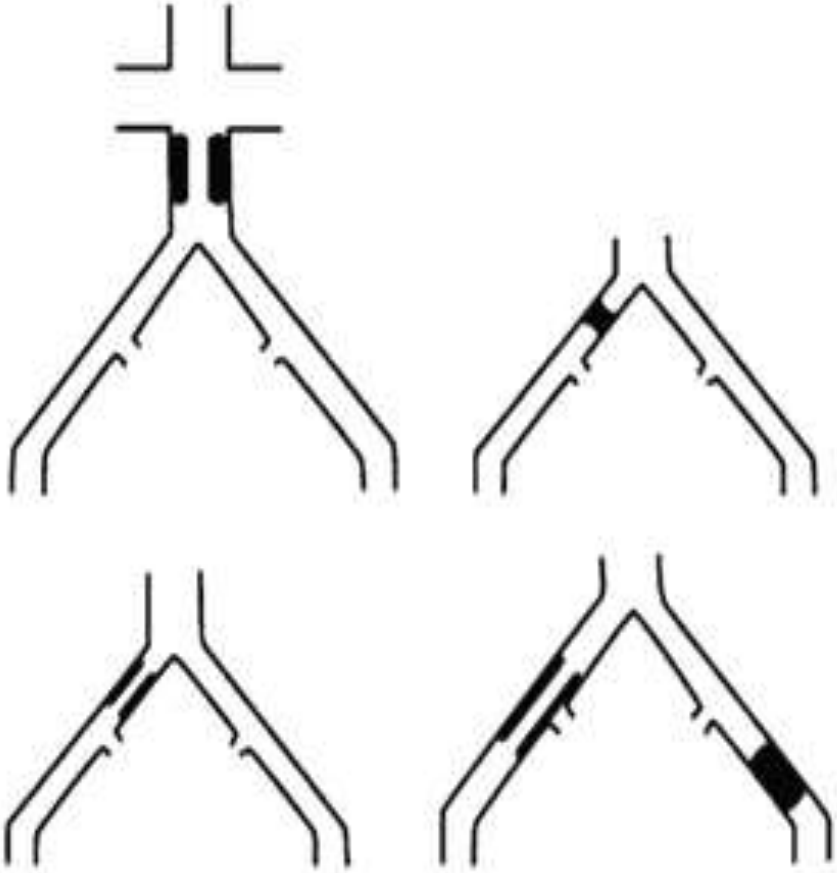
Type A lesions

- Unilateral or bilateral stenoses of CIA
- Unilateral or bilateral single short (≤3 cm) stenosis of EIA



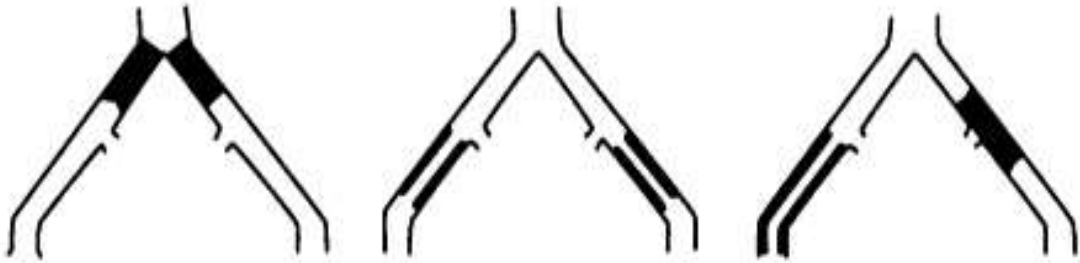
Type B lesions:

- Short (≤3cm) stenosis of infrarenal aorta
- Unilateral CIA occlusion
- Single or multiple stenosis totaling 3–10 cm involving the EIA not extending into the CFA
- Unilateral EIA occlusion not involving the origins of internal iliac or CFA



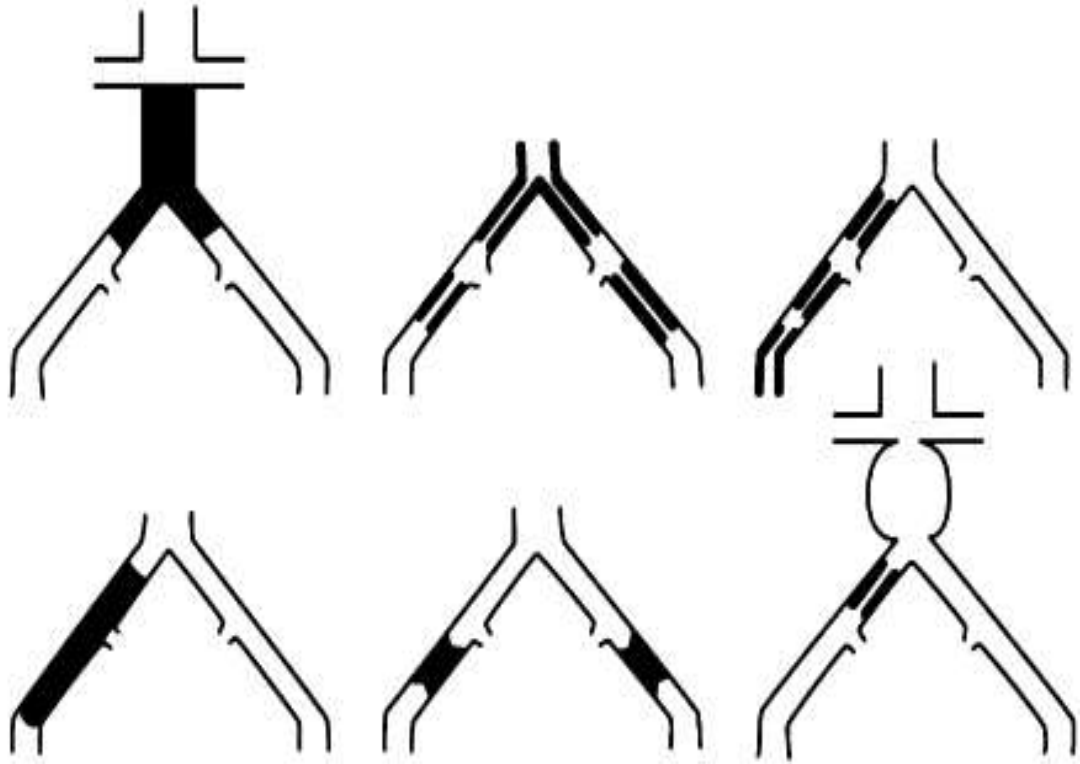
Type C lesions

- Bilateral CIA occlusions
- Bilateral EIA stenoses 3–10 cm long not extending into the CFA
- Unilateral EIA stenosis extending into the CFA
- Unilateral EIA occlusion that involves the origins of internal iliac and/or CFA
- Heavily calcified unilateral EIA occlusion with or without involvement of origins of internal iliac and/or CFA



Type D lesions

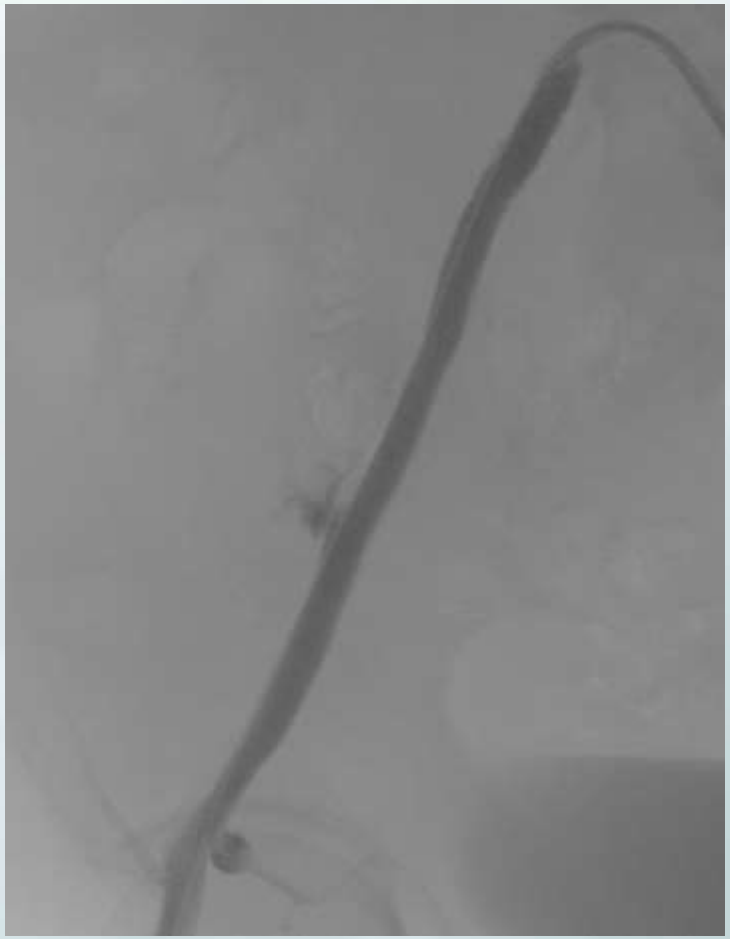
- Infra-renal aortoiliac occlusion
- Diffuse disease involving the aorta and both iliac arteries requiring treatment
- Diffuse multiple stenoses involving the unilateral CIA, EIA, and CFA
- Unilateral occlusions of both CIA and EIA
- Bilateral occlusions of EIA
- Iliac stenoses in patients with AAA requiring treatment and not amenable to endograft placement or other lesions requiring open aortic or iliac surgery



TASC
Inter-Society Consensus for the Management of PAD

Technique

- Good quality DSA, MRA, or CT Angio to plan approach
- Be prepared to attempt antegrade and retrograde crossing of the occlusion
- Have available a full inventory of stents to treat the occlusion – complete lesion coverage
- Full inventory of bailout equipment



Technique

- If there is a proximal stump – try from above (radial/brachial) approach may provide more support if contralateral approach fails)
- Kissing stents if there is disease at the ostium of the contralateral iliac artery
- If the onset of symptoms is acute or subacute – use thrombolytic therapy or mechanical thrombectomy

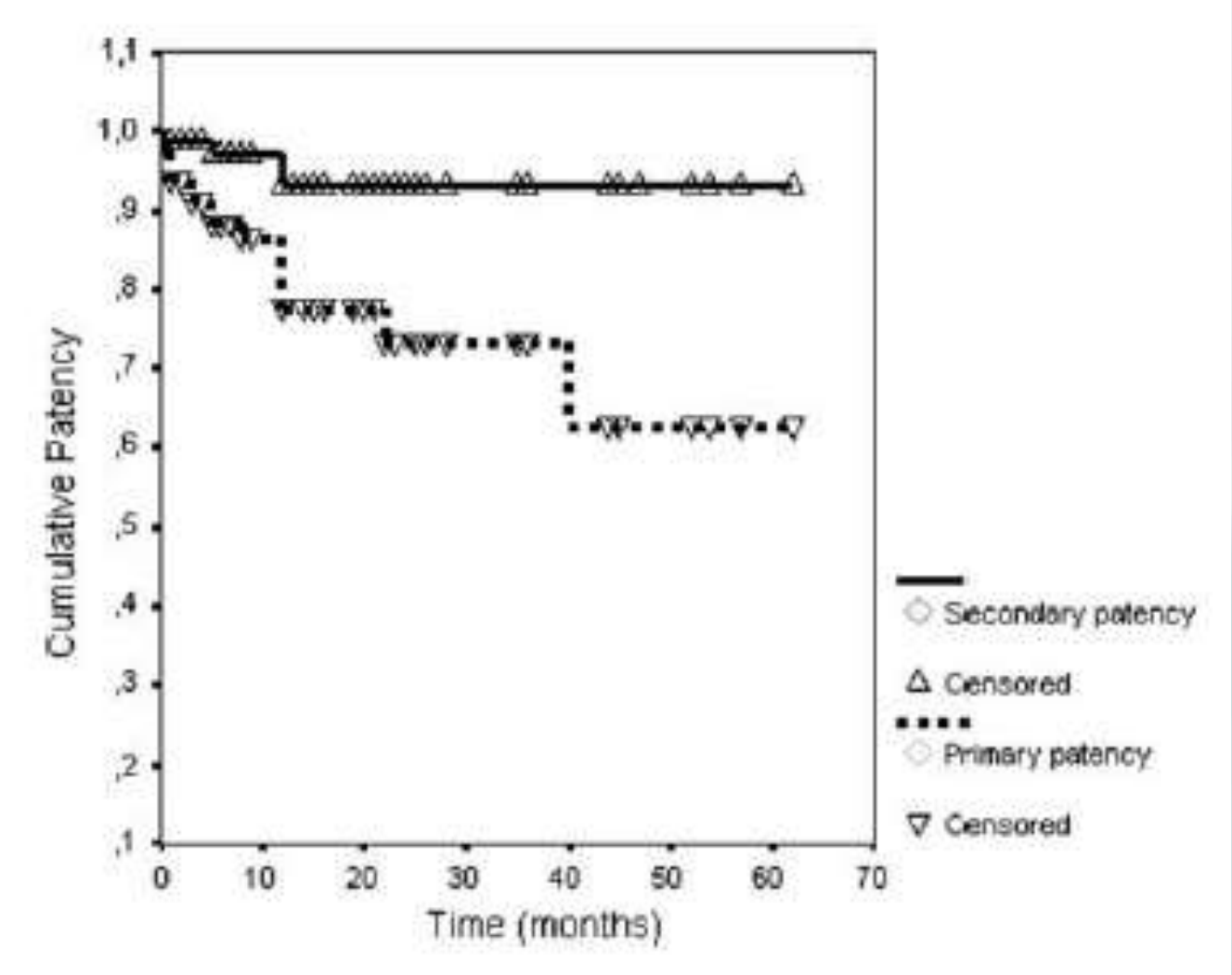
Technique, Complication, and Long-Term Outcome for Endovascular Treatment of Iliac Artery Occlusion

Cardiovasc Intervent Radiol (2010) 33:18–24

- 2001 – 2008, n=118 patients, retrospective
- All lesions treated with stent
- Technical success 92%
  - Anterograde 90% successful
  - Retrograde 50% successful
- Complication rate = 24%

Technique, Complication, and Long-Term Outcome for Endovascular Treatment of Iliac Artery Occlusion

Cardiovasc Intervent Radiol (2010) 33:18–24



Technique, Complication, and Long-Term Outcome for Endovascular Treatment of Iliac Artery Occlusion

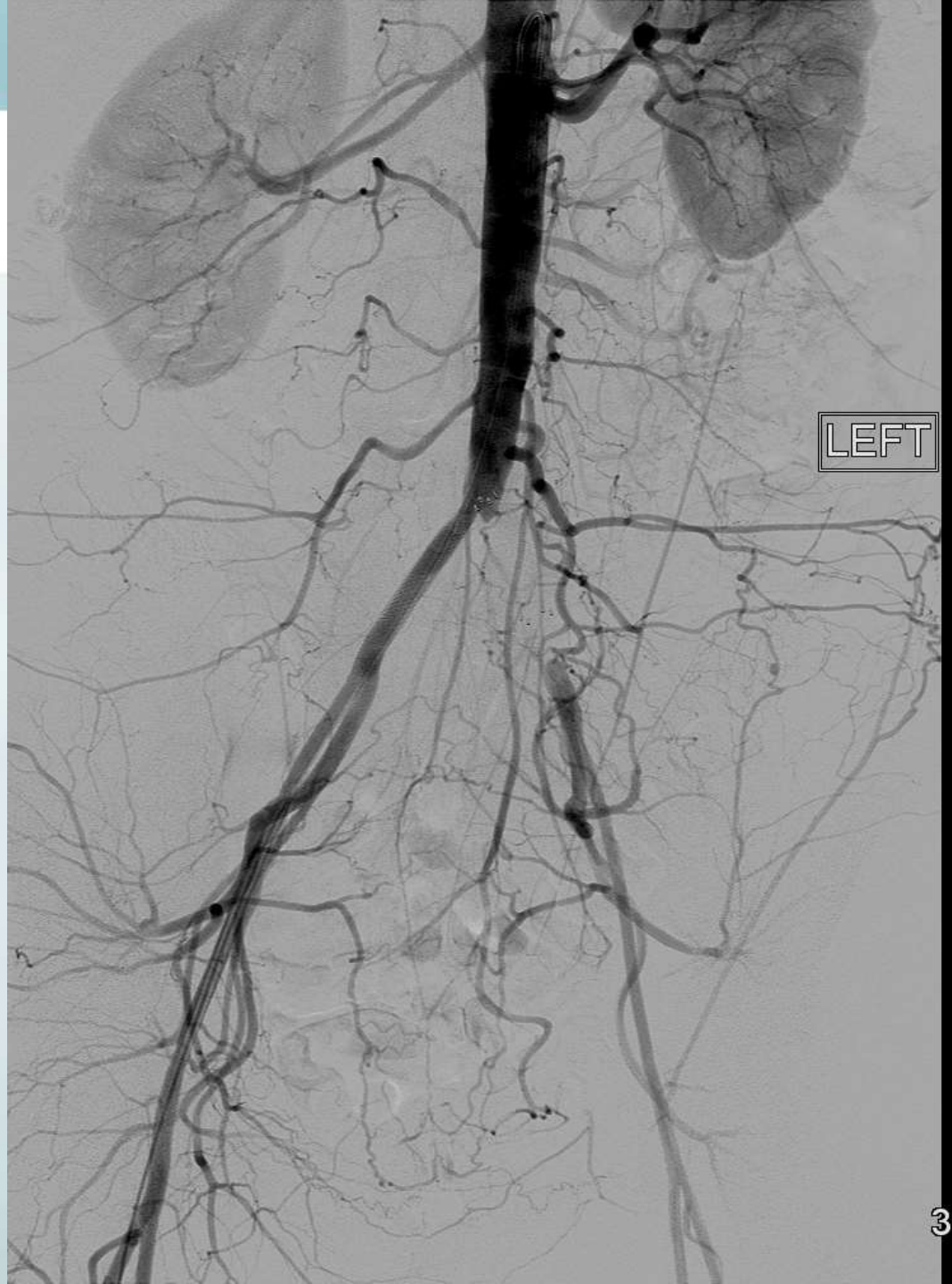
Cardiovasc Intervent Radiol (2010) 33:18–24

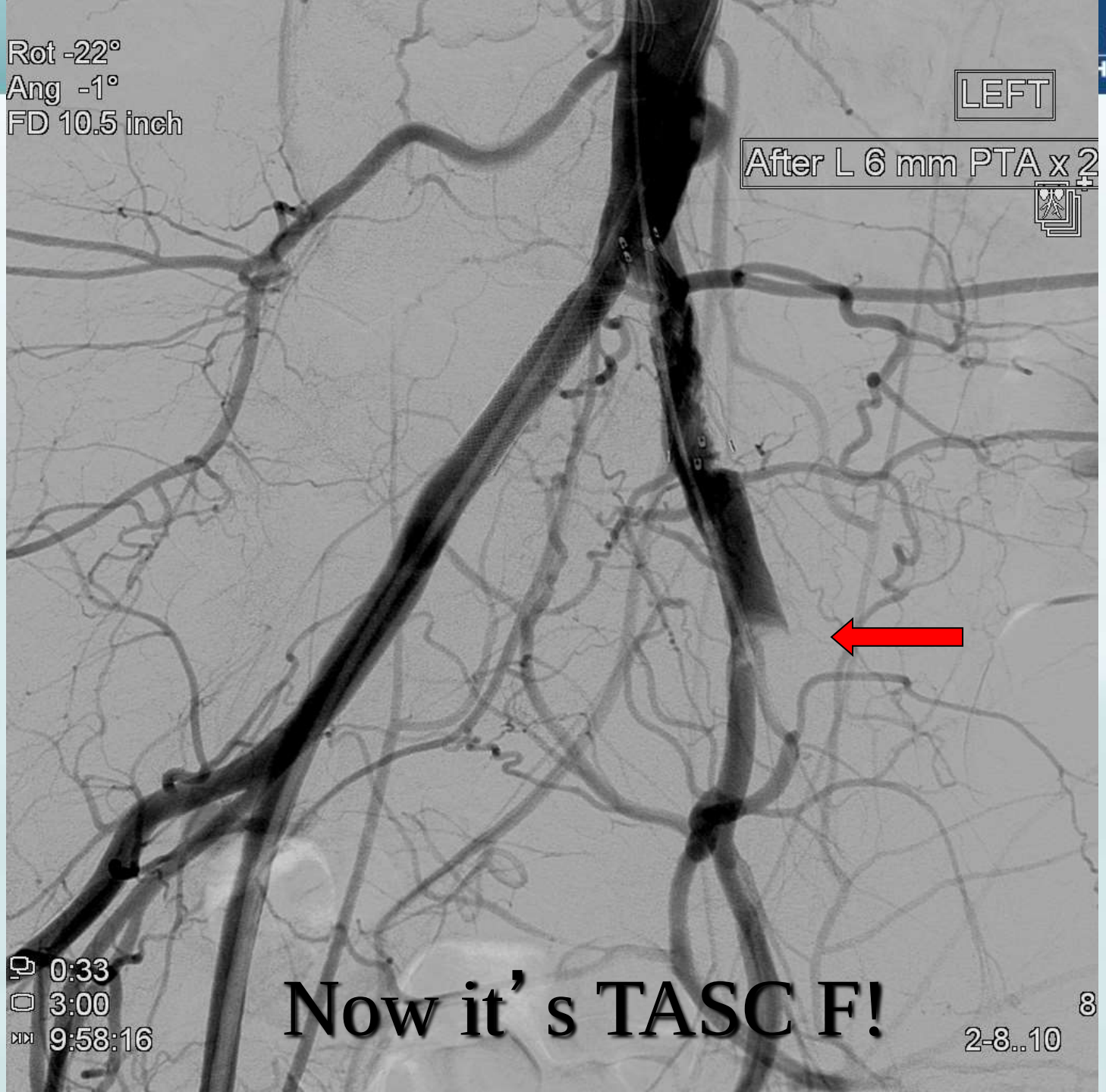
- Independent predictors of early stent thrombosis
  - CLI, subintimal recanalization, major complications
- Decreased patency rates associated with:
  - CLI, TASC C lesions, combined occlusions of CIA and EIA, major complications

TASC B
Simple Case?

- Occluded left common iliac artery stent

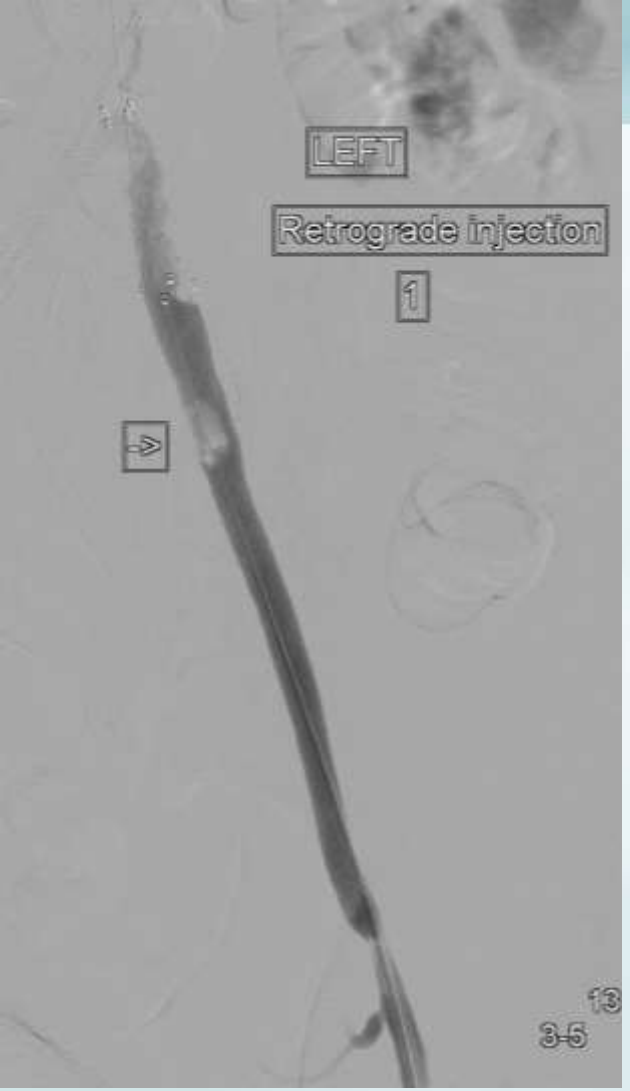
- Recent worsening of claudication symptoms




Rot -22°
Ang -1°
FD 10.5 inch
LEFT
After L 6 mm PTA x 2
0:33
3:00
9:58:16
Now it's TASC F!
8
2-8..10

When You're In Trouble….

Things Can Often Go From Bad to Worse

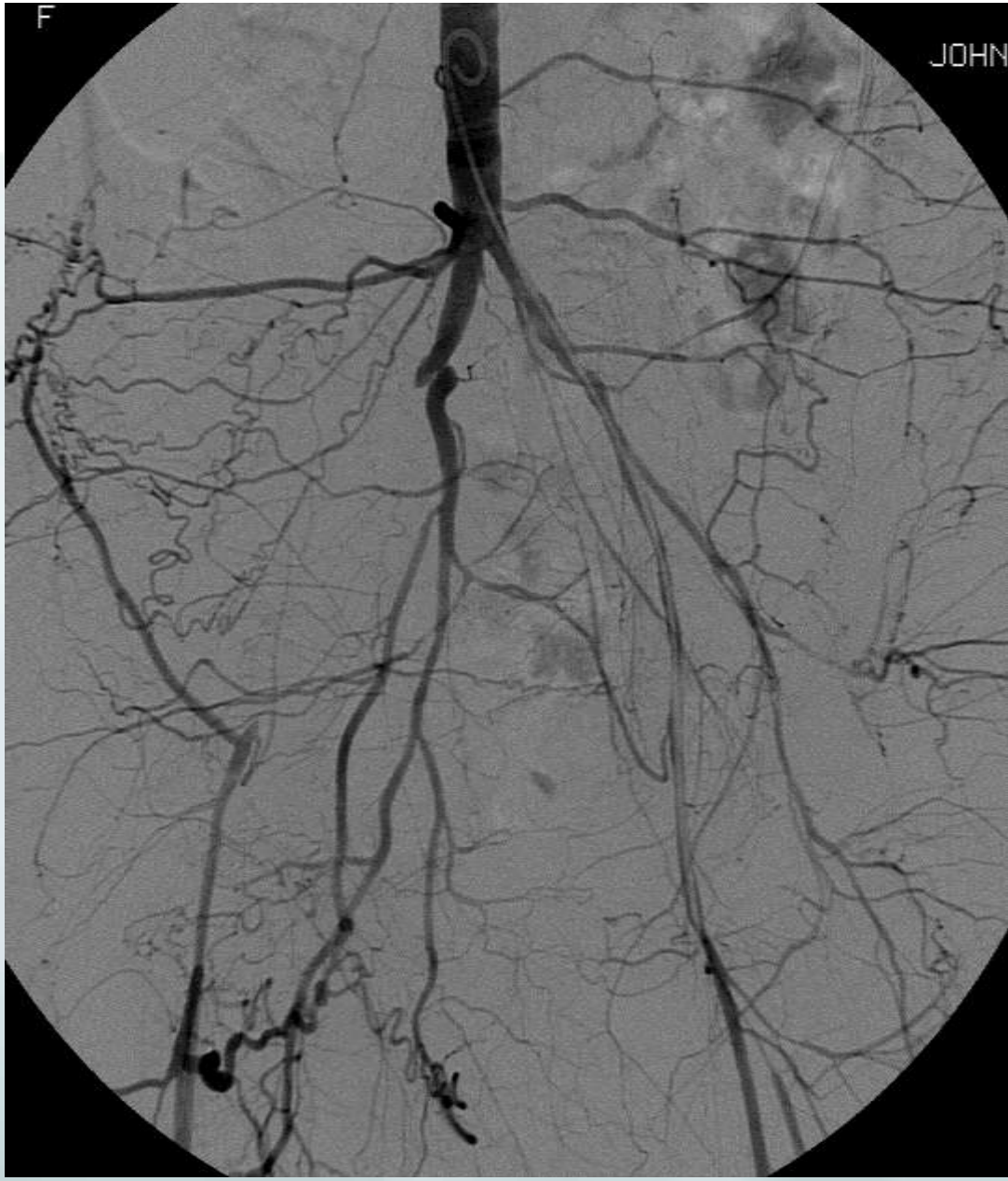

LEFT
Retrograde injection
1
13
3-5


LEFT
Retrograde injection
2
13
3-8


LEFT
Retrograde injection
3
13
3-11

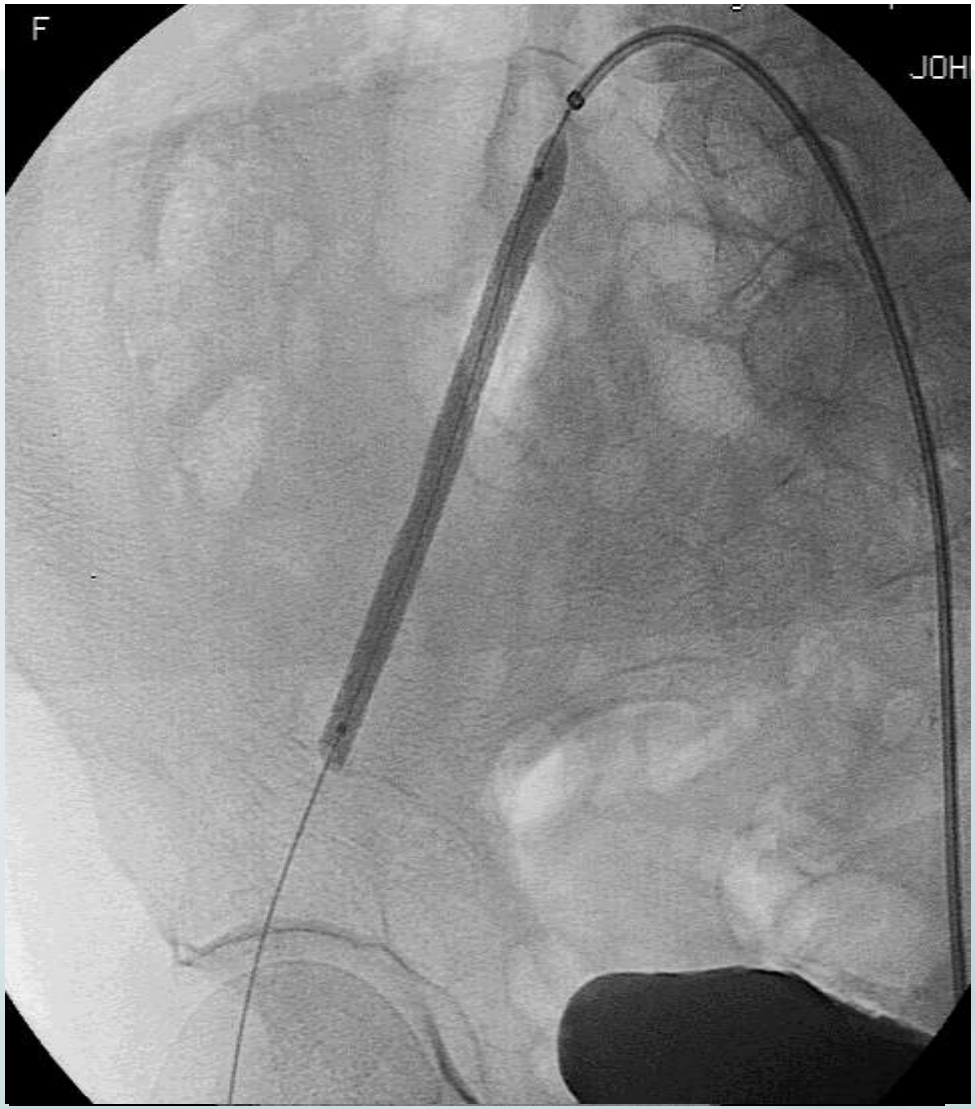
Iliac Occlusion TASC C

- 67 year old female
- Chronic right hip and calf claudication
- Absent right femoral pulse
- ABI = 0.6



Technique

- Contralateral approach
- Crossover sheath – advance guidewire into internal iliac artery and exchange for stiffer wire to allow for sheath advancement
- Cross occlusion with straight Terumo wire
- Conservative balloon sizing

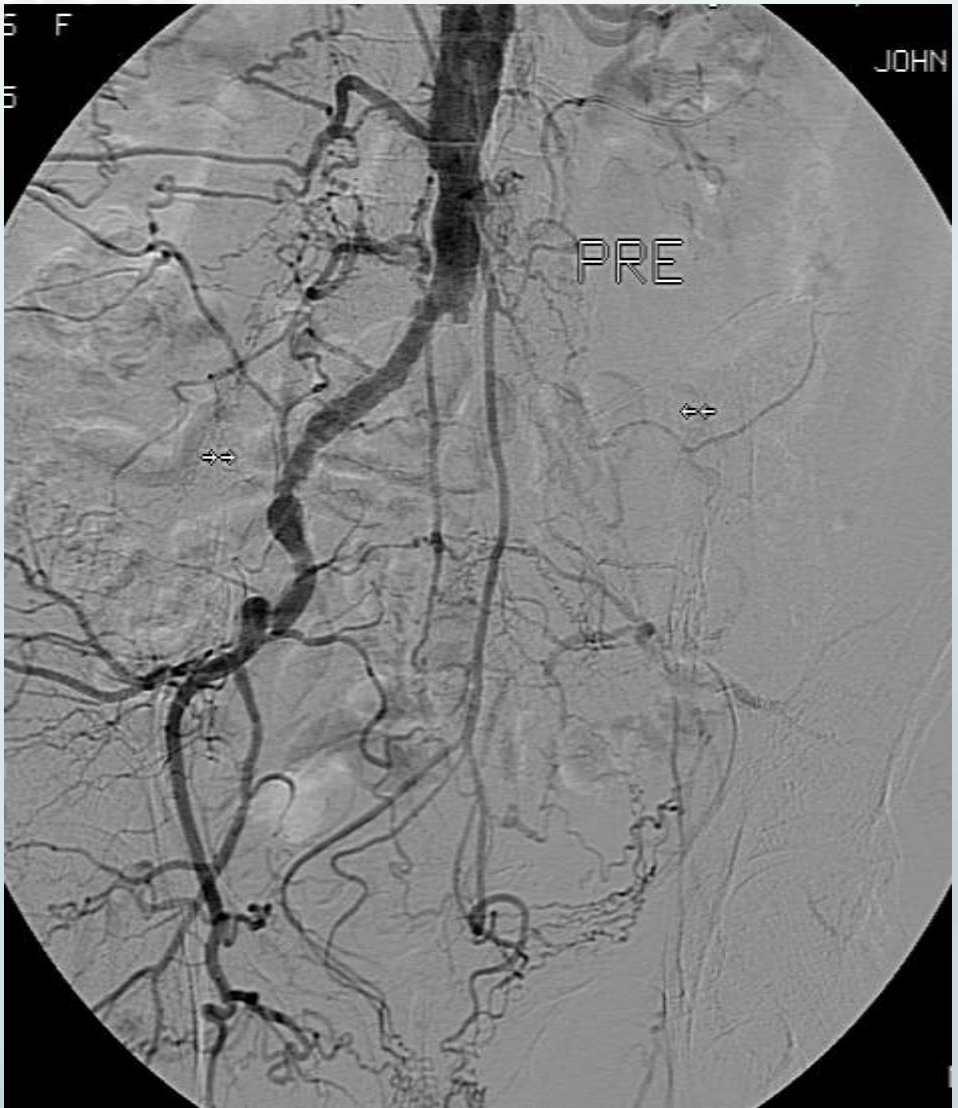


Technique

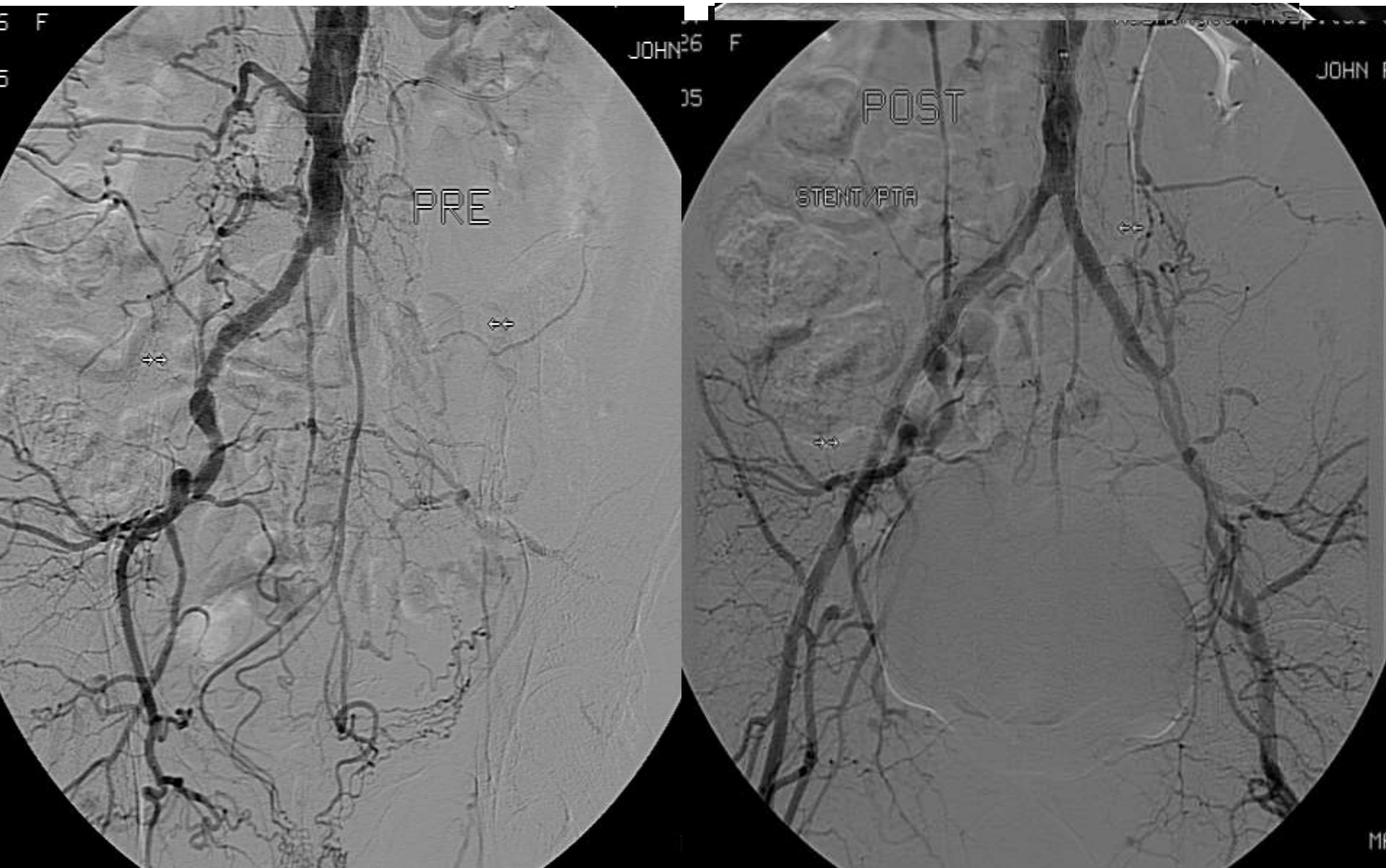
- Complete coverage of the lesion
- Stent choice: self expanding nitinol, 8 mm diameter, 80 mm long
- Post dilatation with 6 mm balloon

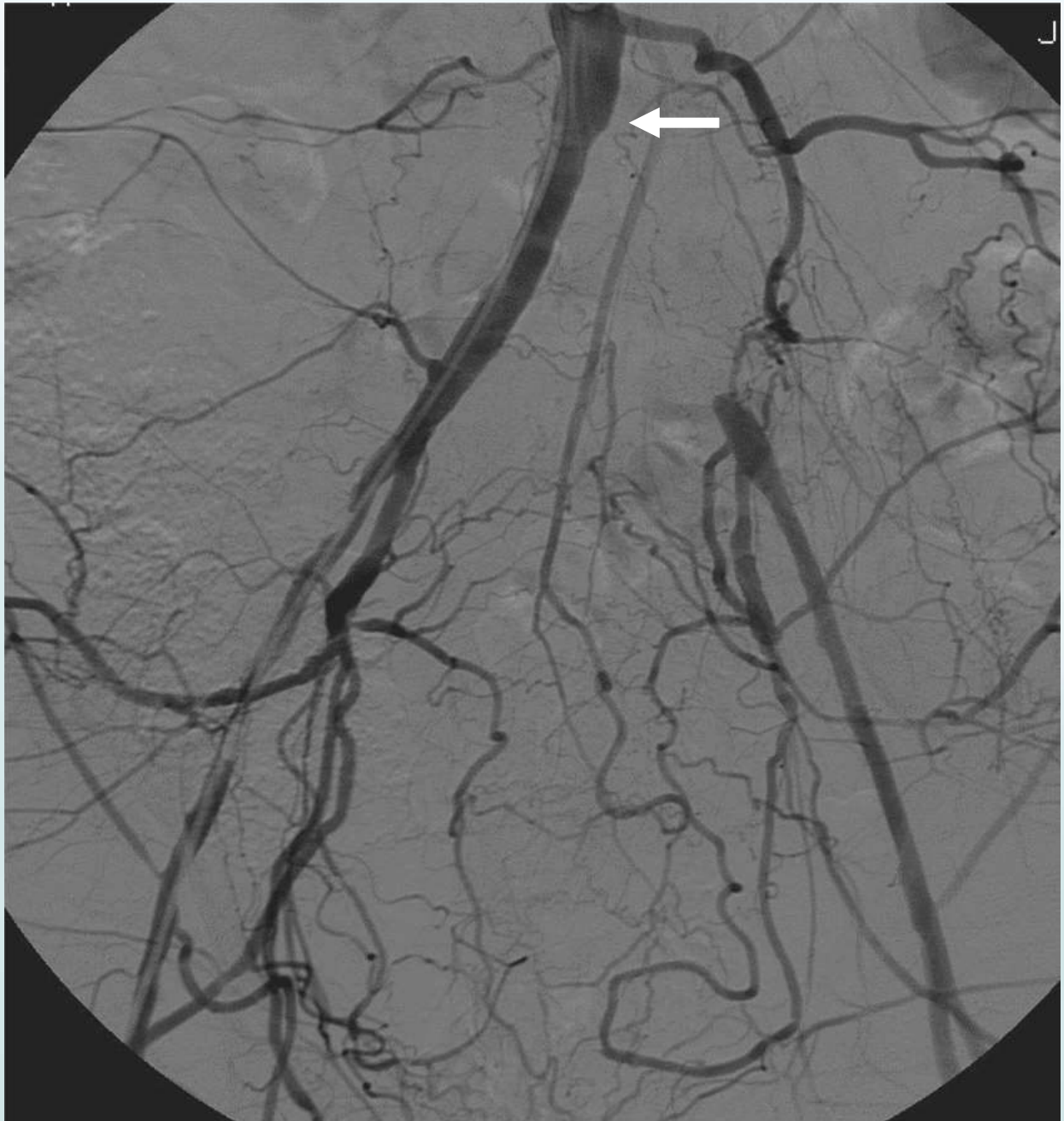
Bilateral Iliac Occlusions – TASC D

Upper Extremity Approach



6 Fr Shuttle Sheath from Brachial Approach

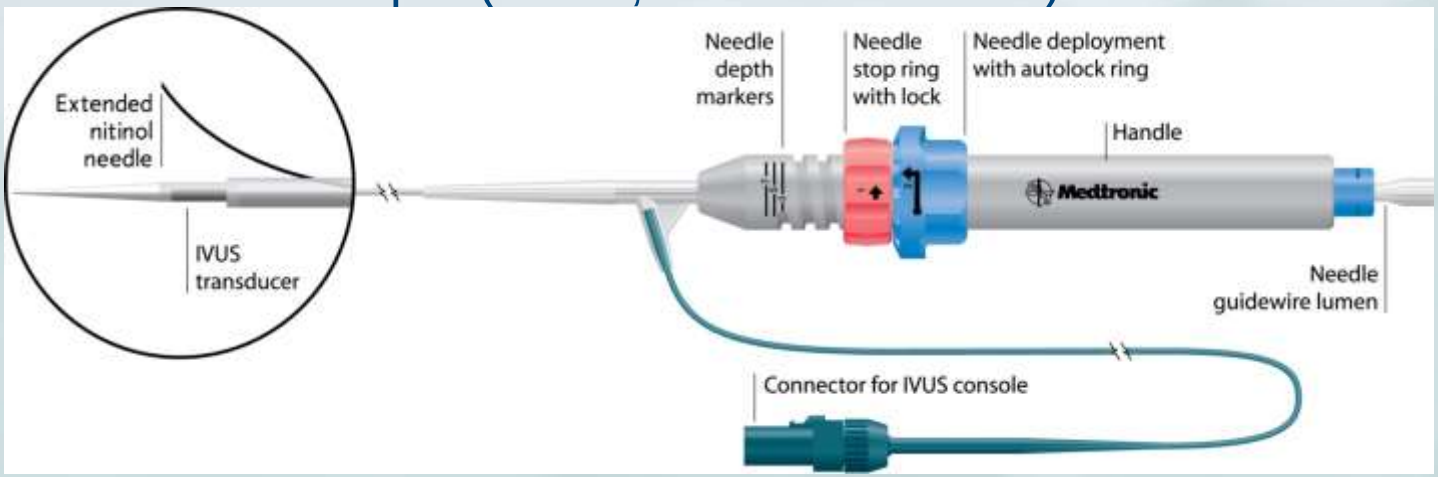




Unable to cross from above?

Pioneer Plus Catheter

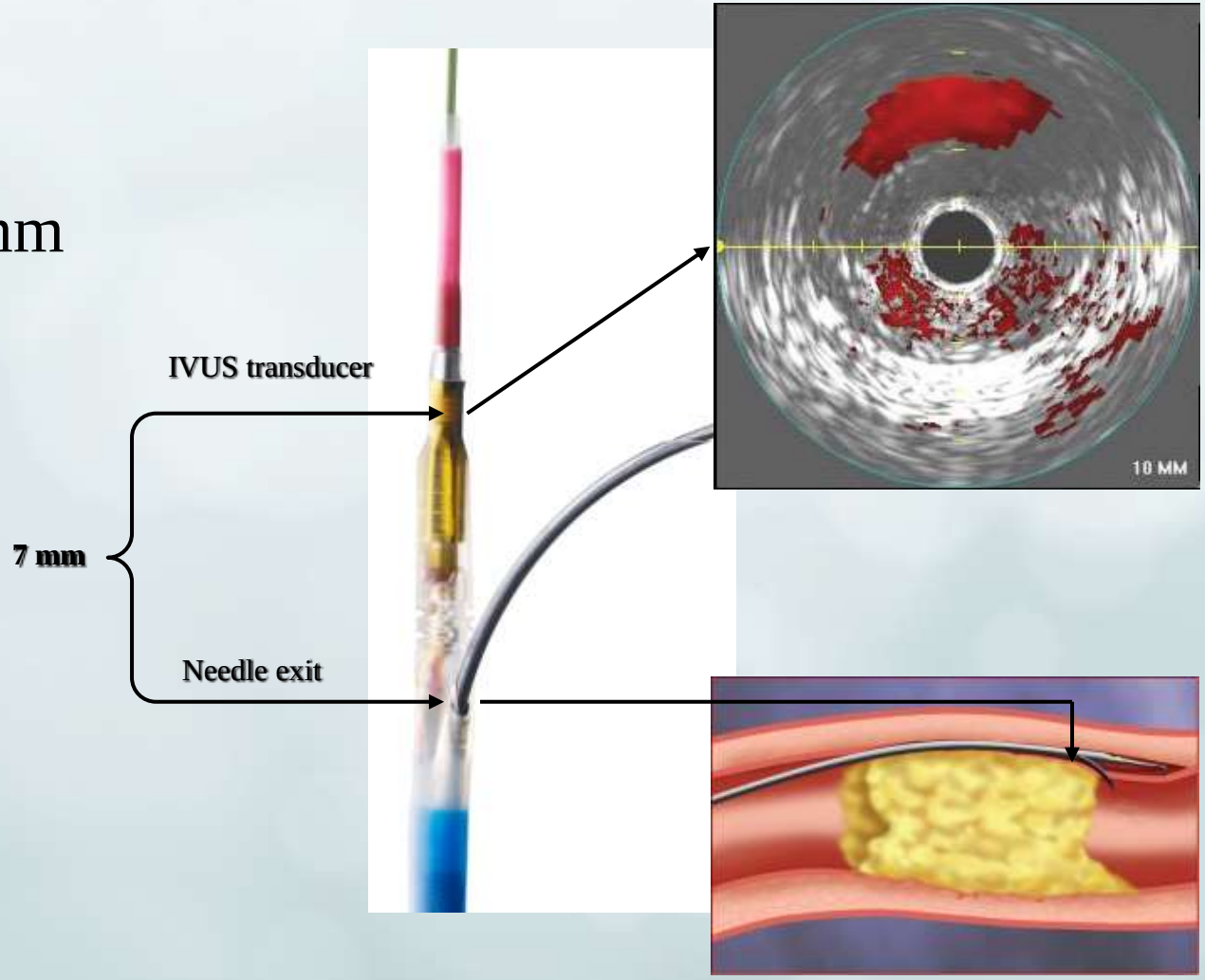
- 6F sheath compatible
- 24G needle allows for delivery of a 0.014” non-hydrophilic guidewire
- Intuitive, easy-to-use handle allows for single-handed deployment of needle
- Adjustable needle depth (3 mm, 5 mm and 7 mm)



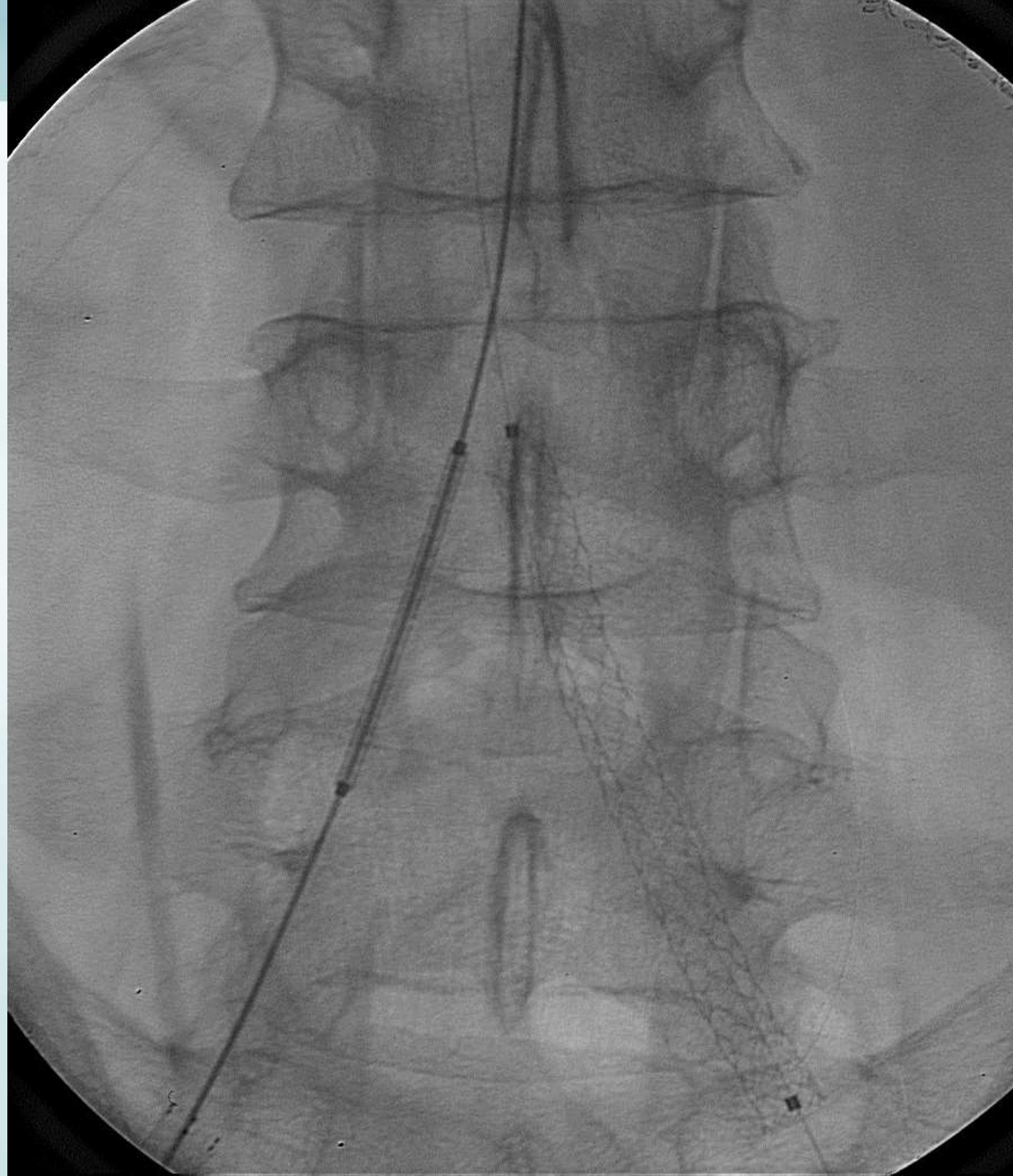
Pioneer Plus Catheter

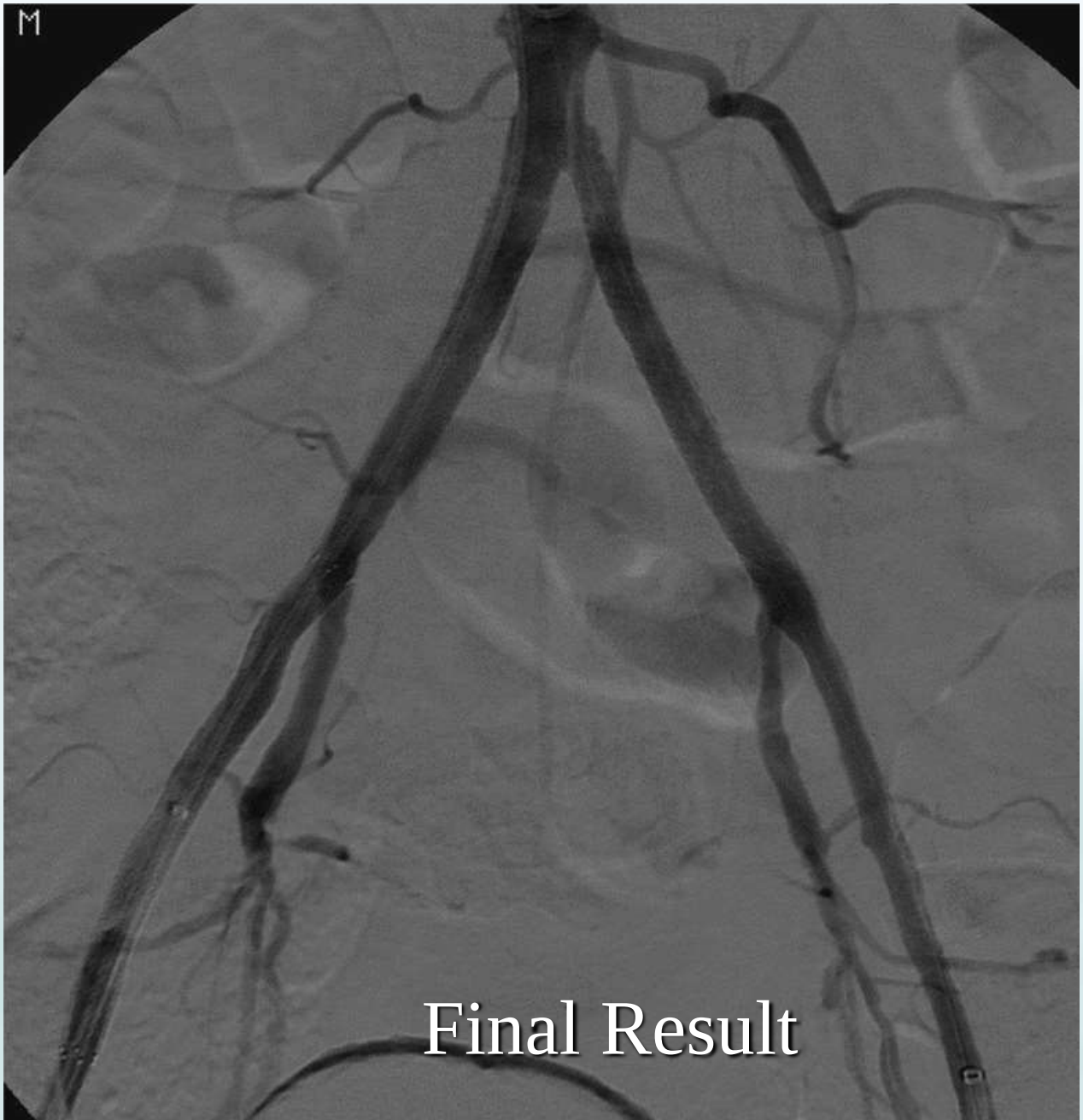
Needle and IVUS Transducer

Needle exits catheter ~7mm below IVUS transducer



Kissing stents to raise
the bifurcation





Final Result

Treatment of Chronic Iliac Occlusions

- 80 iliac recanalizations in 78 patients (1994-1999)
- Predictors of success: short occlusions, complete lesion coverage, patent ipsilateral femoral arteries
- Mean follow-up two years:

	Primary Patency	Secondary Patency
1 year	78.1%	88.8%
2 year	74.5%	88.8%
3 year	64%	77.9%

Cardiovasc Interv Radiol 2002;5:397-402

Complications
A Word of Caution

- Large groin hematoma (1)
- Failure (3)
- Aortic dissection (1)
- Embolic occlusion (7)
- Gluteal claudication (1)
- Genital necrosis!! (1)

Complications of permanent significance: 9%

Iliac Rupture

Iliac artery rupture

- 1981-2000
- 657 Iliac interventions
- Atherosclerotic vessels
- Incidence of vessel rupture = 0.8%

Iliac artery rupture during balloon dilatation: what treatment?
Allaire et al. Ann Vasc Surg. 2003 May;17(3):306-14

Iliac artery rupture

Etiology

- Calcified vessels
- Occluded vessels
- Oversized balloons
- H/O recent endarterectomy
- Chronic steroid therapy
- Diabetes Mellitus

Allaire E et al. Ann Vasc Surg. 2003 May;17(3):306-14

Conclusions

- Very complex aortoiliac CTOs can be approached with a high likelihood of procedural success
- Better stents and stent grafts have expanded the patient population that can be successfully treated with endovascular therapies
- Re-entry devices address the most common reason for failure – subintimal wire trapping – and make success possible in the most difficult cases