

CIRA Case of the Week

April 2016

Case Courtesy of Drs. Jean-Nicolas Racicot and Catherine Lalonde
University Laval



59 year old man

Diabetic

Rest pain left lower limb

Left femoro-popliteal bypass stenosis suspected

Past history:

2005: Femoro-femoral bypass left to right (gore-tex)

2006: Left femoro-popliteal bypass (gore-tex)

2010: Right ilio-femoral bypass (gelsoft)

2014: Right femoro-popliteal bypass (in situ vein)



Femoro-popliteal
bypass origin



Occlusion of femoro-
popliteal bypass

Occlusion of SFA



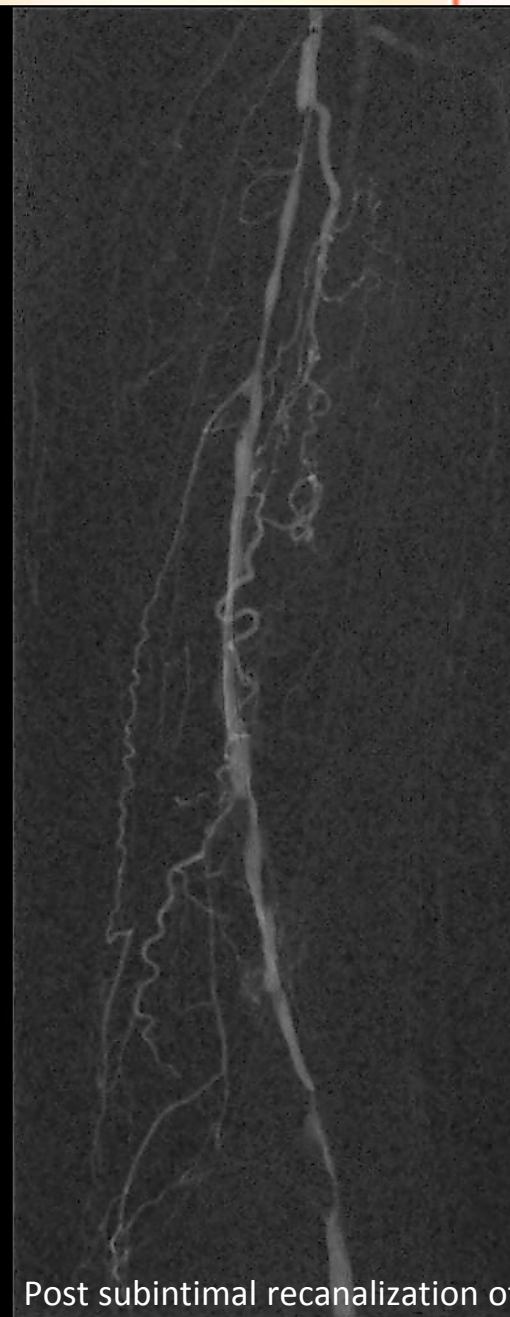
Popliteal flow restoration

Contralateral insertion of standard 6 Fr introducer sheath very difficult because of prior surgeries.

We could only insert it halfway (20/40 cm), impossible to push it further.

4 Fr Introducer was then inserted further through the 6 Fr sheath up to the left superficial femoral artery.

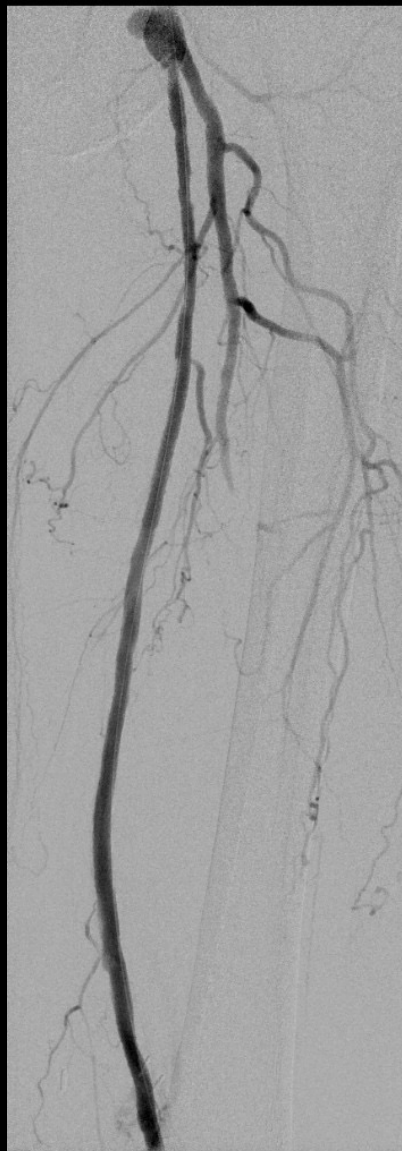
Subintimal SFA recanalization was then performed.



Post subintimal recanalization of left SFA



Post balloon angioplasty



Two 5 mm stents : one at entry and one at re-entry



No distal complications

At withdrawal, the 6 Fr introducer sheath fractured.

15 cm was left in the patient.

The guidewire was still in place in abdominal aorta.

Since insertion was very difficult, the introducer's dilator had been put back in place to prevent bleeding if a fracture of the introducer was to happen.

Retrieval options

1- Endovascular

- Snare the introducer and remove it from another access. Need of a bigger sheath (10-12 Fr)
- Could not use left inguinal access: past history of surgery similar to the right side
- Only access possible: humeral access → small vessel

2- Surgery: last resort.

Final decision

- 1- Use a humeral access.
- 2- Snare the guidewire inserted via right inguinal access.
- 3- Create a through and through access to push-pull the 6Fr introducer to retrieve it via the right inguinal access.



Left humeral artery access was used. (6 Fr introducer)





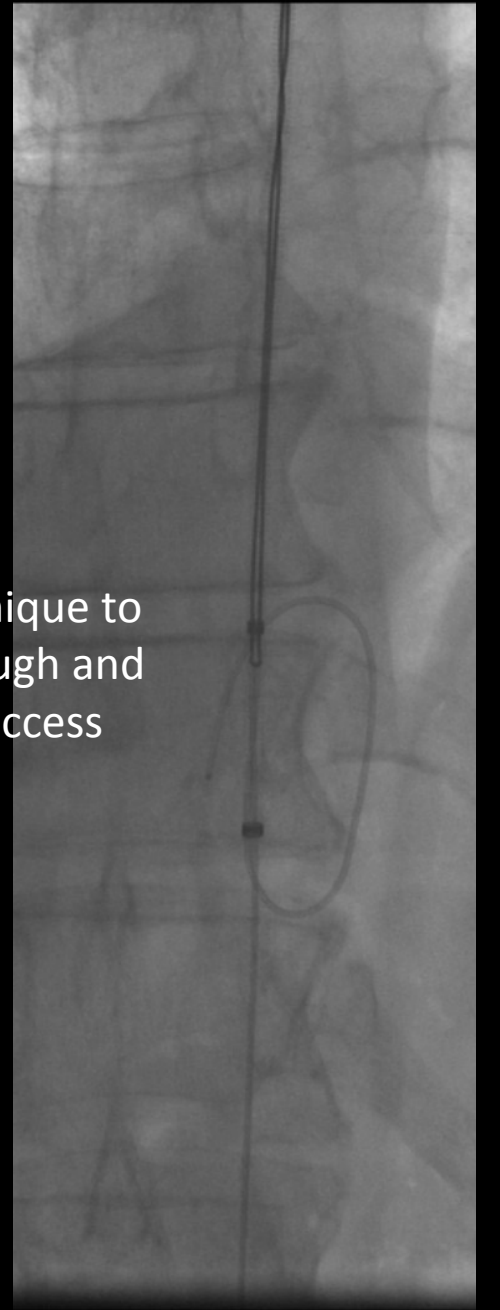
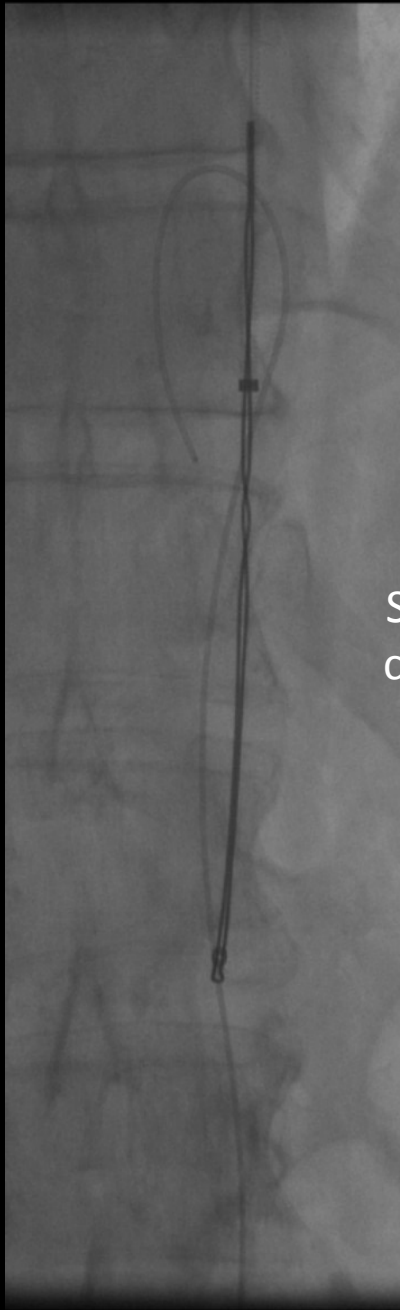
6 Fr 90 cm humeral
introducer

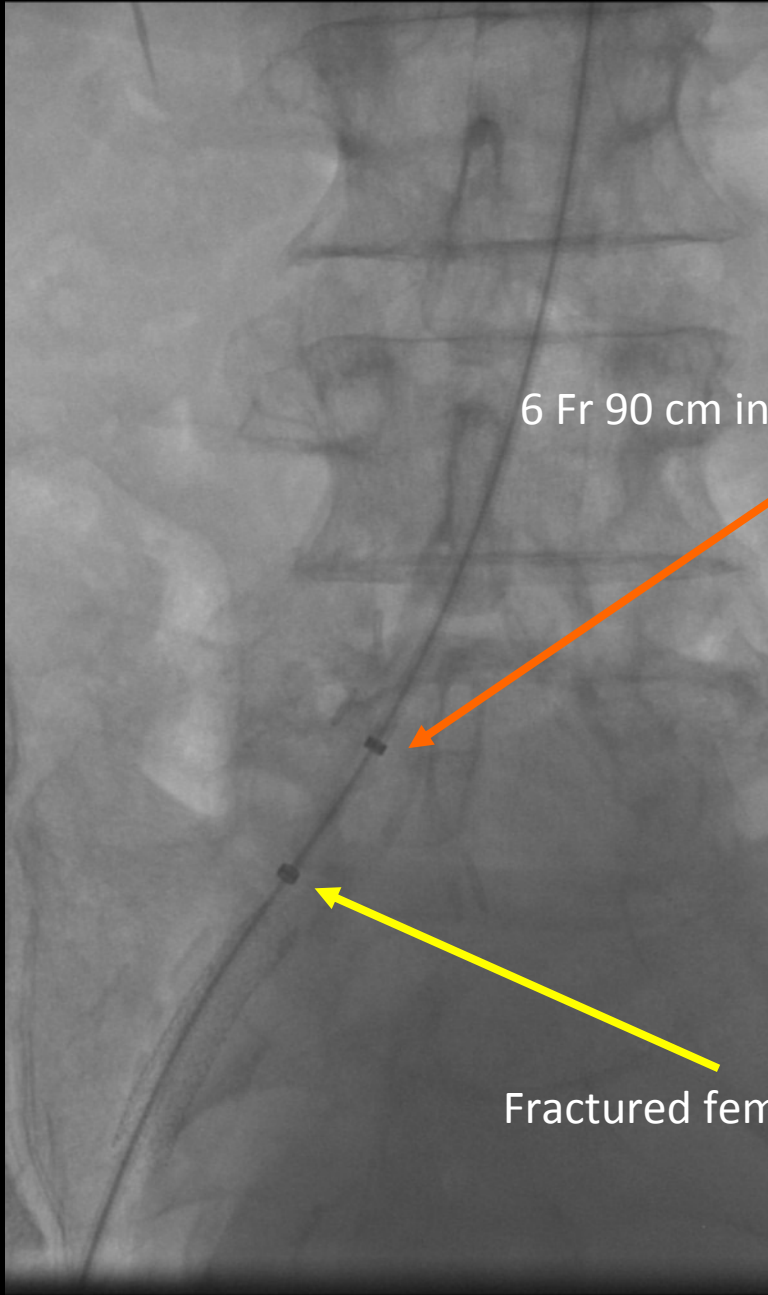


Guidewire
through
femoral
introducer

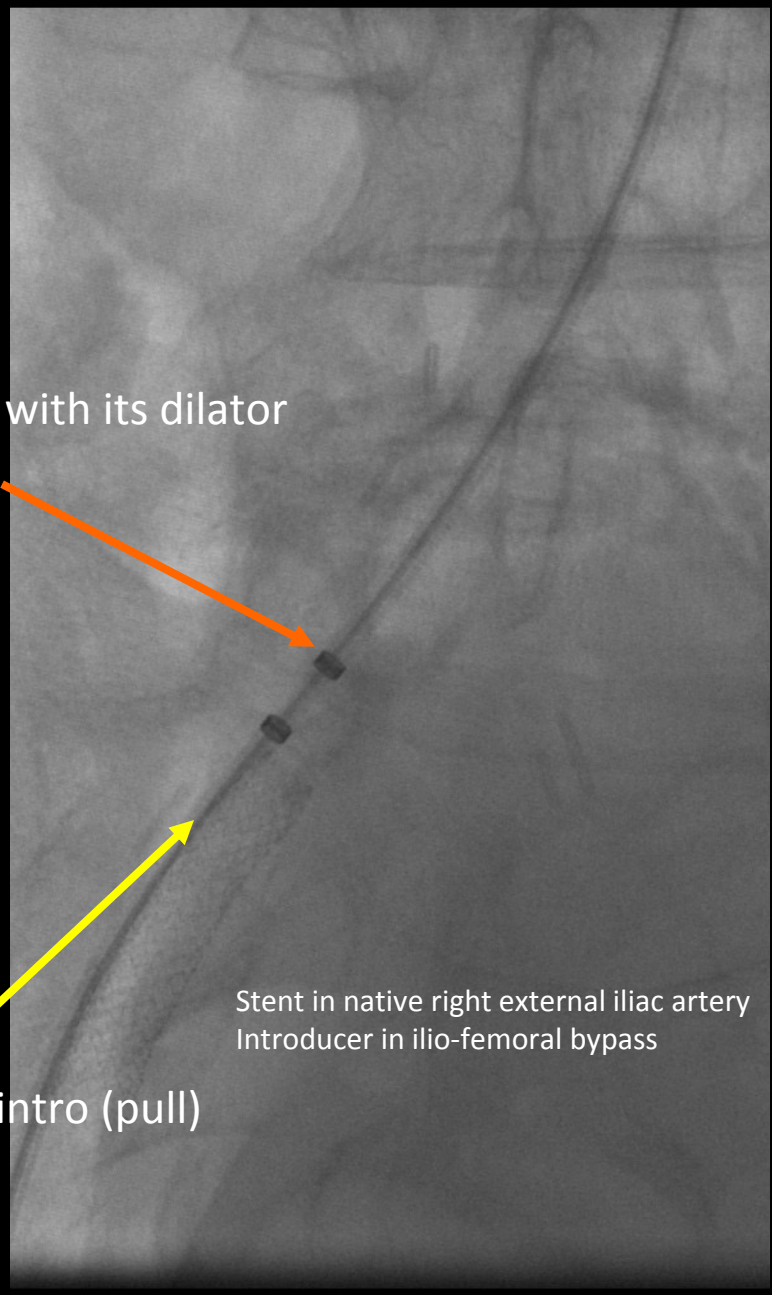


Snare technique to
create through and
through access



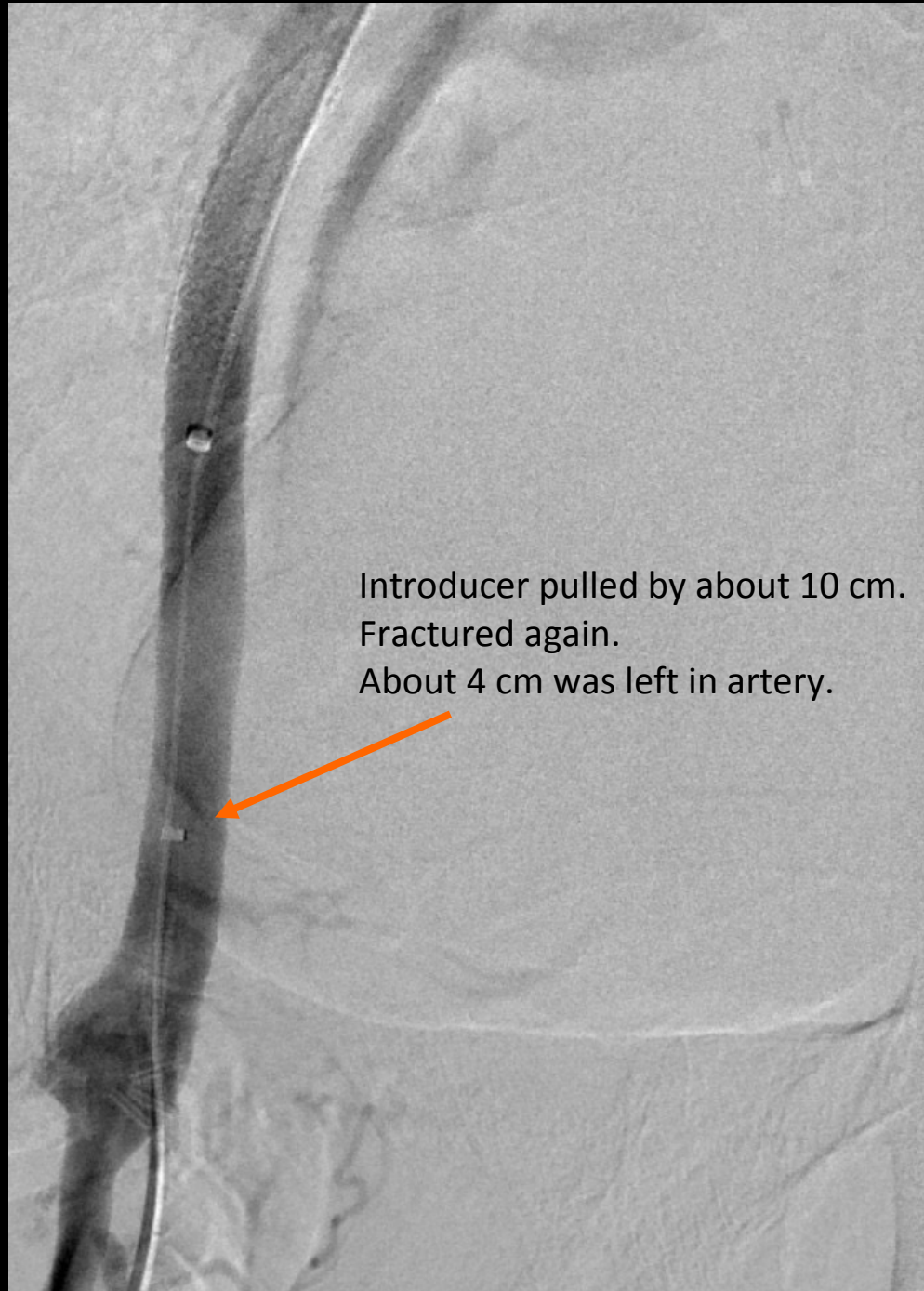


6 Fr 90 cm introducer with its dilator
(push)



Stent in native right external iliac artery
Introducer in ilio-femoral bypass

Fractured femoral 6Fr intro (pull)

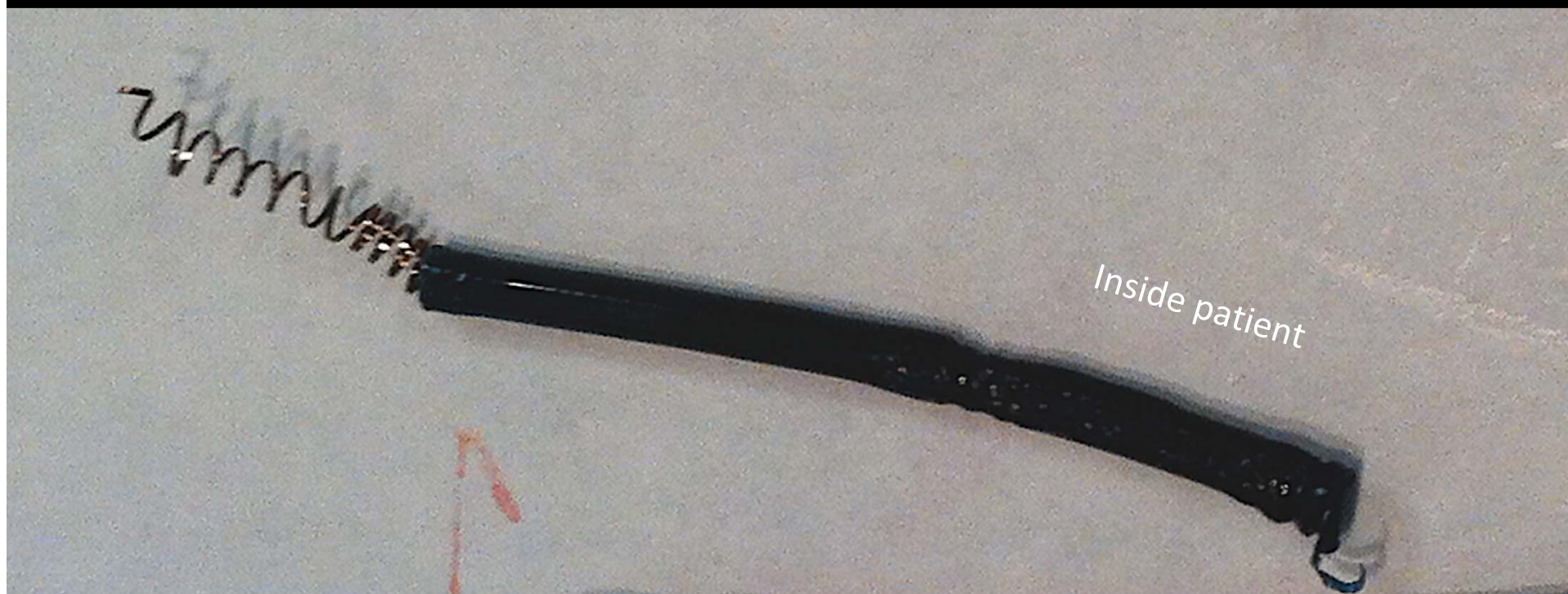


Introducer pulled by about 10 cm.
Fractured again.
About 4 cm was left in artery.



Fogarty technique with non-compliant balloon.

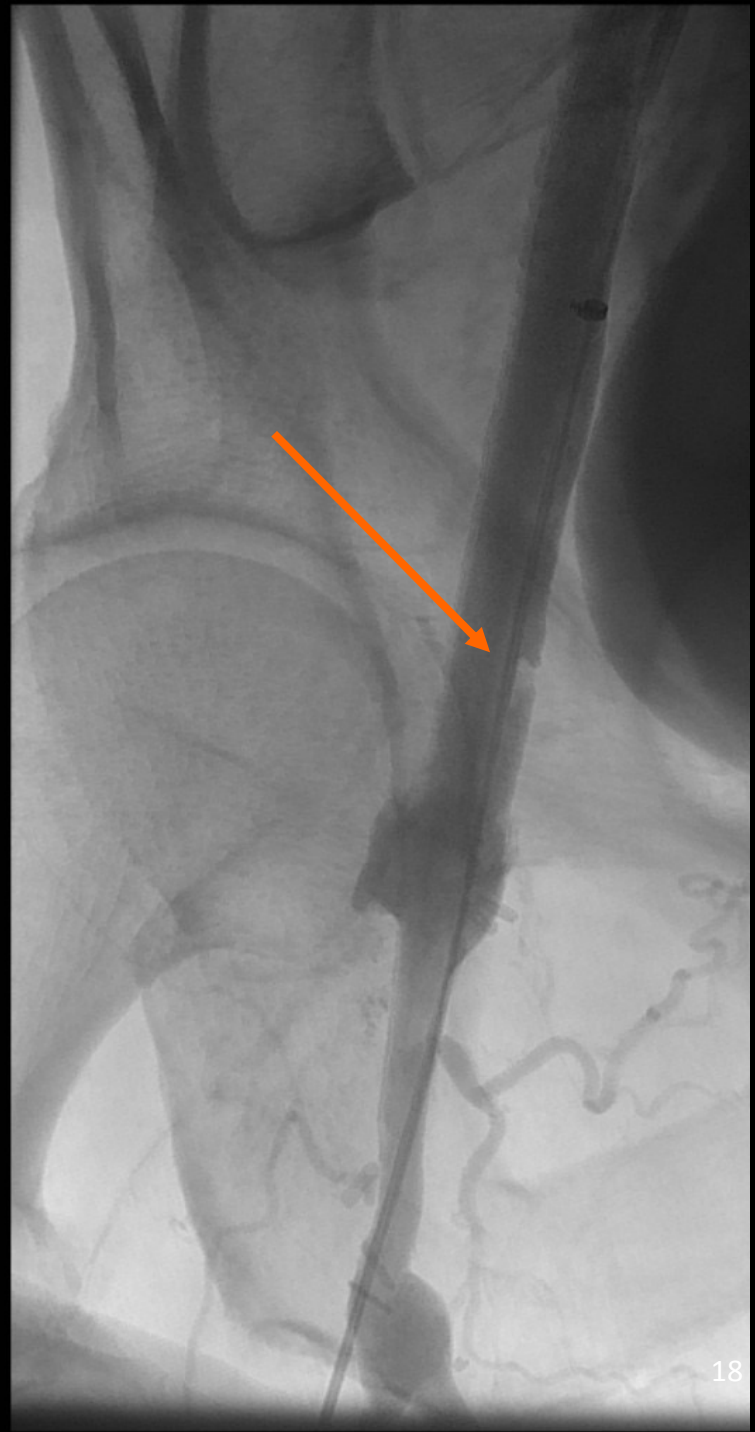
Success!



Fragment of introducer sheath. No fragment was missing.

Subtle wall irregularity still present,
unknown nature,
considered not significant.

Could it be a clot adherent to the
guidewire?



Management

Outpatient

24h admission recommended

IV antibiotics recommended

IV Heparin

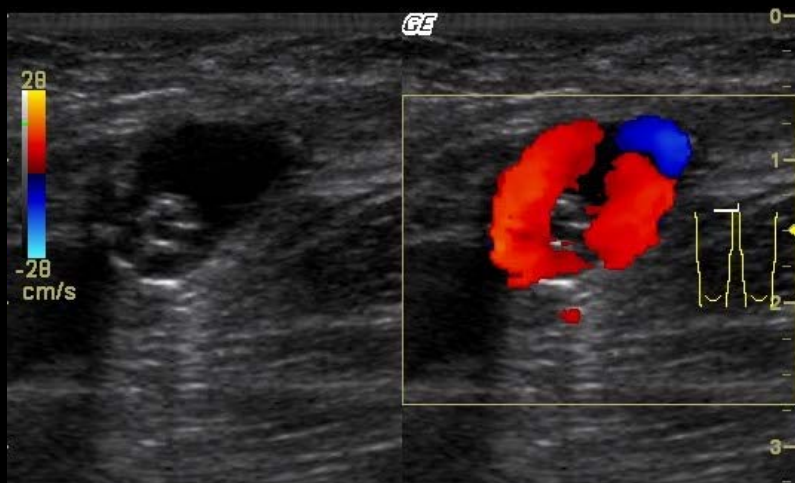
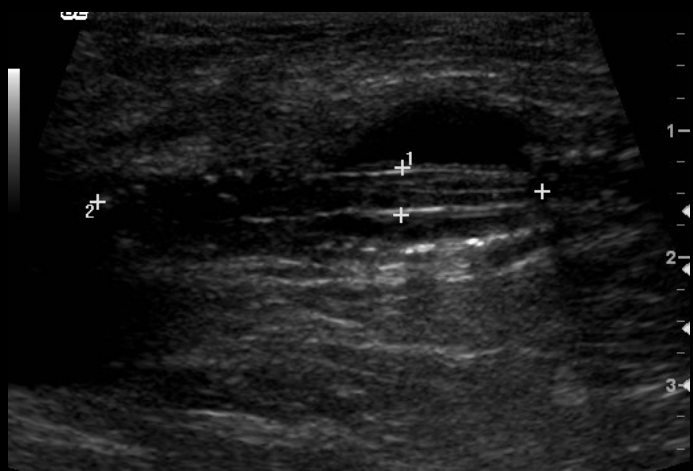
Arterial doppler ultrasound done 2 days later: normal, no clot visible

Patient discharged from hospital

Follow-up Doppler recommended in a few weeks to rule out long-term complications

2 months later

Follow-up Doppler



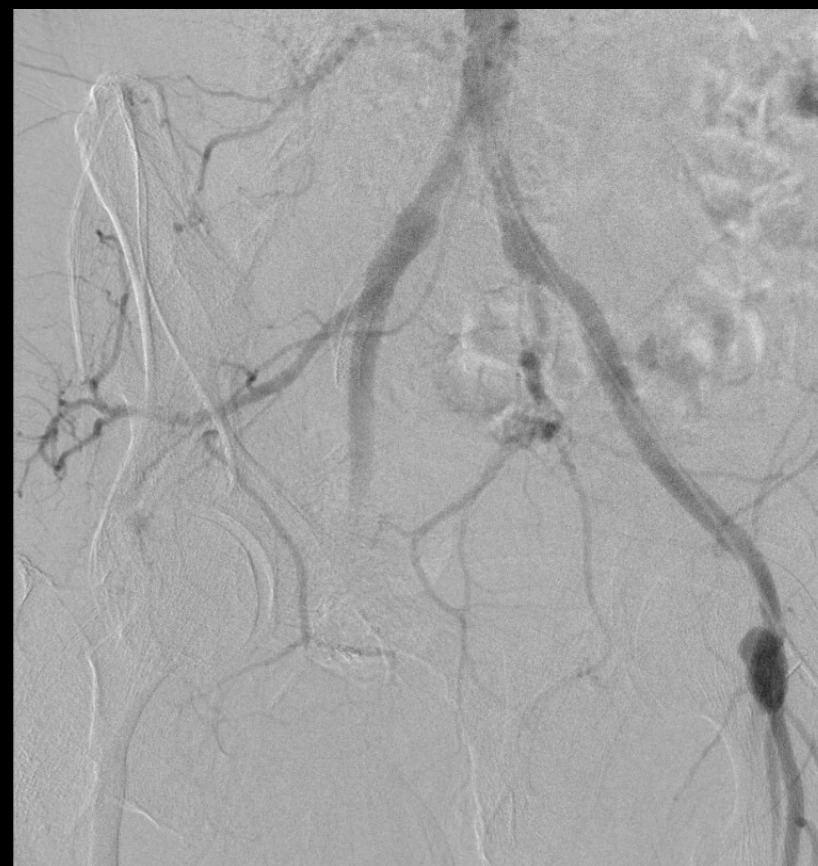
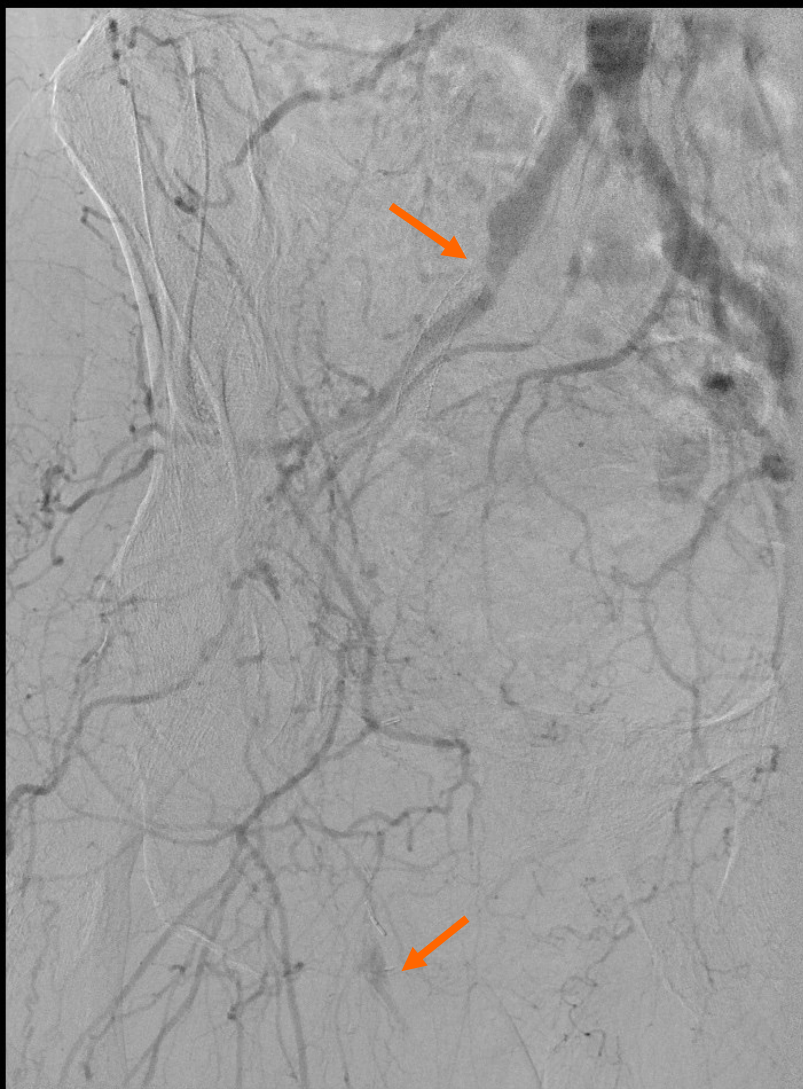
Tubular foreign body in right common femoral artery.
Not radiopaque.

Probably a fragment of angiographic material left vs a tubular
synechia secondary to the manipulations.



Another 2 months later

Patient came back with grade 3 ischemia of
right leg, symptomatic x 3 weeks



Previously on first study realised 4 months earlier.

Complete thrombosis of ilio-femoral bypass

Minimal restoration of flow in femoro-popliteal bypass



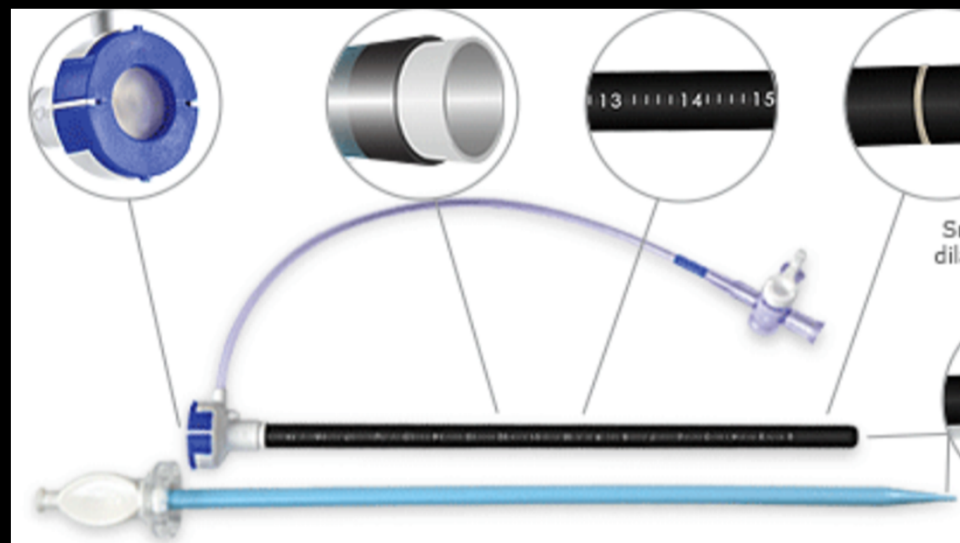


Complete thrombosis of right ilio-femoral bypass and CFA

Surgical thrombectomy

Hydrophilic outer coating of introducer sheath was found and removed from artery

Patient evolved well afterwards



Source : "Adelante® Magnum." *The High Performance Hemostatic Valve Introducer*. N.p., n.d. Web. 14 May 2015. <<http://www.oscor.com/medical-devices/adelante-magnum.html>>.

Sheath dysfunction

- Outer coating was peeled off when introducer sheath was withdrawn with force.
- Case reports :
 - hydrophilic coating of a jailed guidewire was peeled of in the coronary tree and successfully retrieved (J Invasive Cardiol. Nov. 2010)¹
 - sudden stripping of outer coating of a J-tip hydrophilic guidewire (Vojnosanit Pregl. 2014 Oct)²
 - In both cases, outer coating was visible: foreign body removed by endovascular techniques right away.

Intravascular foreign bodies

- Causes:
 - Technical: insertion with excessive force, unnatural resistance, excessive traction force
 - Device failure:
 - Delivery system causing dislodgement of a device into the vascular system
 - Inadequate balloon dilation causing stent dislodgement
 - Stent balloon catheter rupture causing stent to drop into the vessel
- Safe to leave in place:
 - If firmly adherent to the vessel wall, as reported in the literature ³⁻⁶
- Otherwise retrieval is necessary
 - Risk of embolism or thrombosis
 - Percutaneous retrieval is safe and effective ^{3,7}

Take home messages

- Ultrasound can identify non-radiopaque parts of material, like the hydrophilic sheath of the introducer.
- When identified, loose foreign bodies need to be removed to prevent complications.
- Endovascular removal is safe and effective, as long as we make sure no fragments are left.

References

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2. Damjanović M, Šalinger-martinović S, Djordjević-radojković D, Koraćević G, Miloradović V. A successful retrieval of stripped outer coating of J-tip diagnostic guidewire from the left popliteal artery during elective coronary angiography. *Vojnosanit Pregl.* 2014;71(10):969-71.
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4. Forauer AR, Theoharis CG, Dasika NL. Jugular vein catheter placement: histologic features and development of catheter-related (fibrin) sheaths in a swine model. *Radiology.* 2006;240(2):427-34.c
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7. Cahill AM, Ballah D, Hernandez P, Fontalvo L. Percutaneous retrieval of intravascular venous foreign bodies in children. *Pediatr Radiol.* 2012;42(1):24-31.
8. "Adelante® Magnum." *The High Performance Hemostatic Valve Introducer.* N.p., n.d. Web. 14 May 2015. <<http://www.oscor.com/medical-devices/adelante-magnum.html>>