# Access is everything – How to select and secure access for peripheral interventions

George Joseph
Professor of Cardiology
Christian Medical College , Vellore

# Importance of Percutaneous Vascular Access

- Most crucial skill for endovascular intervention
- Start and finish of any endovascular procedure
- Majority of complications in endovascular intervention are puncture related

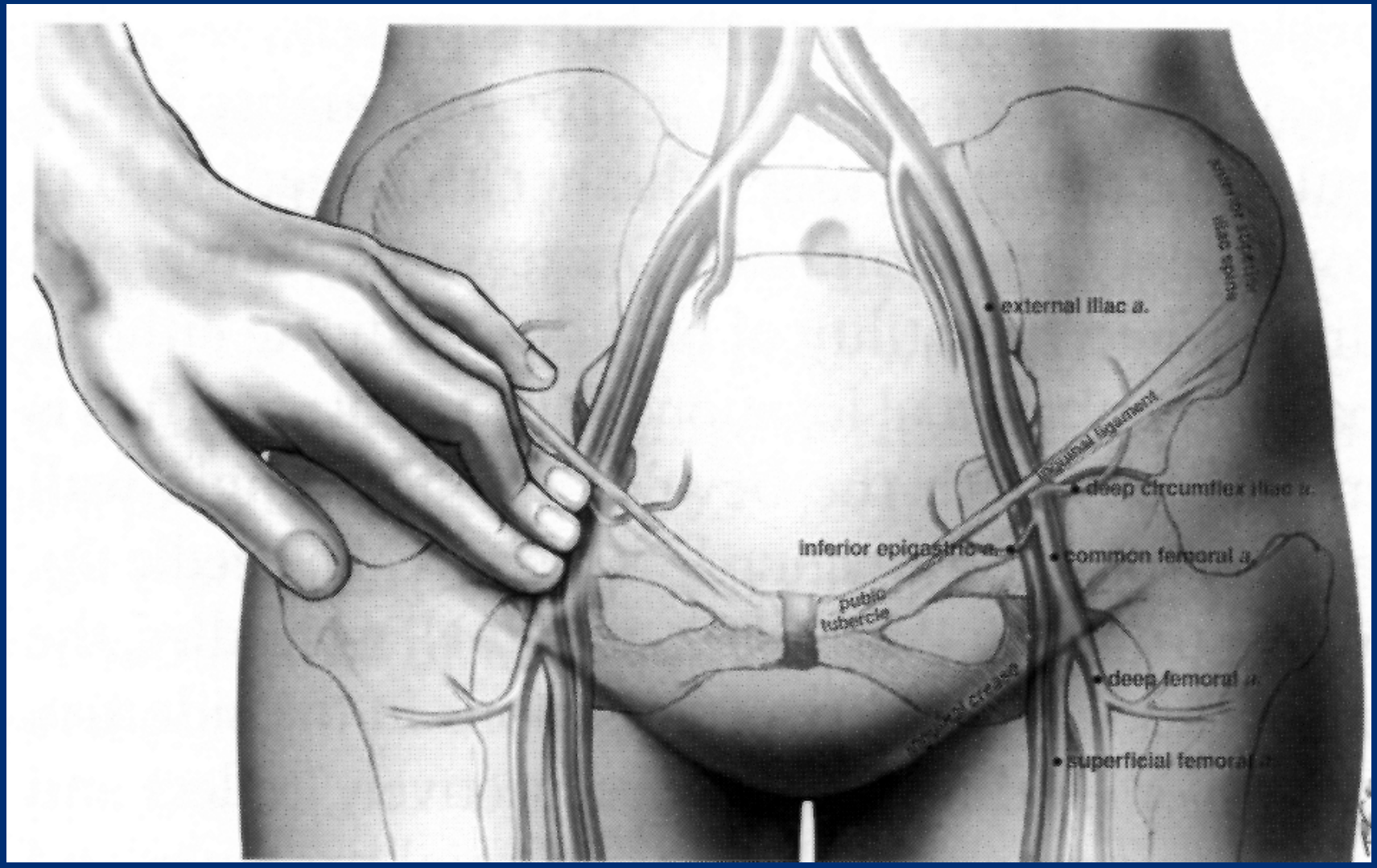
# Arterial Access Routes

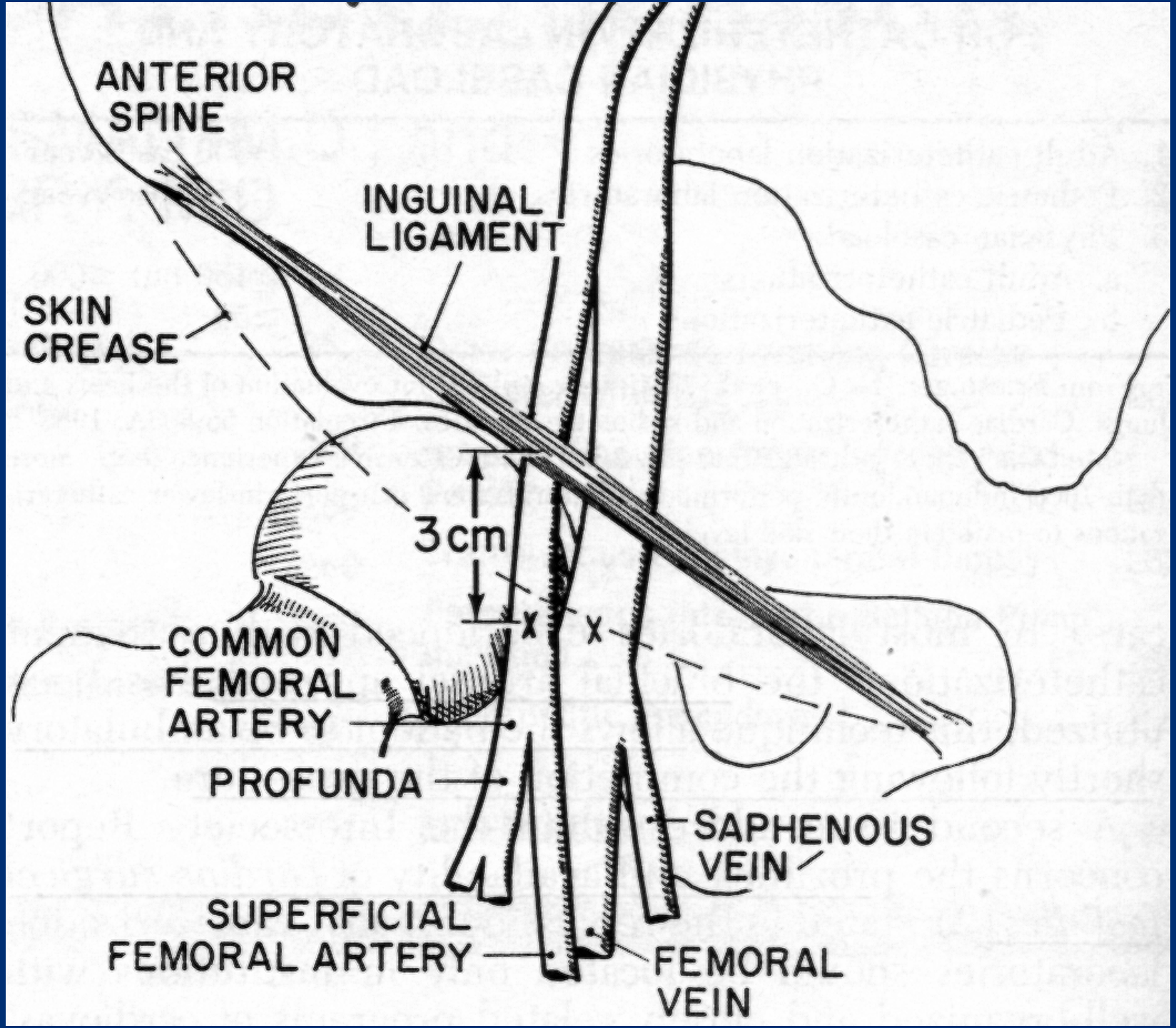
- Retrograde femoral
- Contra-lateral
- Radial
- Brachial
- Antegrade femoral
- Popliteal
- Pedal
- Carotid
- Trans-septal

# Retrograde Femoral Approach

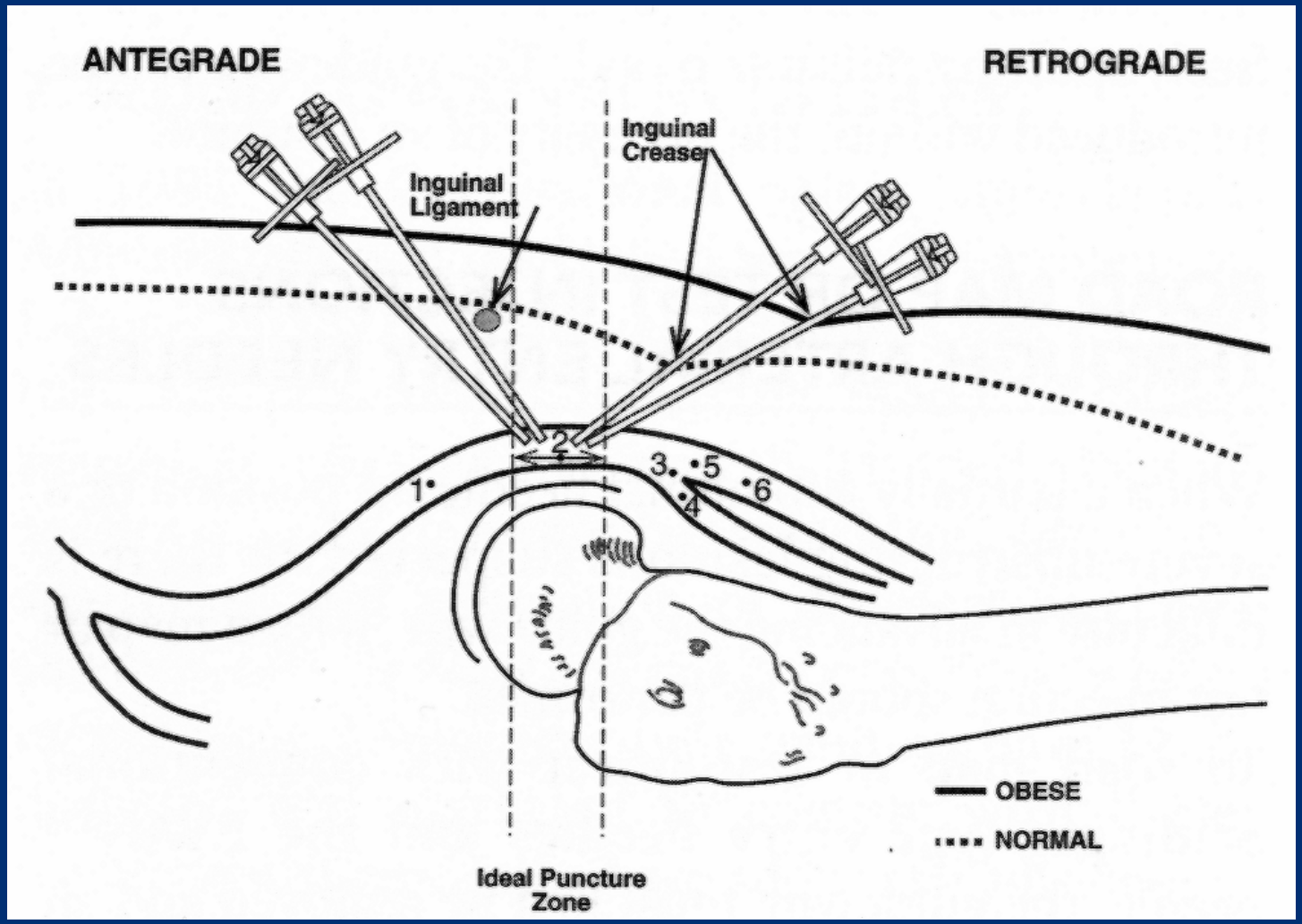
1. The common femoral artery is the optimal puncture target
2. Vessel entry should be at the infra-inguinal level

# Anatomy and Landmarks

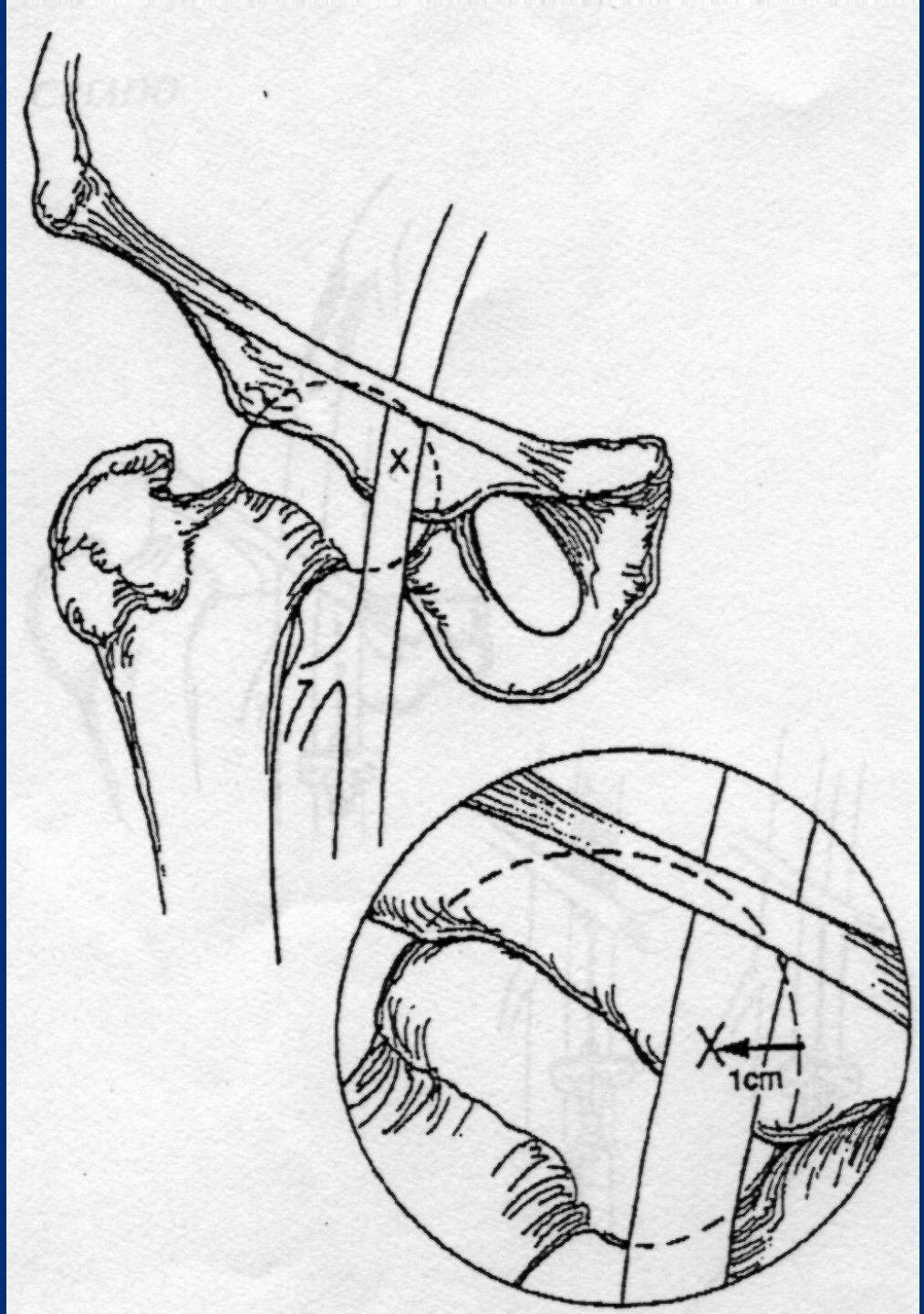



ANTERIOR
SPINE
INGUINAL
LIGAMENT
SKIN
CREASE
3cm
X
X
COMMON
FEMORAL
ARTERY
PROFUNDA
SAPHENOUS
VEIN
SUPERFICIAL
FEMORAL ARTERY
FEMORAL
VEIN

# Lateral view of Femoral Triangle

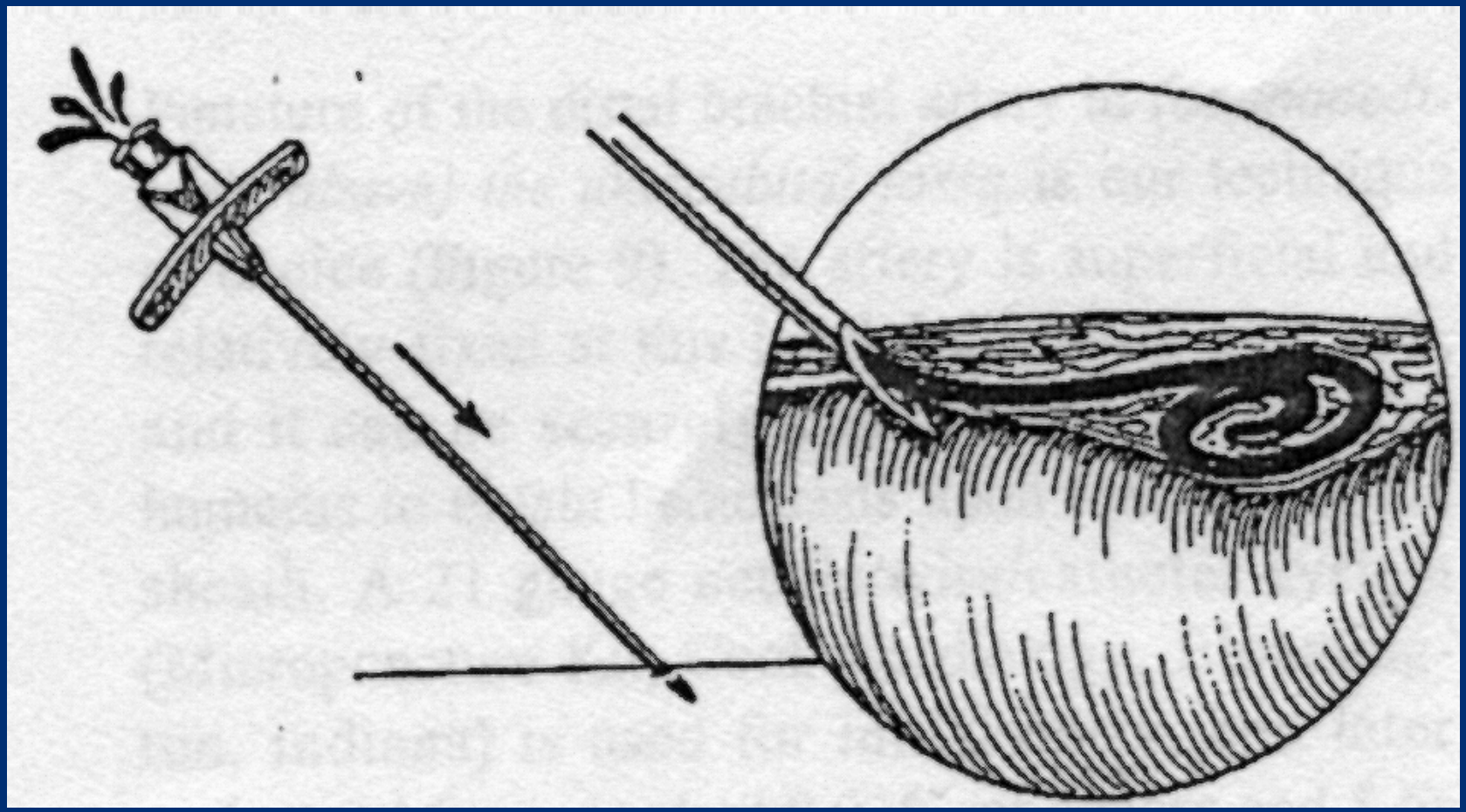


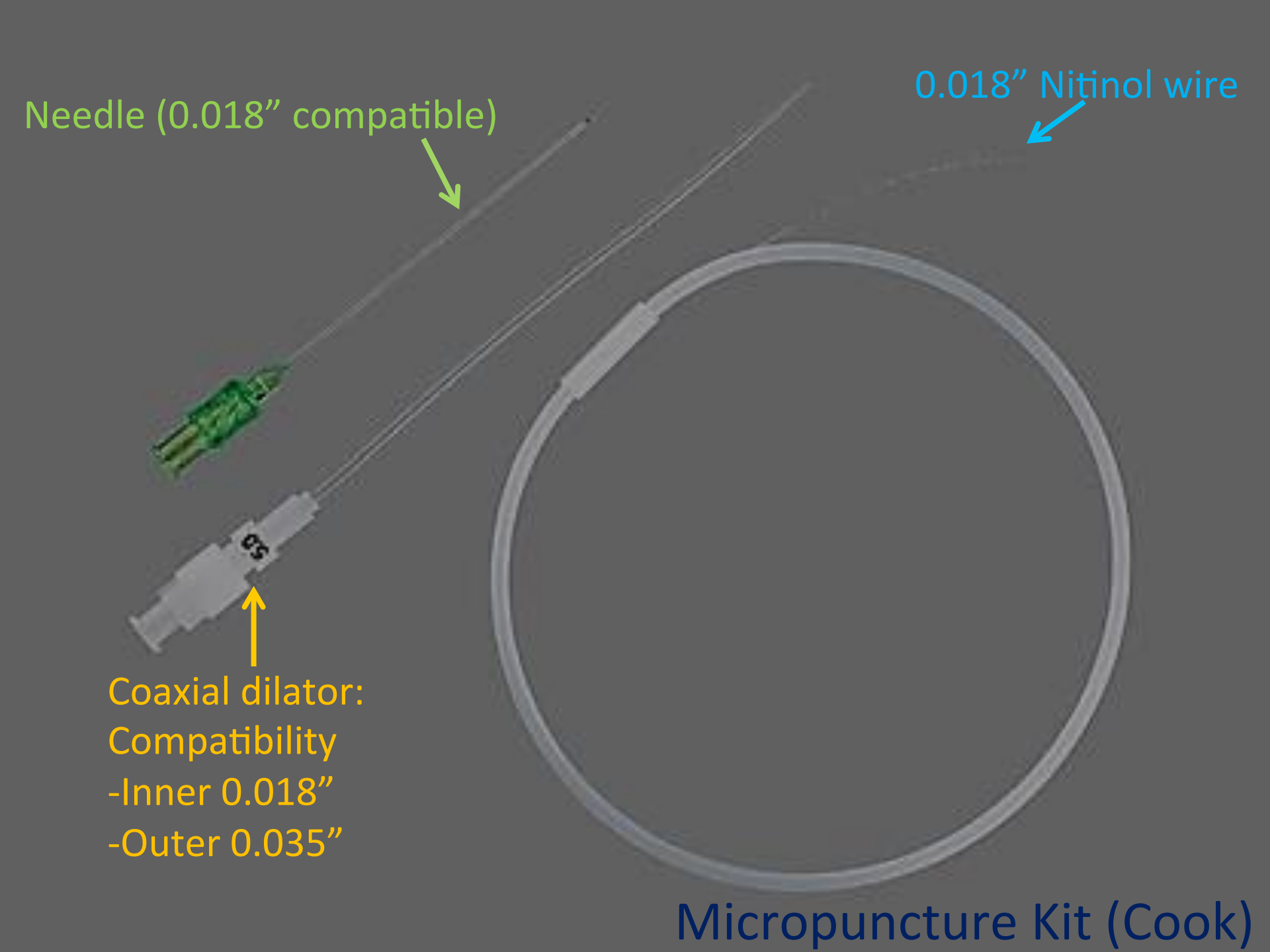
Target 1 cm lateral to the most medial cortex of the femoral head

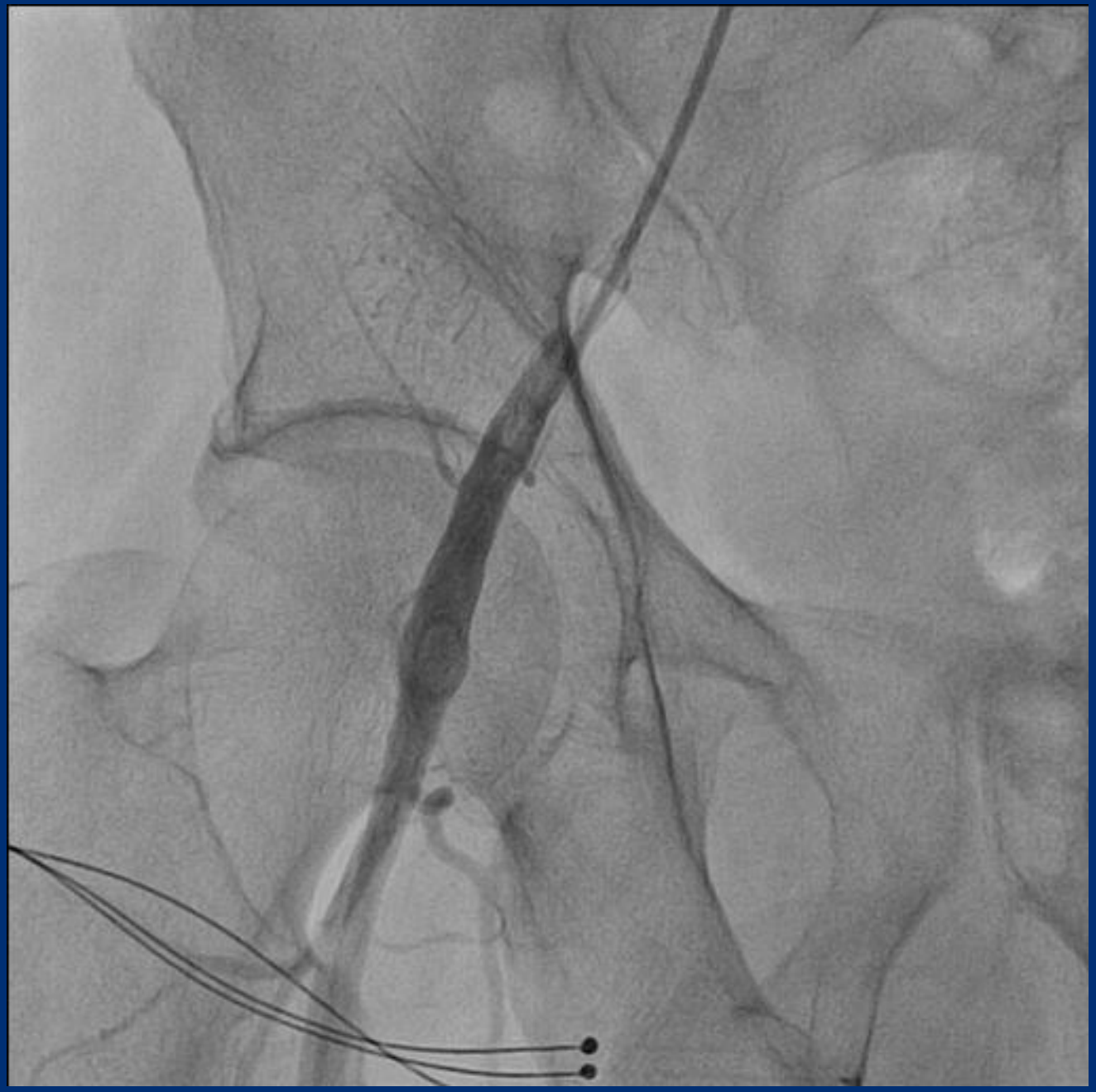



CFA runs over medial 1/3 rd of the femoral head in >70% of patients

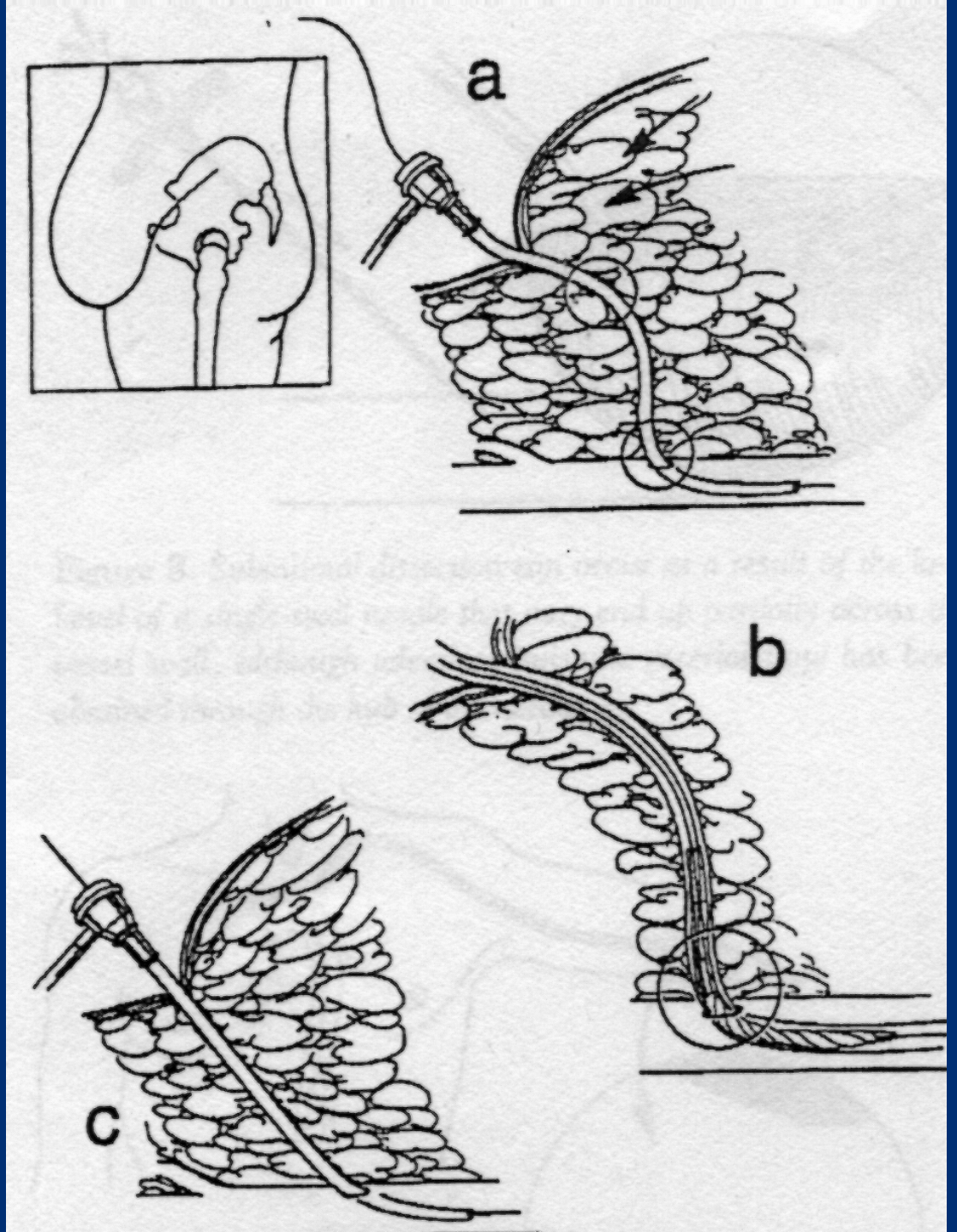
# Sub-intimal dissection as a result of long bevel of single-wall needle

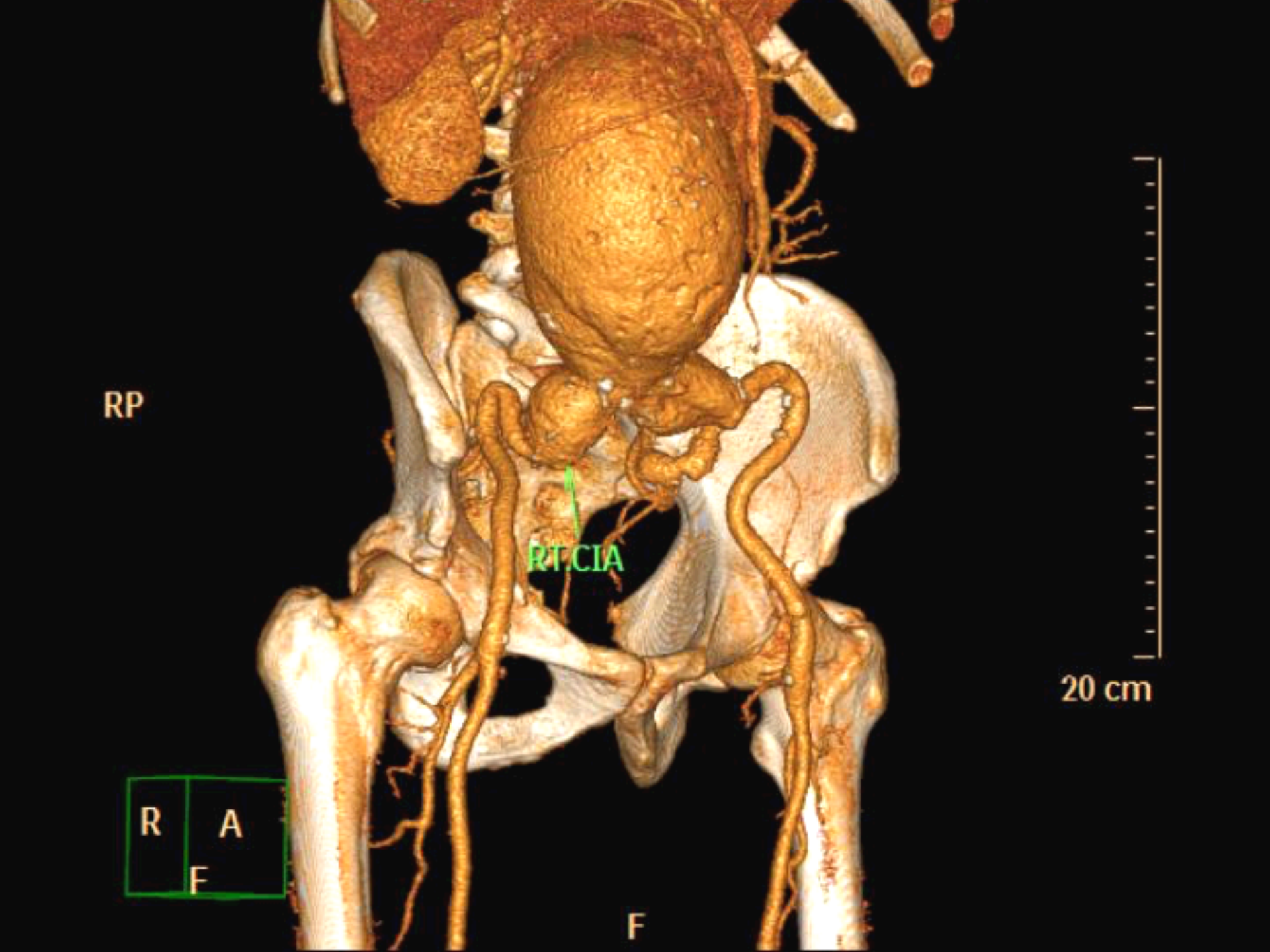



Needle (0.018” compatible)
0.018” Nitinol wire
Coaxial dilator:
Compatibility
-Inner 0.018”
-Outer 0.035”
Micropuncture Kit (Cook)



S-shaped deformity of access pathway in “difficult groins” and obesity

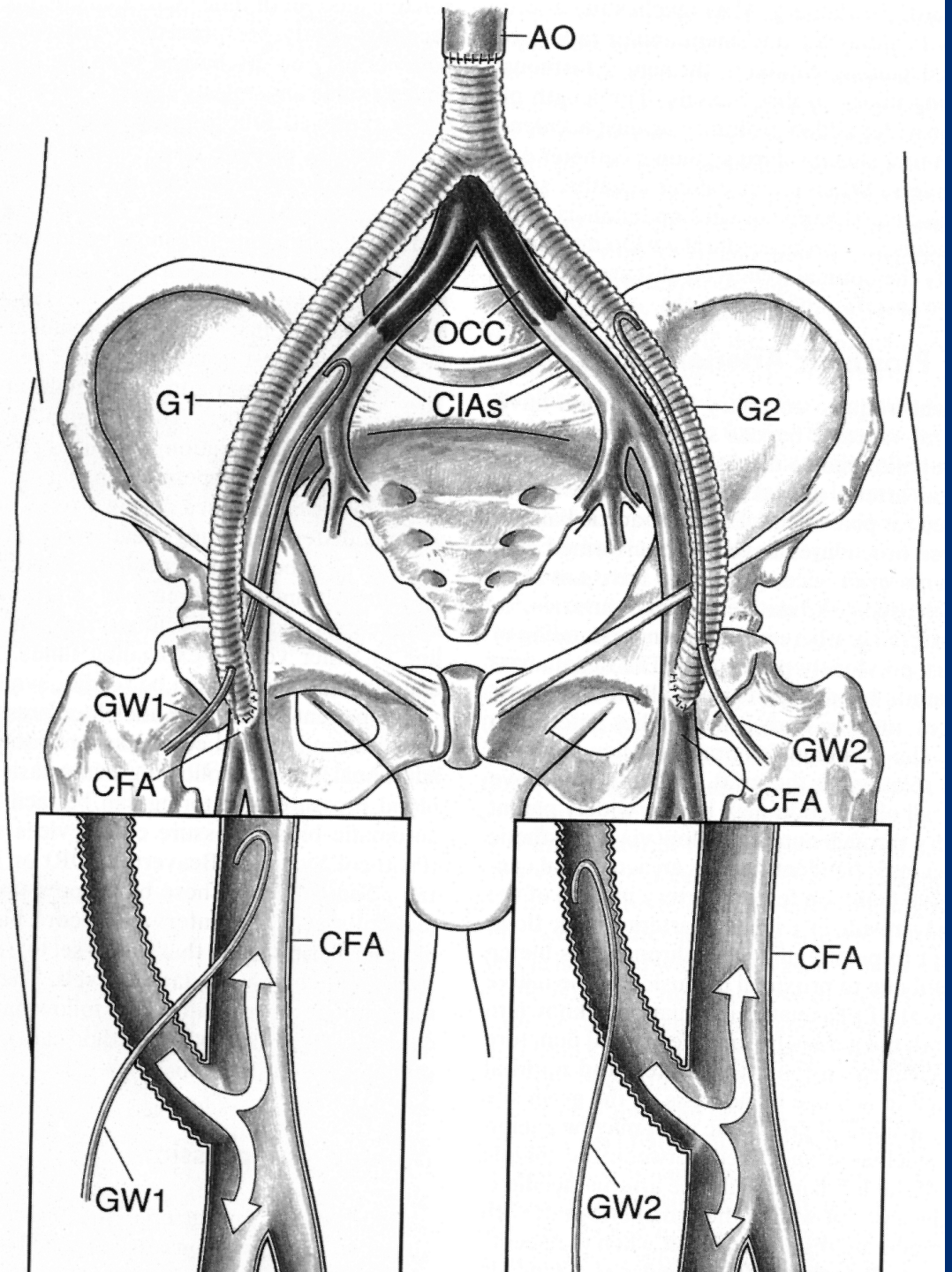



RP
RT.CIA
20 cm
R
A
F
F

# Iliac tortuousity

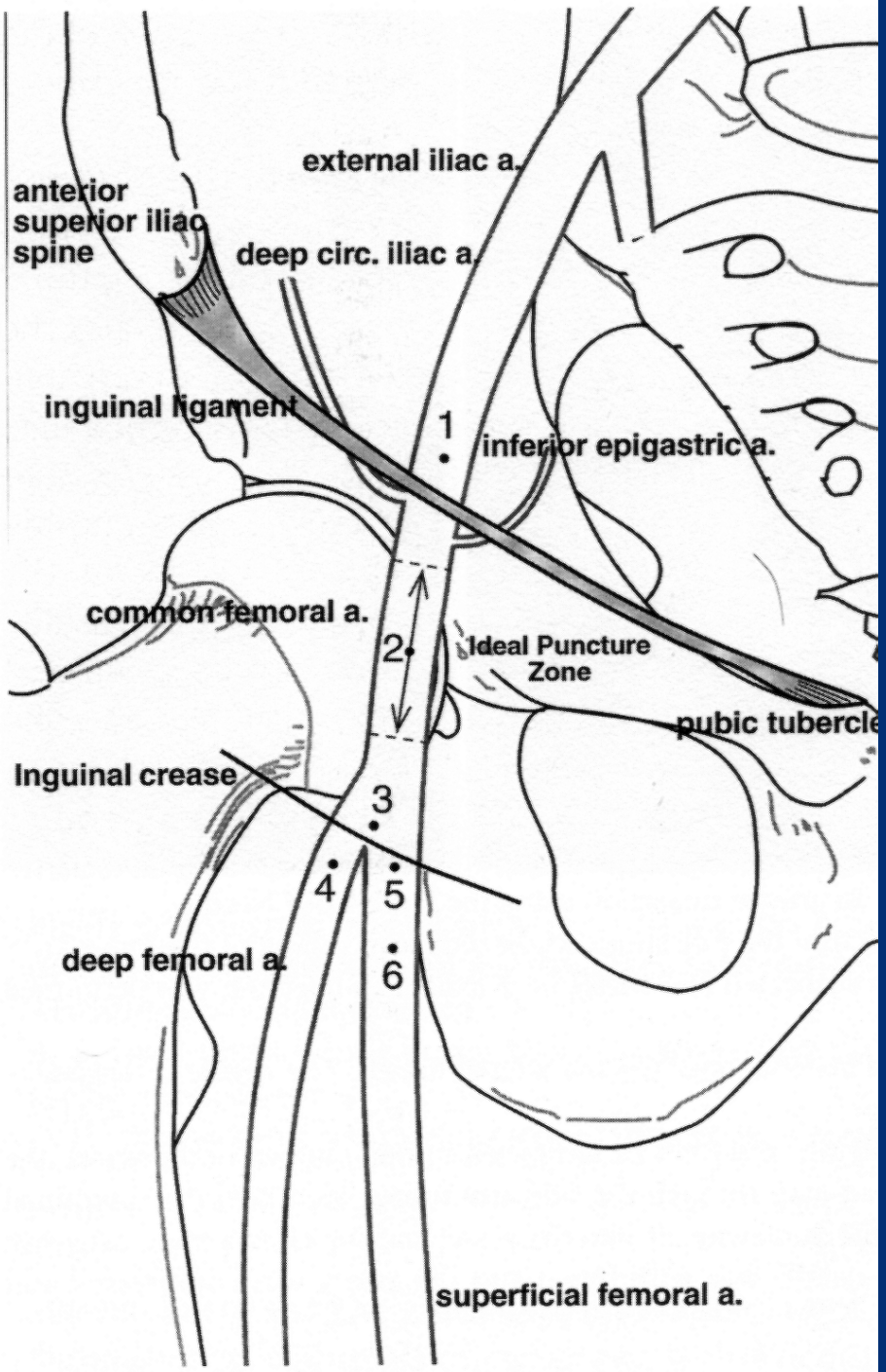
- Cross with 0.035” angled Terumo with 5F Vertebral / JR catheter support
- Use long flexible 7F / 8F braided sheath with tip in aorta.
- Keep 0.035” stiff wire /catheter through sheath at all times
- Watch out for vessel wall invagination and pseudo-lesions when straightening tortuous arteries

# Cannulation of prosthetic femoral artery graft

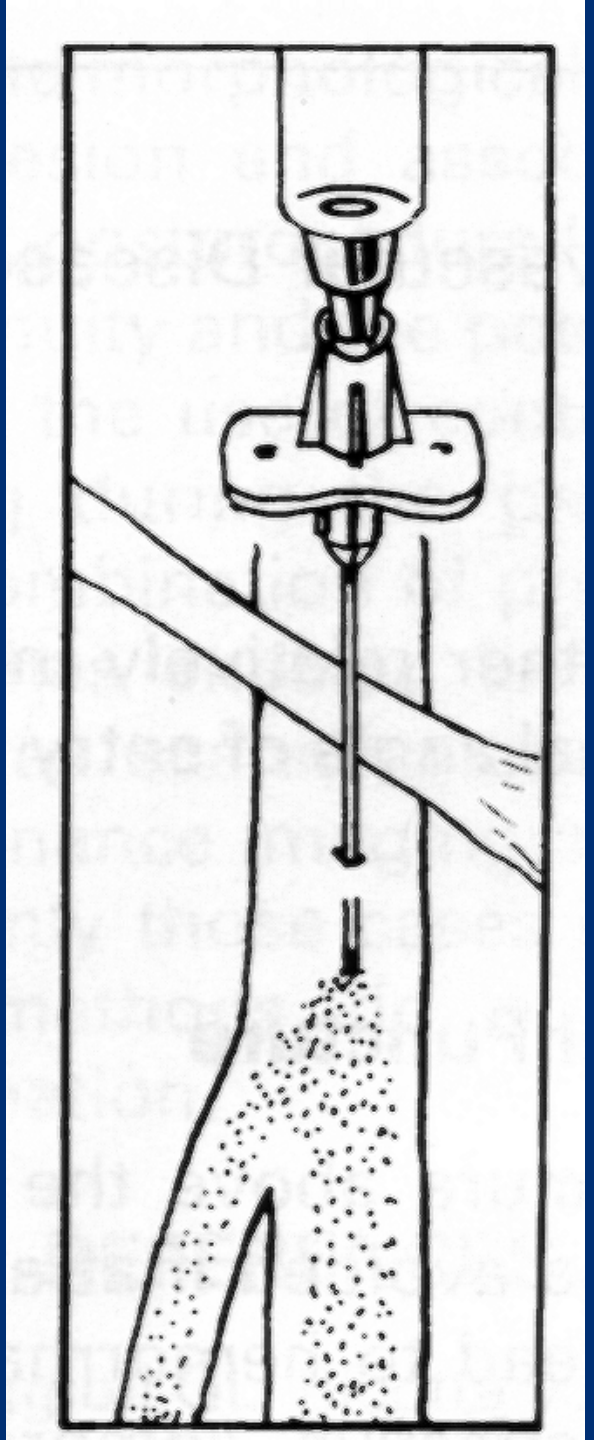


# Antegrade Femoral Artery Puncture

# Possible Arterial Entry Points

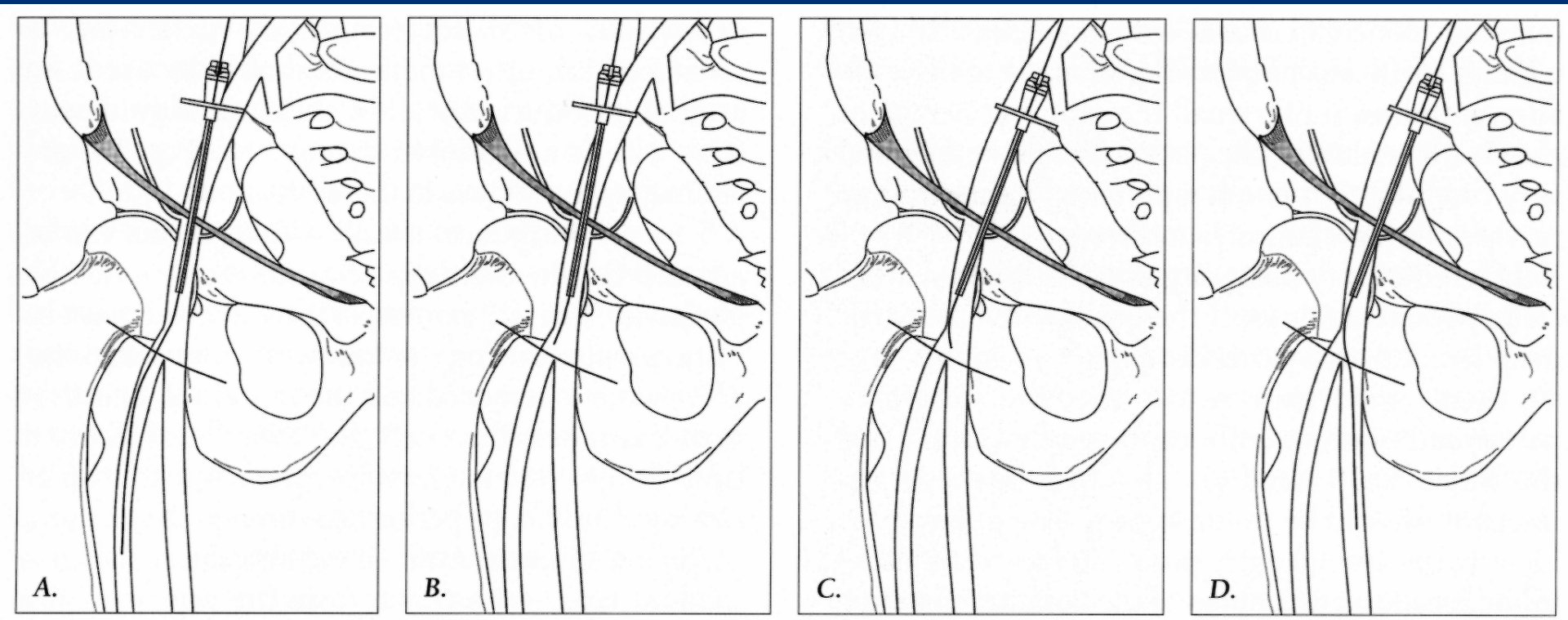


Antegrade femoral artery puncture with injection of contrast through the needle to define femoral bifurcation anatomy



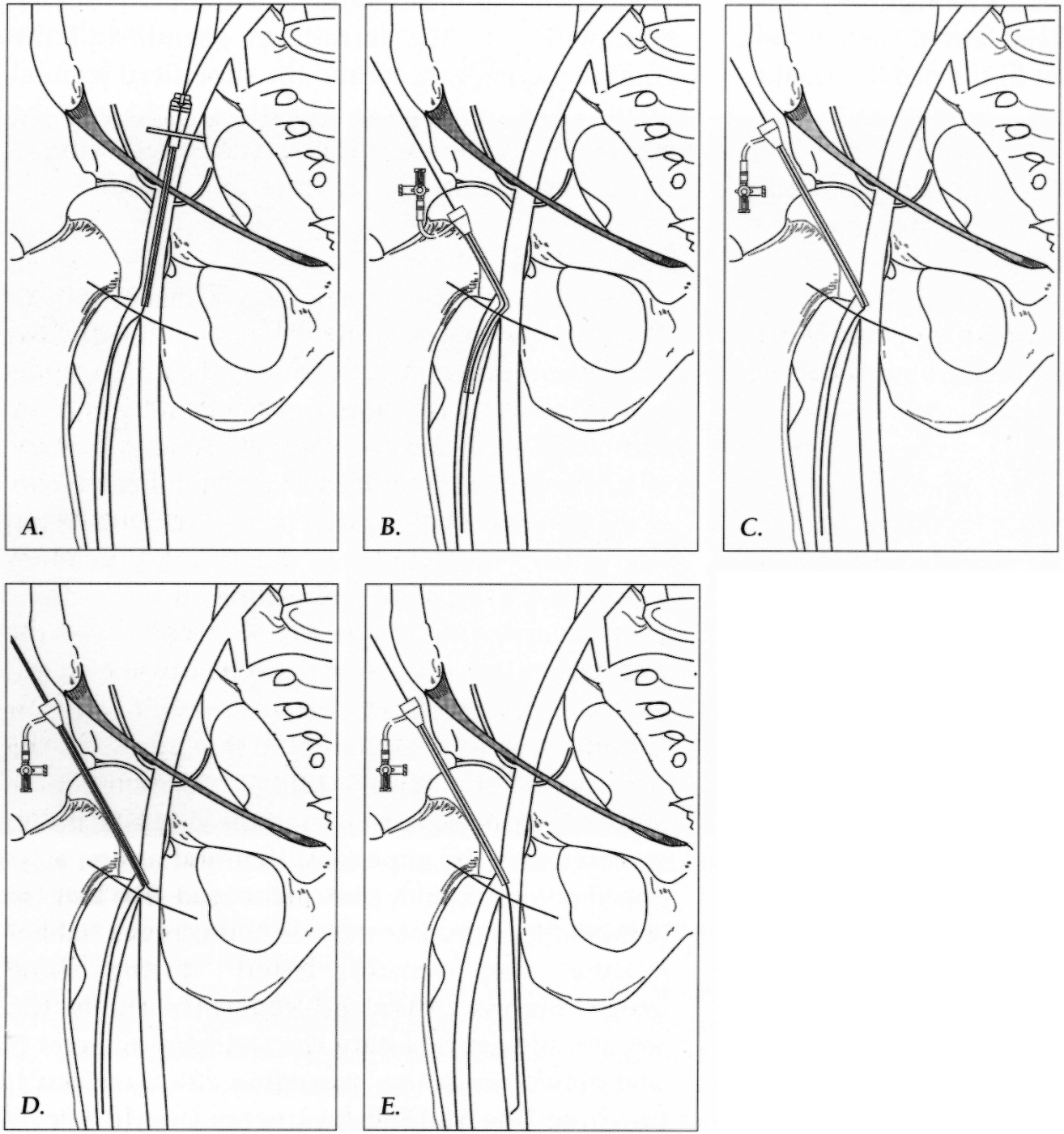
# Ideal common femoral artery entry:

Redirection of guidewire from deep to superficial femoral artery by deflection technique

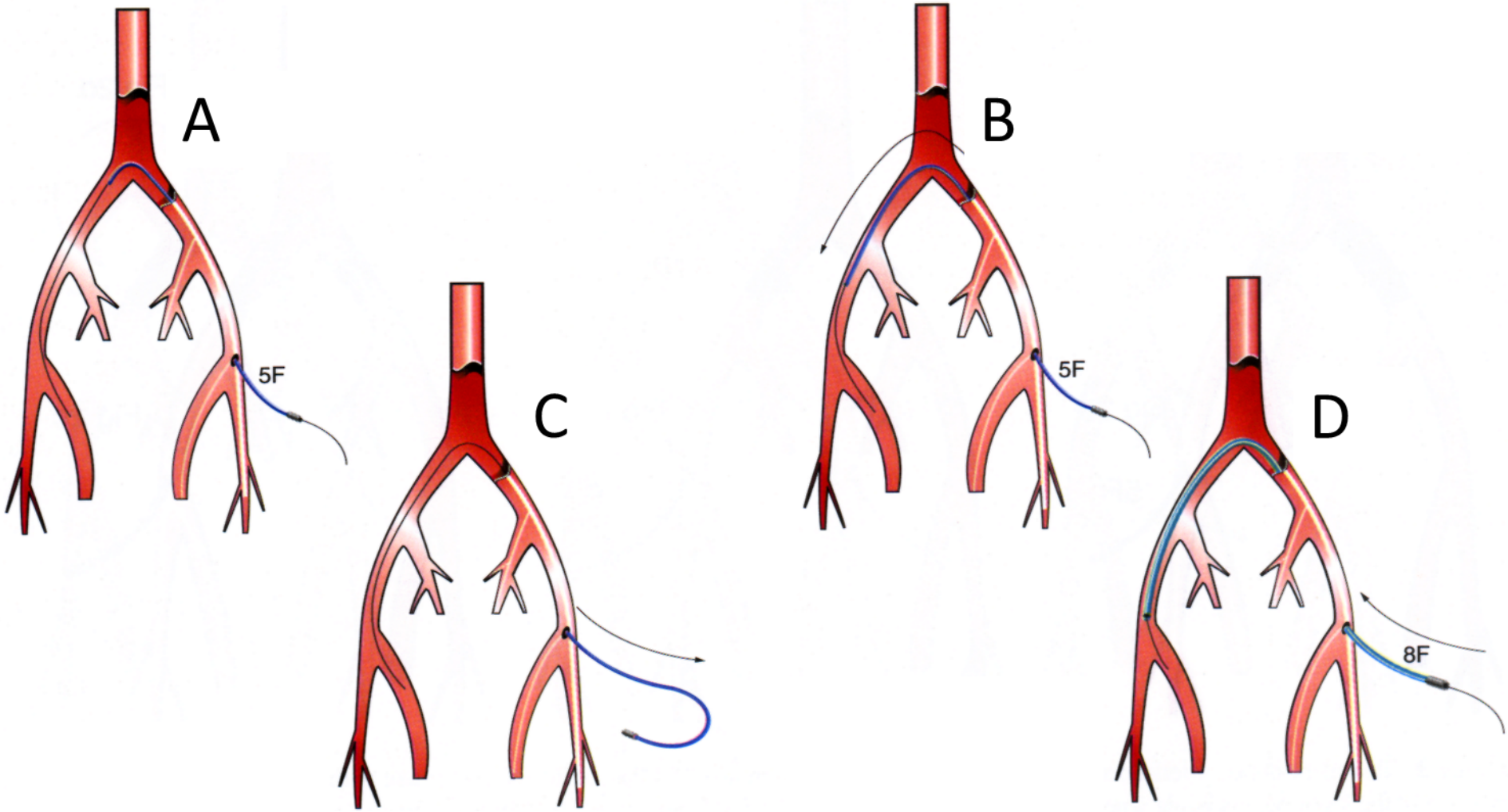


# Distal common Femoral artery Entry:

Redirection of the guidewire from deep to superficial femoral artery using an arterial introducer sheath

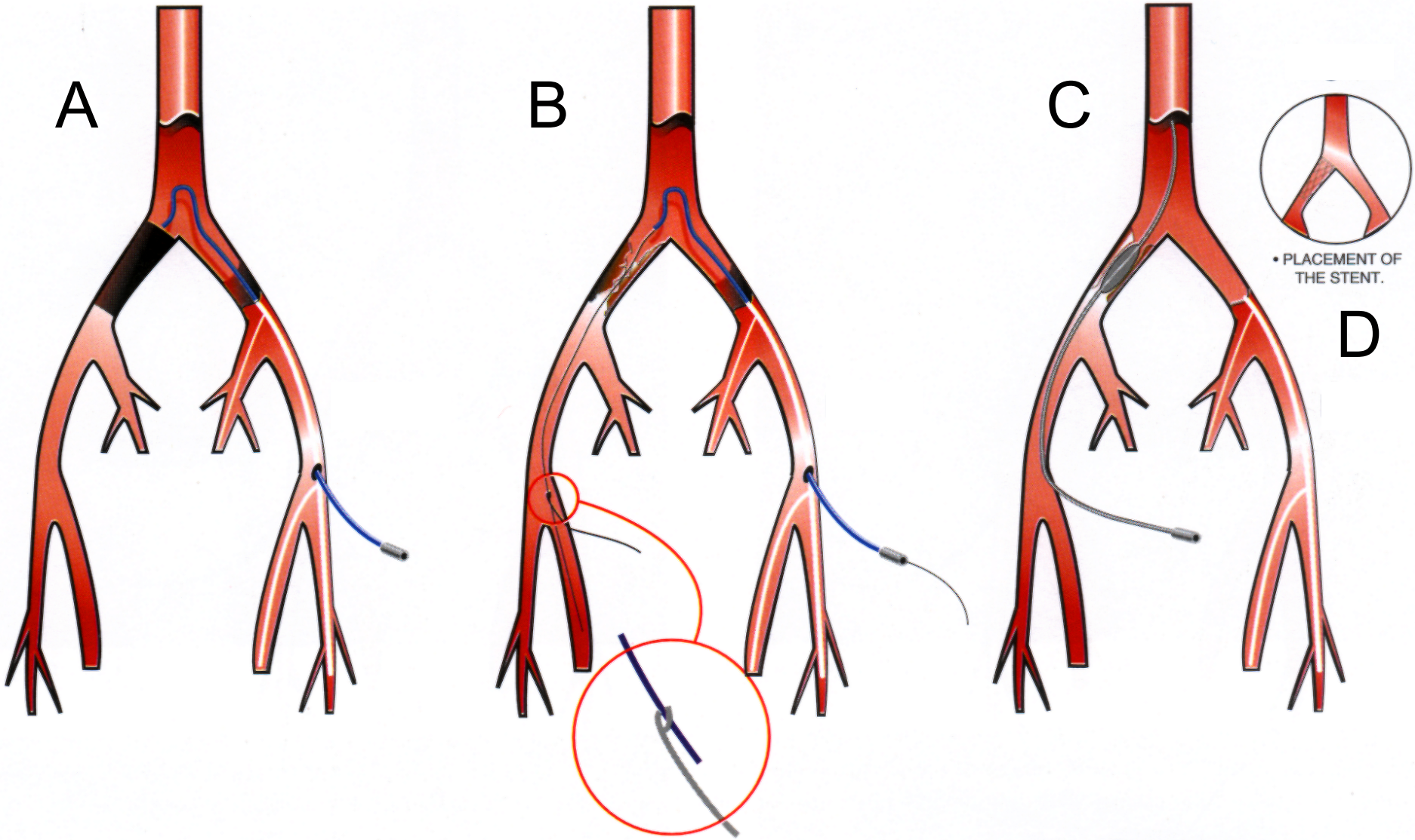


# The Contra-lateral Approach


A
5F
B
5F
C
D
8F


Before


After




Snaring of wire from ipsilateral side followed by ipsilateral angioplasty

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Case Report

# Contralateral approach to iliac artery recanalization with kissing nitinol stents present in the aortic bifurcation☆

George Joseph *, Amit Hooda, Viji Samuel Thomson

Department of Cardiology, Christian Medical College, Vellore, India

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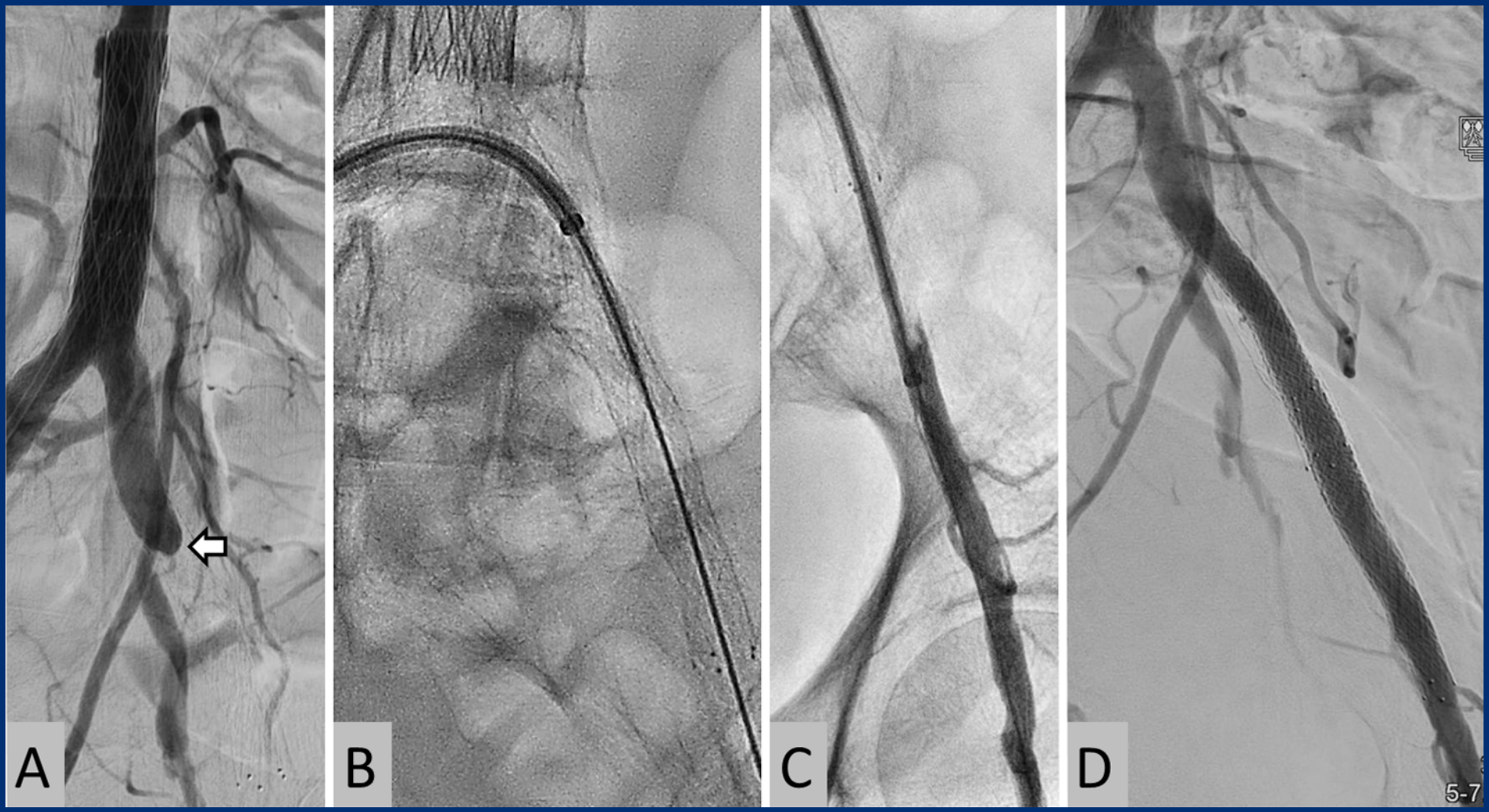
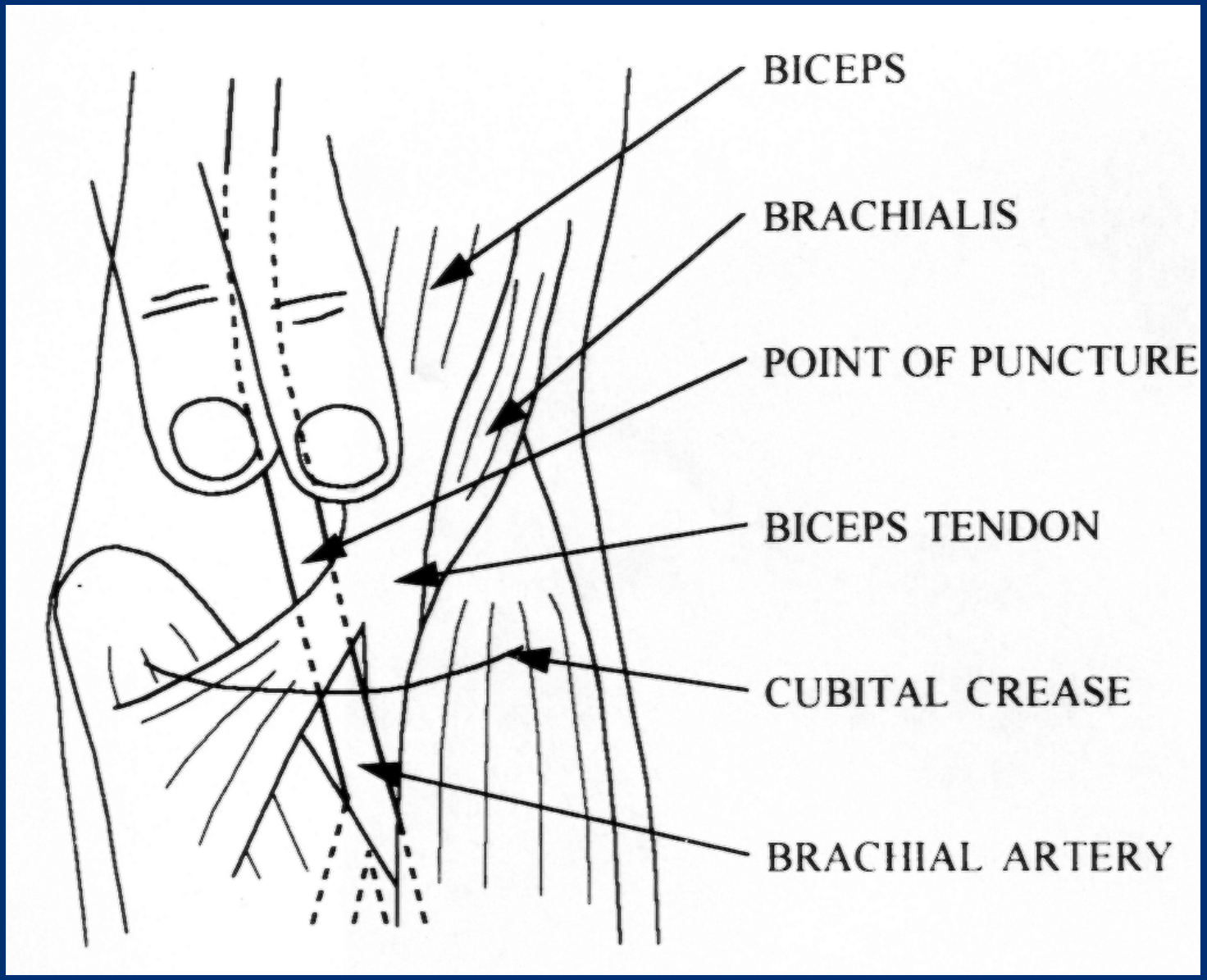
ABSTRACT

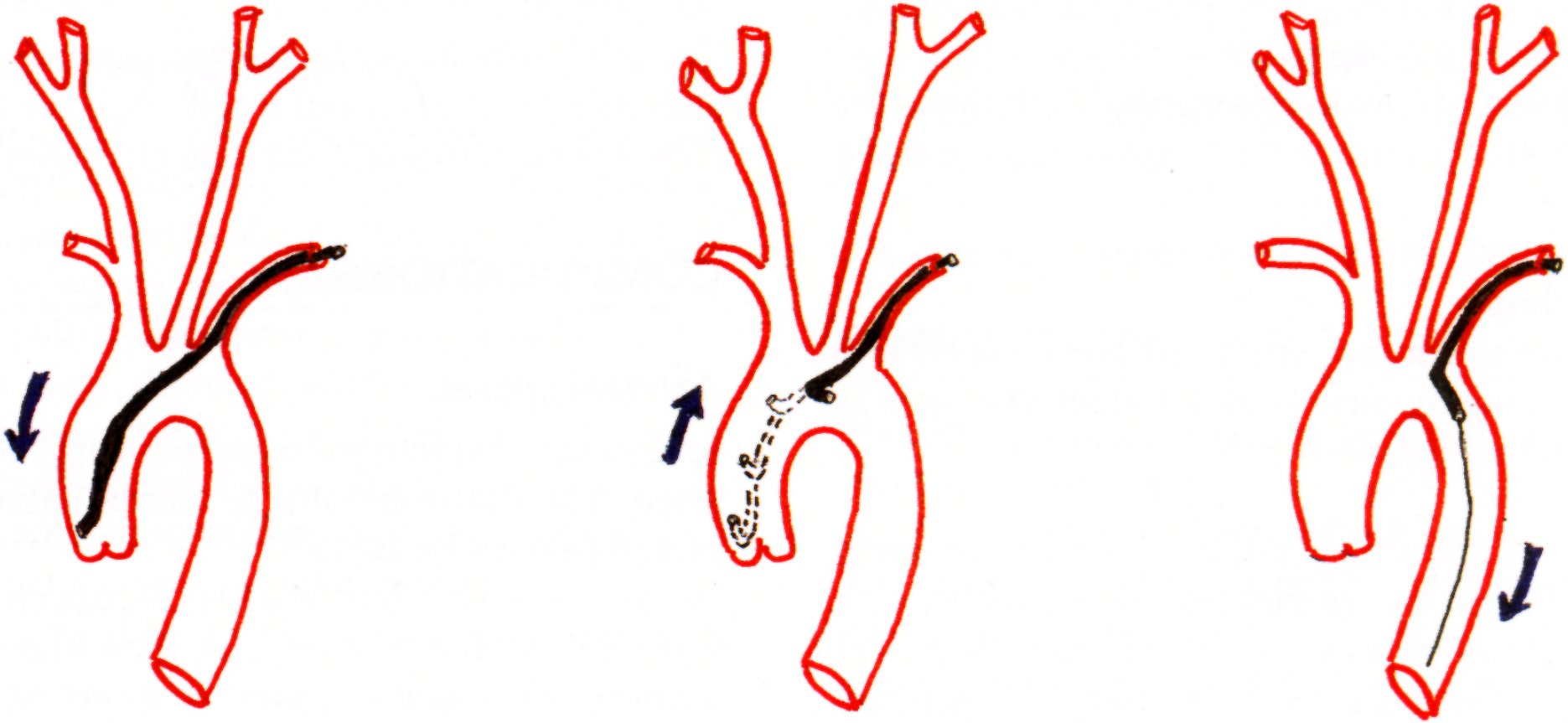
A 69-year-old man, who had earlier undergone reconstruction of the aortic bifurcation with kissing nitinol stents, presented with occlusion of the left external iliac artery. The occlusion was successfully and safely recanalized using contralateral femoral approach with passage of interventional hardware through the struts of the stents in the aortic bifurcation. Presence of contemporary flexible nitinol stents with open-cell design in the aortic bifurcation is not a contraindication to the use of the contralateral femoral approach.


A
B
C
D
5-7

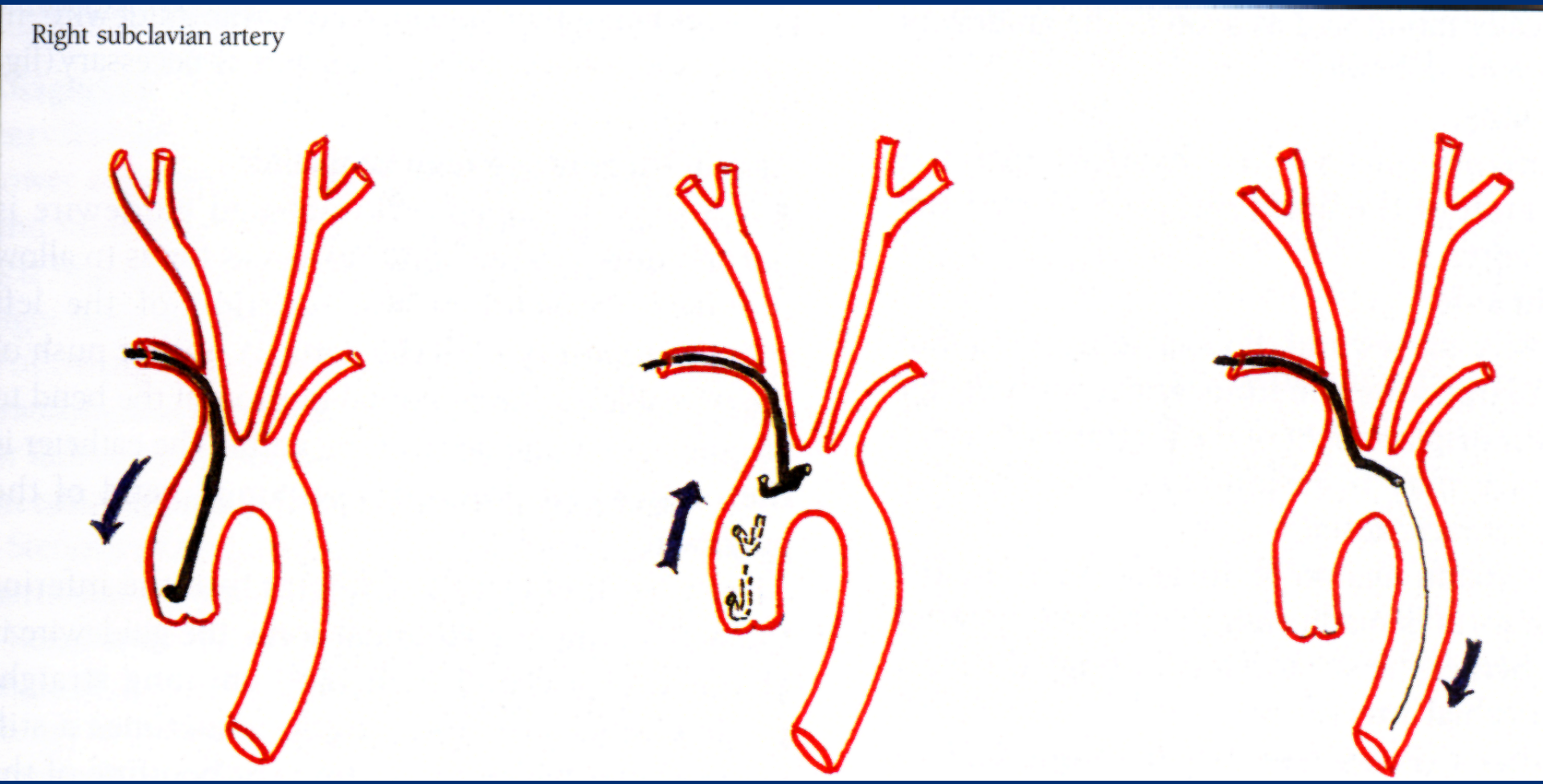
# Percutaneous Brachial Approach

# Brachial approach - landmarks





Left Subclavian artery to Descending Aorta

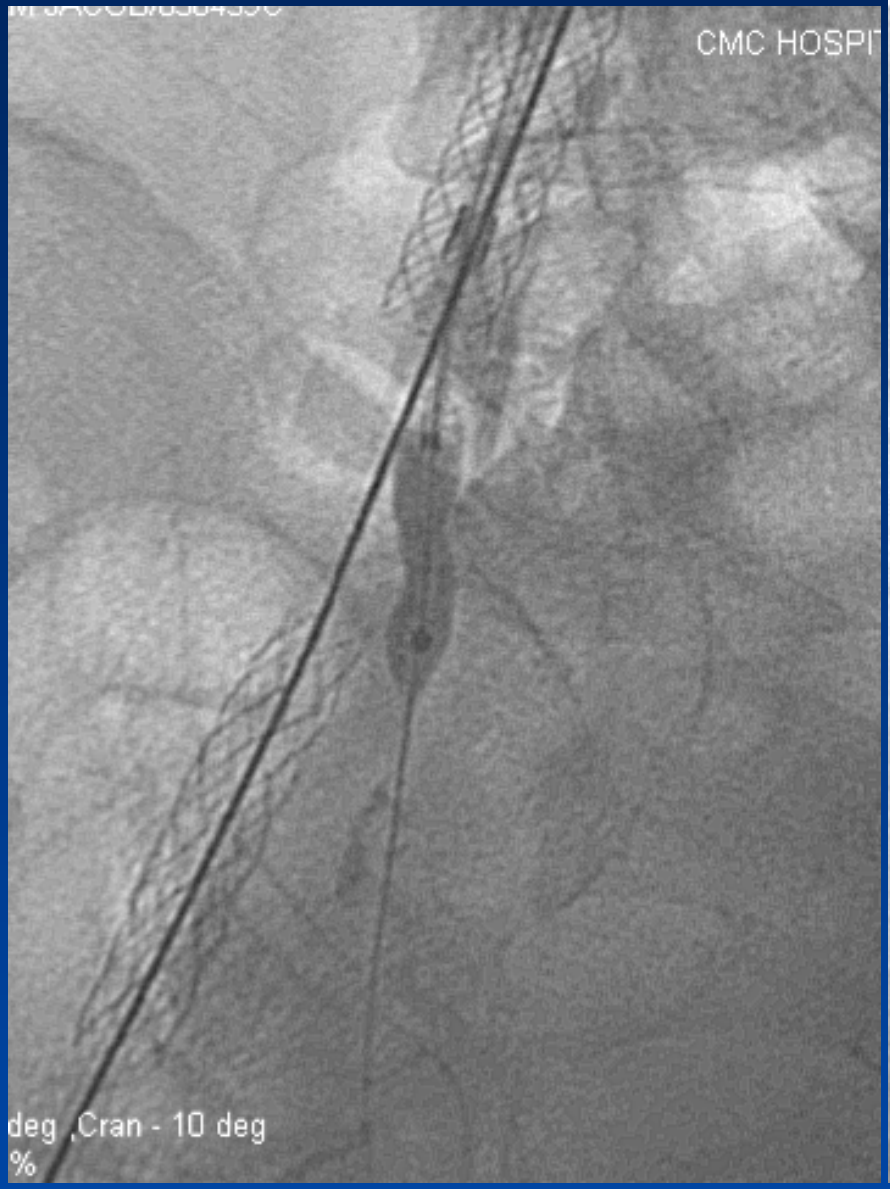



Right Subclavian artery to Descending Aorta

# 5.6.2006

81 male, smoker, HT, LLL SBP 100, RLL 120
S/P RCIA+REIA stents 1999 (USA)
S/P Rt fem-pop bypass 2/2006 (Cochin) – patent
Now presents with Rt gluteal claudication

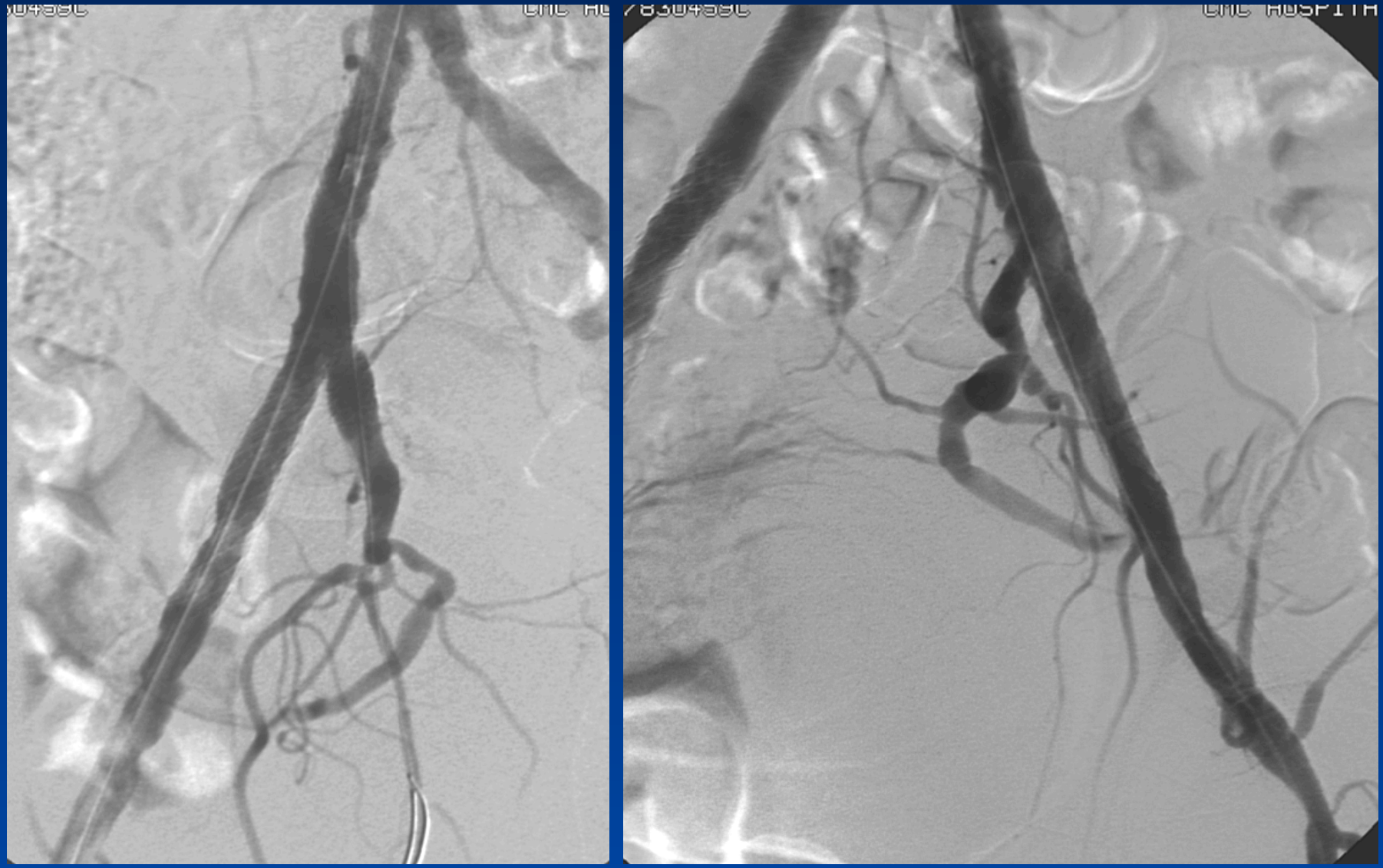
AJ 830459C





5.6.2006

AJ 830459C



5.6.2006

AJ 830459C

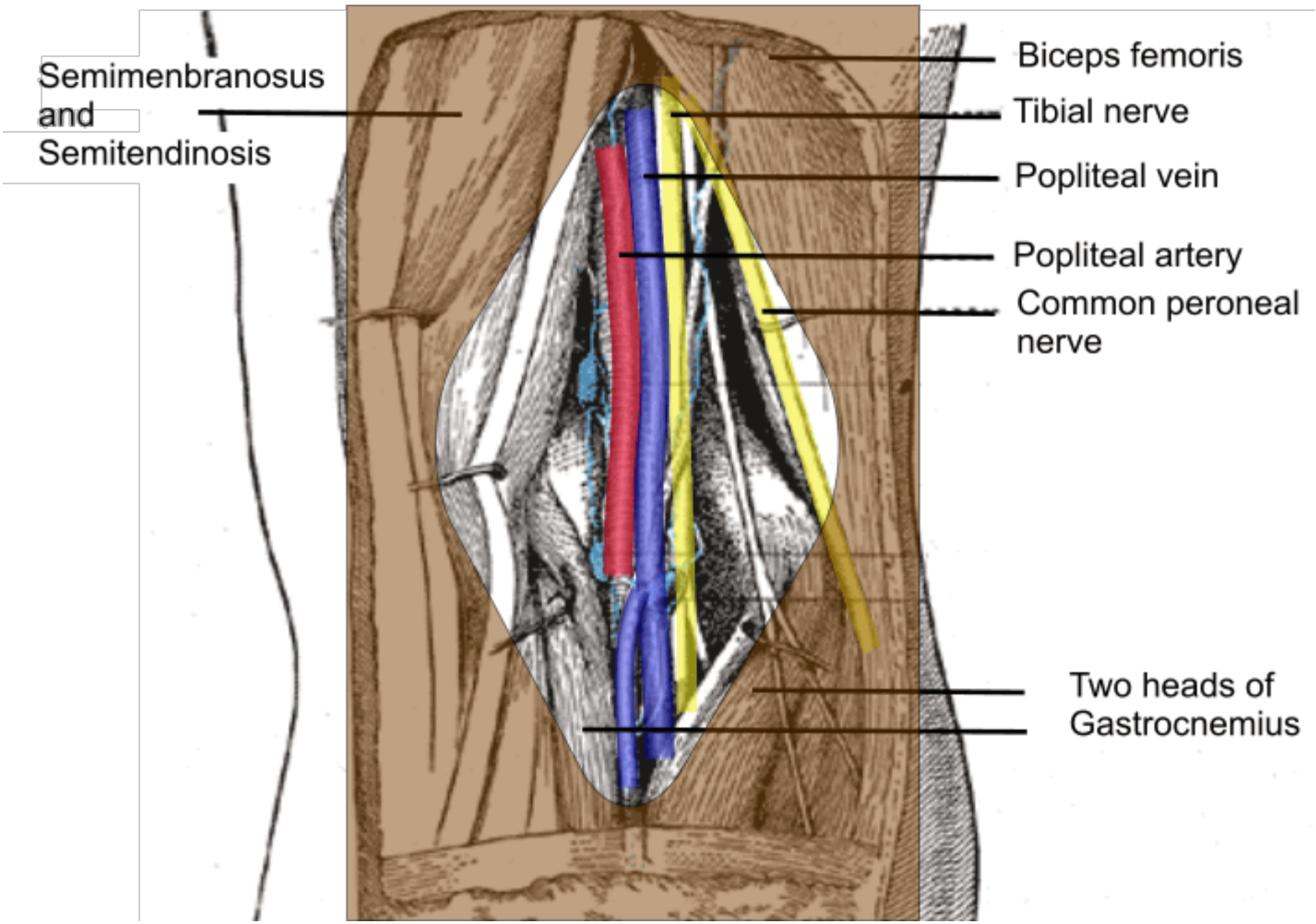
# The Popliteal approach

1. Retrograde
2. Antegrade

# Popliteal Approach - Technique

- Supine – retrograde femoral or brachial puncture for angiographic visualization
- Bladder catheterization
- Prone position – puncture above knee joint under fluoroscopic guidance
- Micropuncture needle
- Placement of guidewire and sheath in standard fashion

# Right popliteal fossa



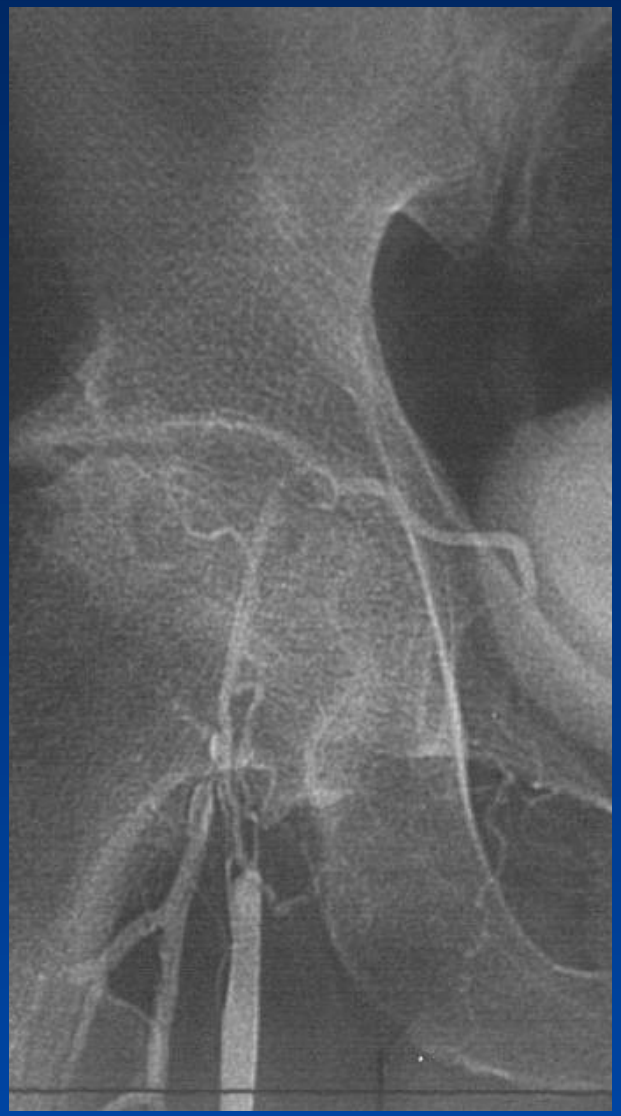
# Popliteal Artery puncture

- In order to minimize the risk of creating an arteriovenous fistula, we recommend a skin incision be located 3-4 cm above the joint level as determined by fluoroscopy, and a puncture directed obliquely from caudal to cranial and from medial to lateral.

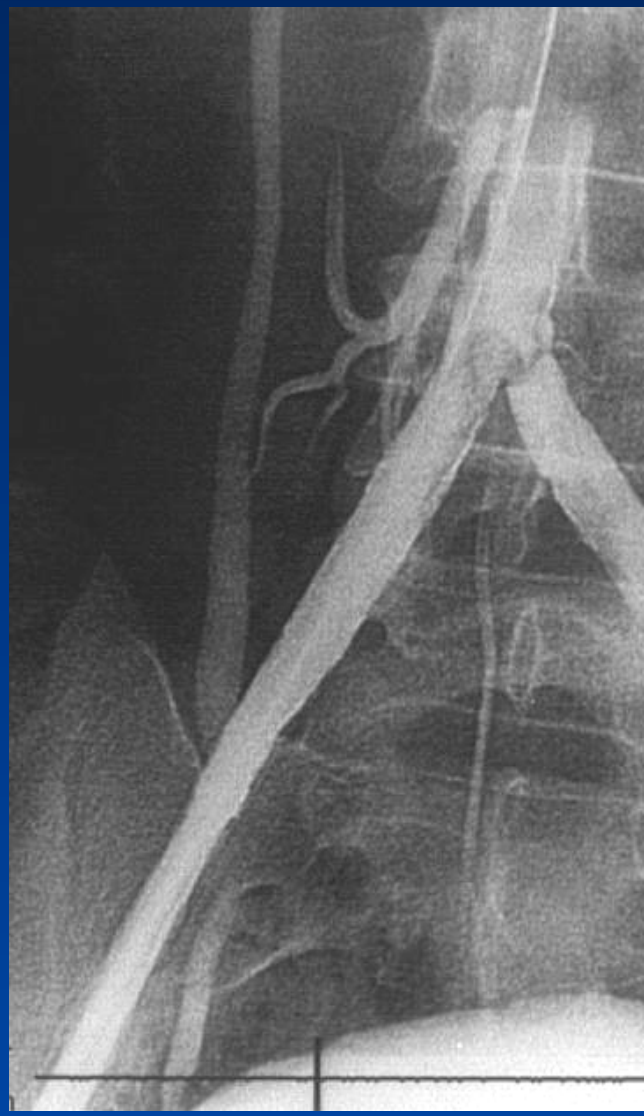
Trigaux JP, Van Beers B, De Wispelaere JF. Anatomic relationship between the popliteal artery and vein: a guide to accurate angiographic puncture. AJR Am J Roentgenol. 1991;157:1259-62.

# Iliac and CFA Recanalization – Popliteal + brachial approach

Supine



Prone

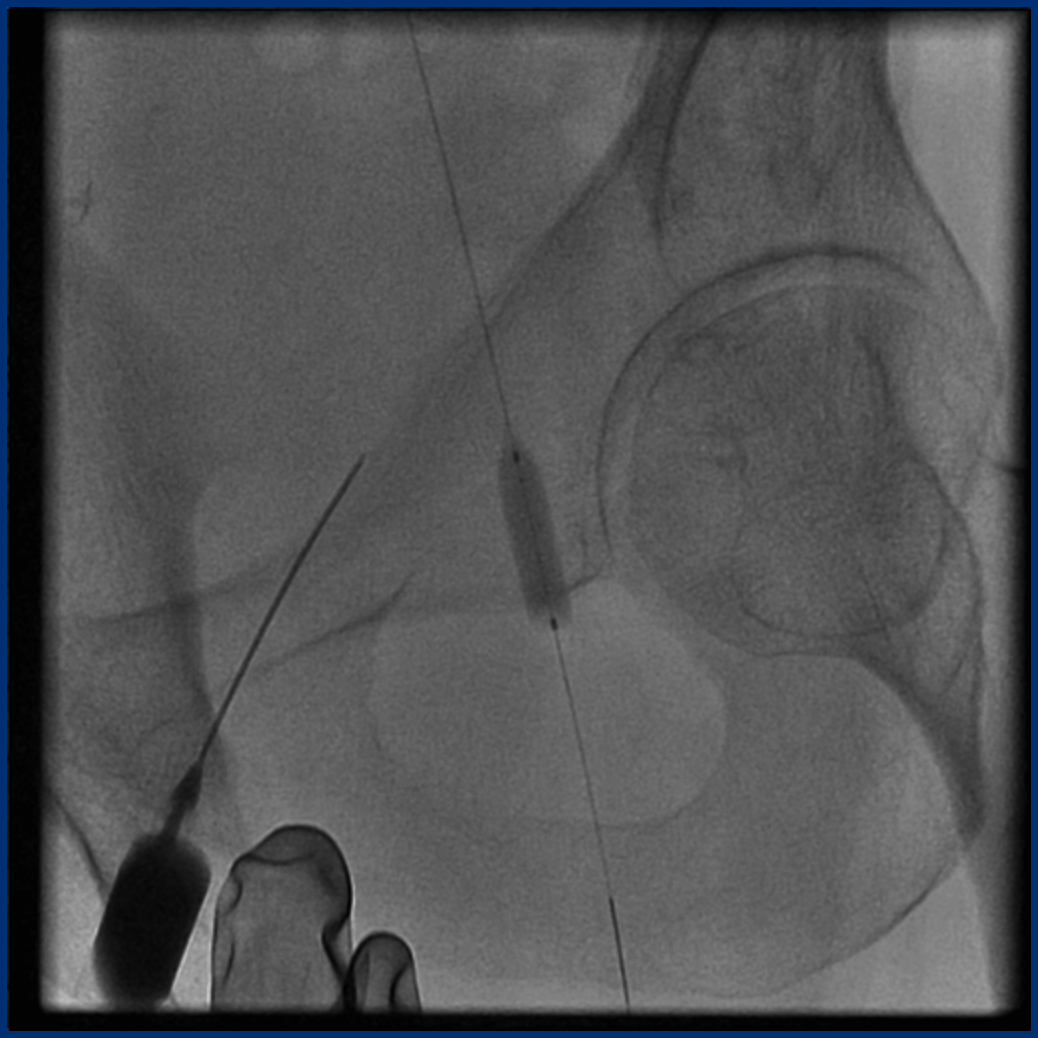


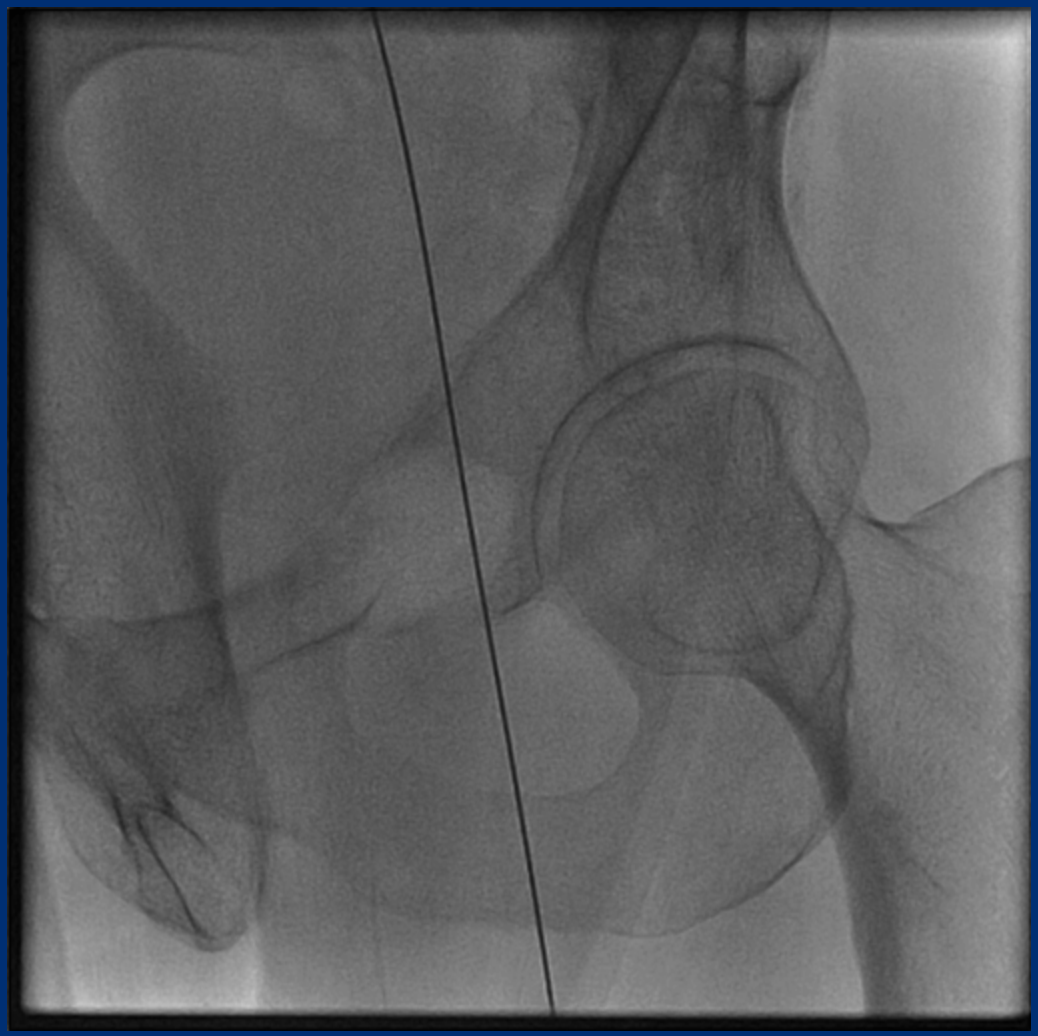
Prone

# Complications of FA puncture

- Bleeding: Groin and Retroperitoneal
- Pseudoaneurysm
- Arteriovenous fistula
- Arterial/Venous thrombosis
- Embolization
- Arterial dissection
- Femoral neuropathy

# Femoral Pseudoaneurysm



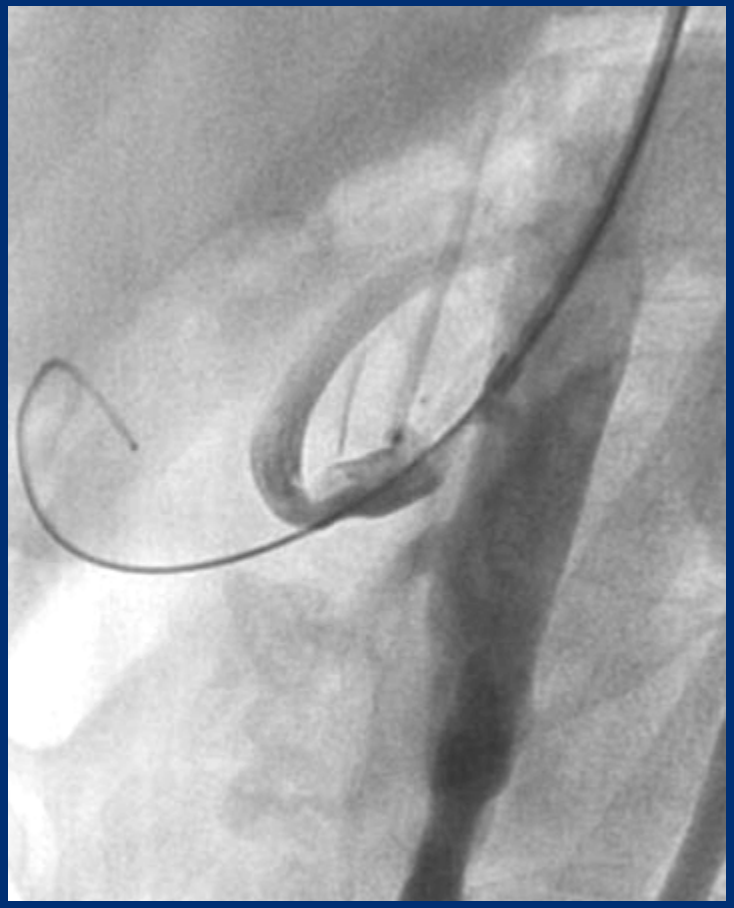


Left
Brachial
AV fistula

# Thrombosis

3.1.2011

5.10.2011

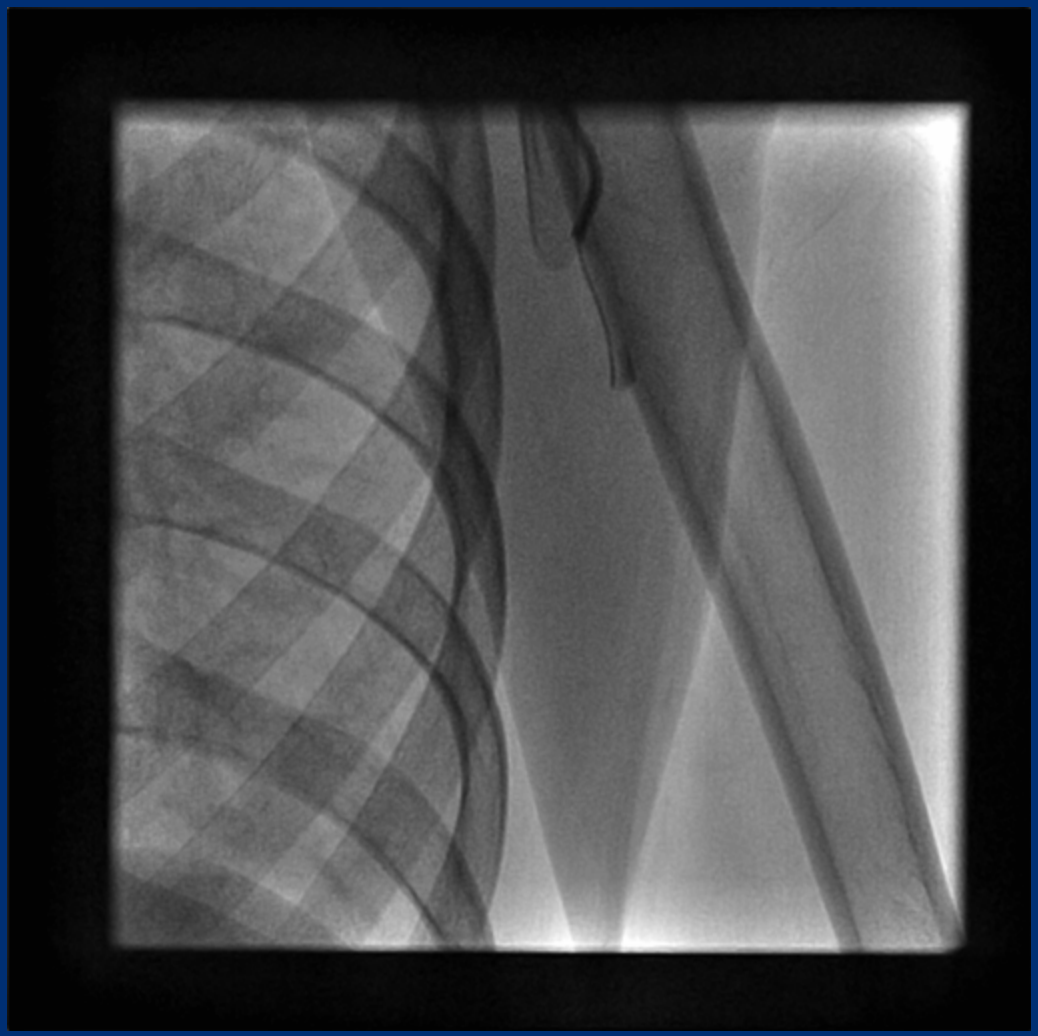


93% stenosis

31% residual

49% stenosis

5.1.2011



EN 823414D

5.1.2011

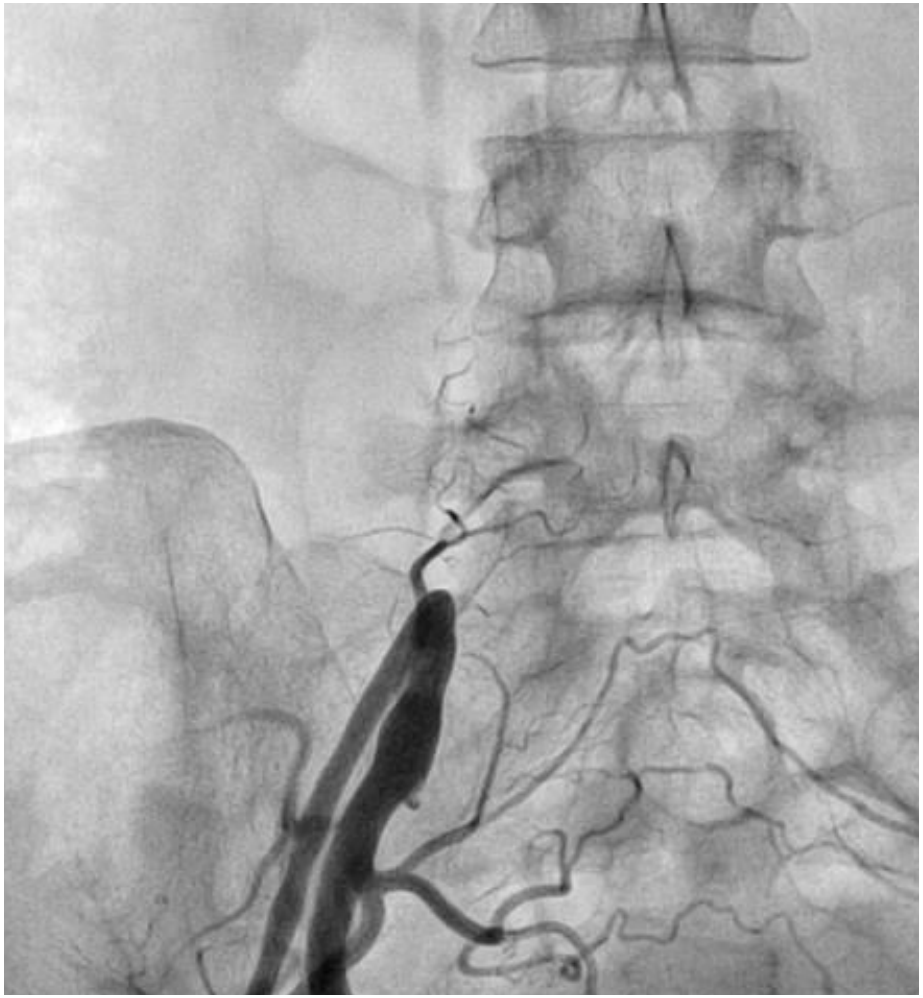
EN 823414D

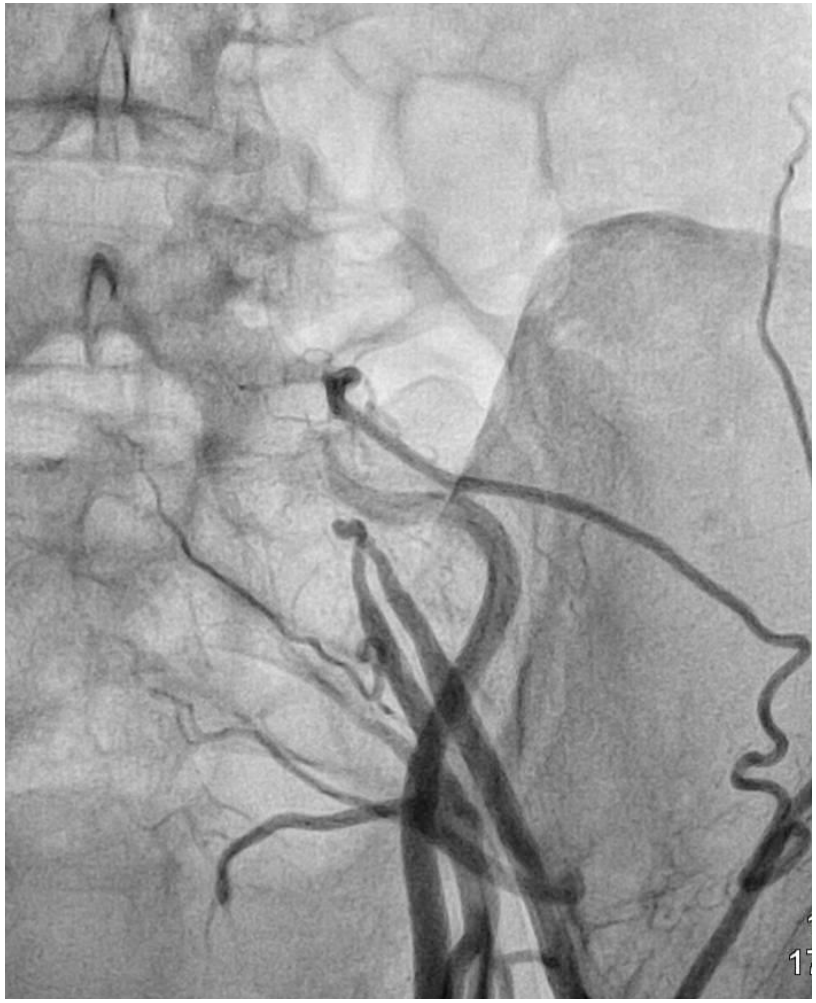
5.1.2011

# Case history

- 26-yr-old female
- Dyspnea and chest pain on exertion
- Claudication of all 4 limbs
- Fever and joint pains in the past
- Abdominal and carotid bruits
- Pulses and BP (130/70) recordable in all limbs except right lower limb (96/60)
- ESR 14/hr, CRP 3.44 mg/L

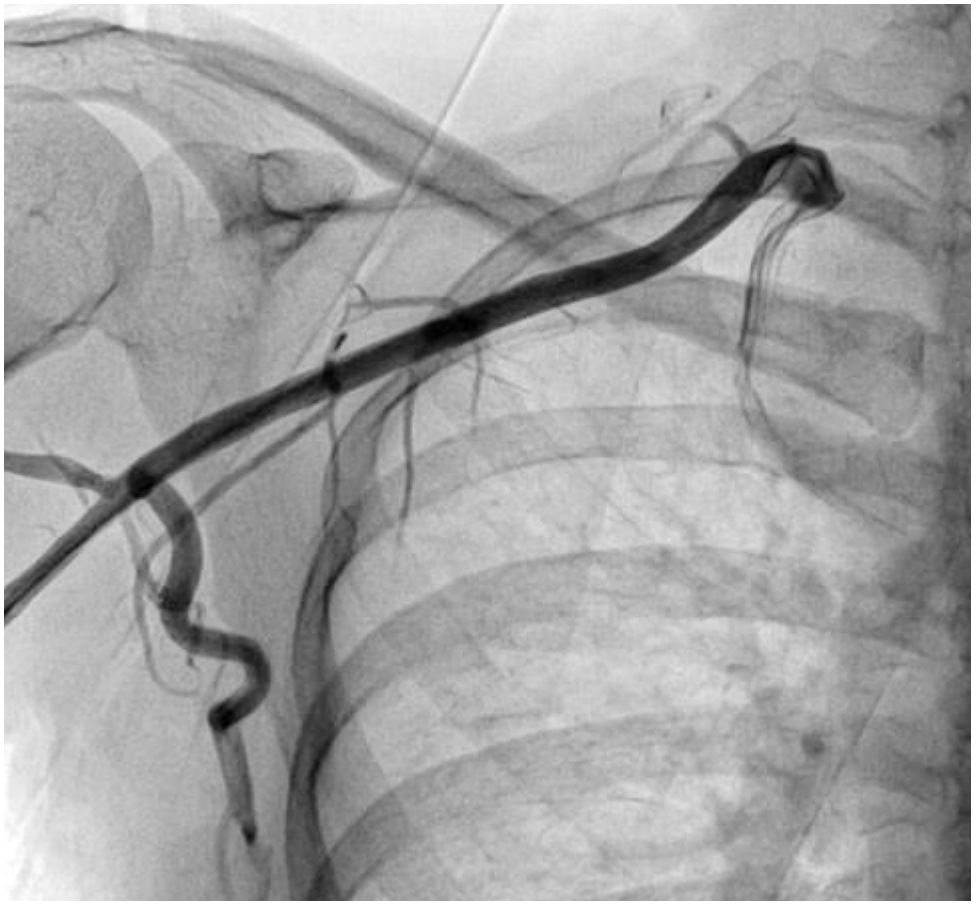
SK 333347F





9.11.2012

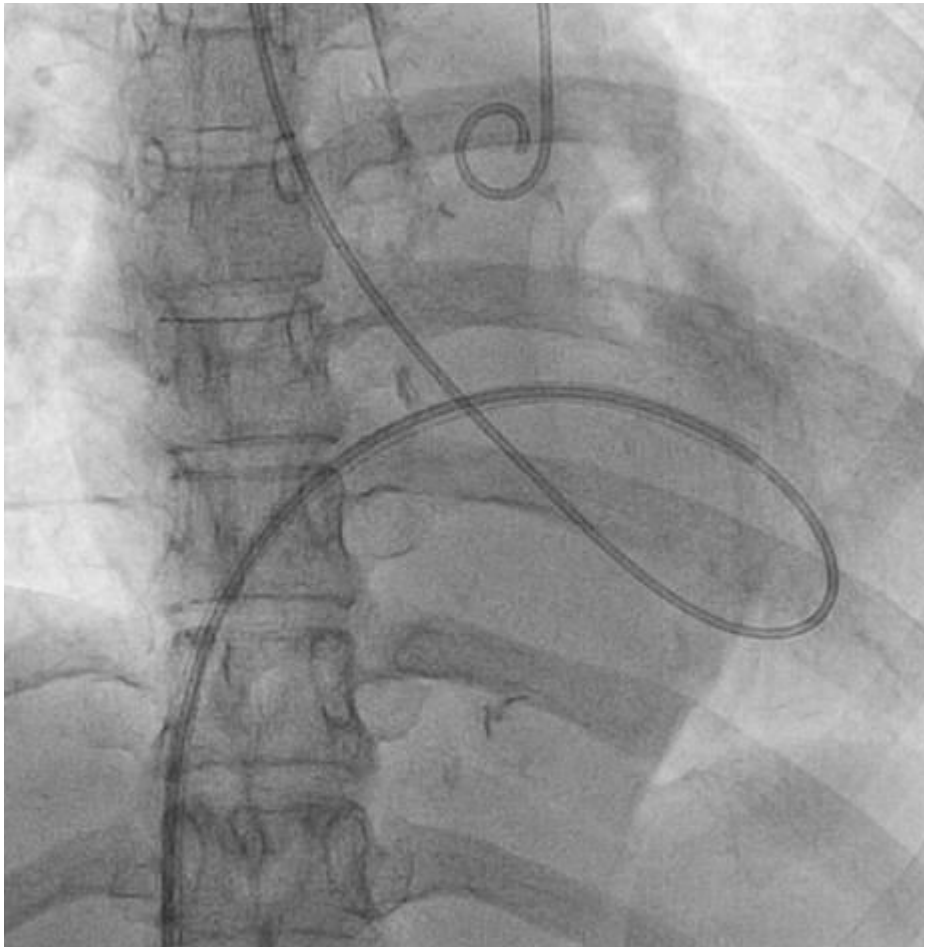
SK 333347F



9.11.2012

ESR 14, CRP 3.4

SK 333347F



9.11.2012

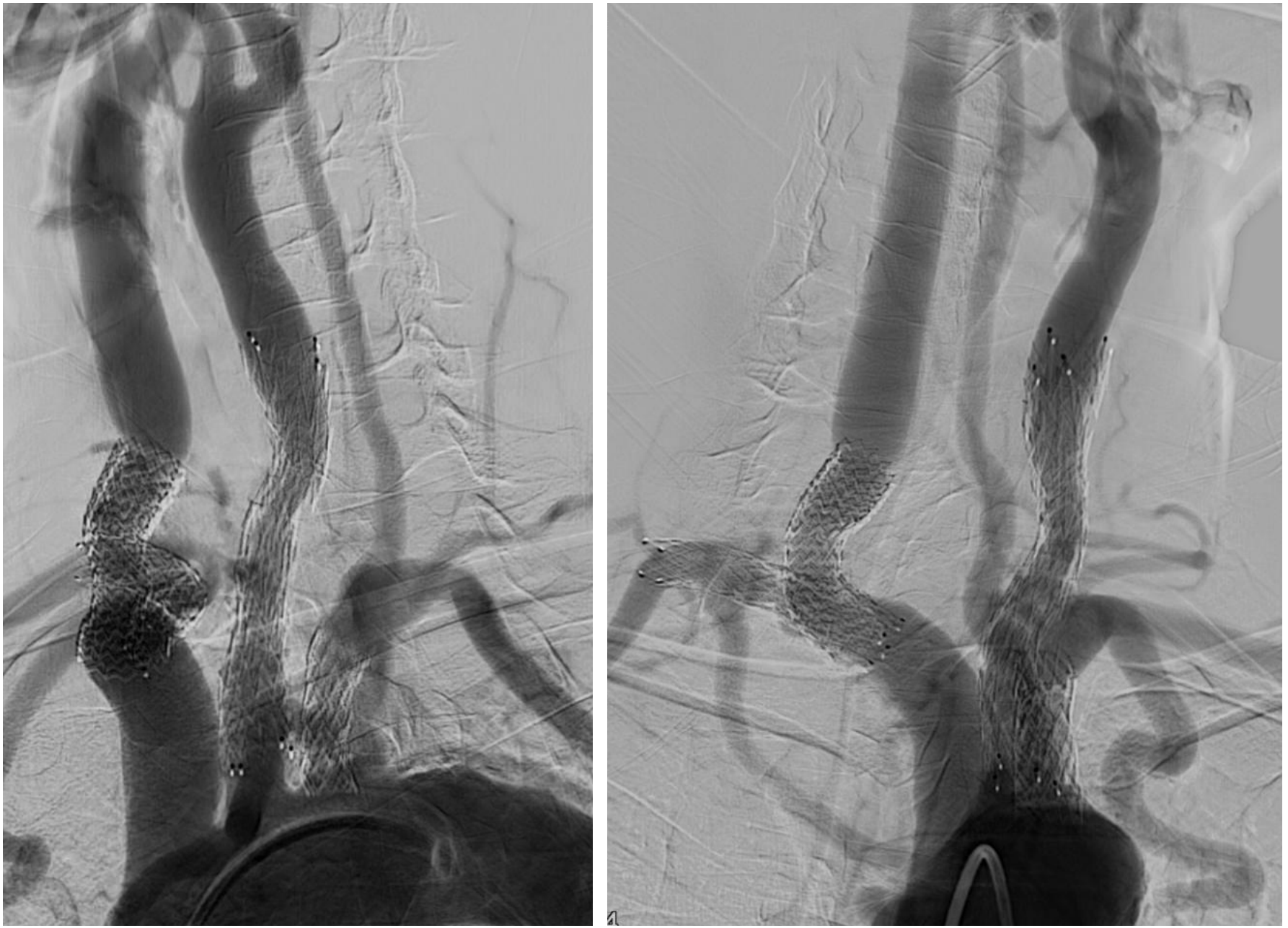
ESR 14, CRP 3.4

SK 333347F

9.11.2012


ESR 14, CRP 3.4

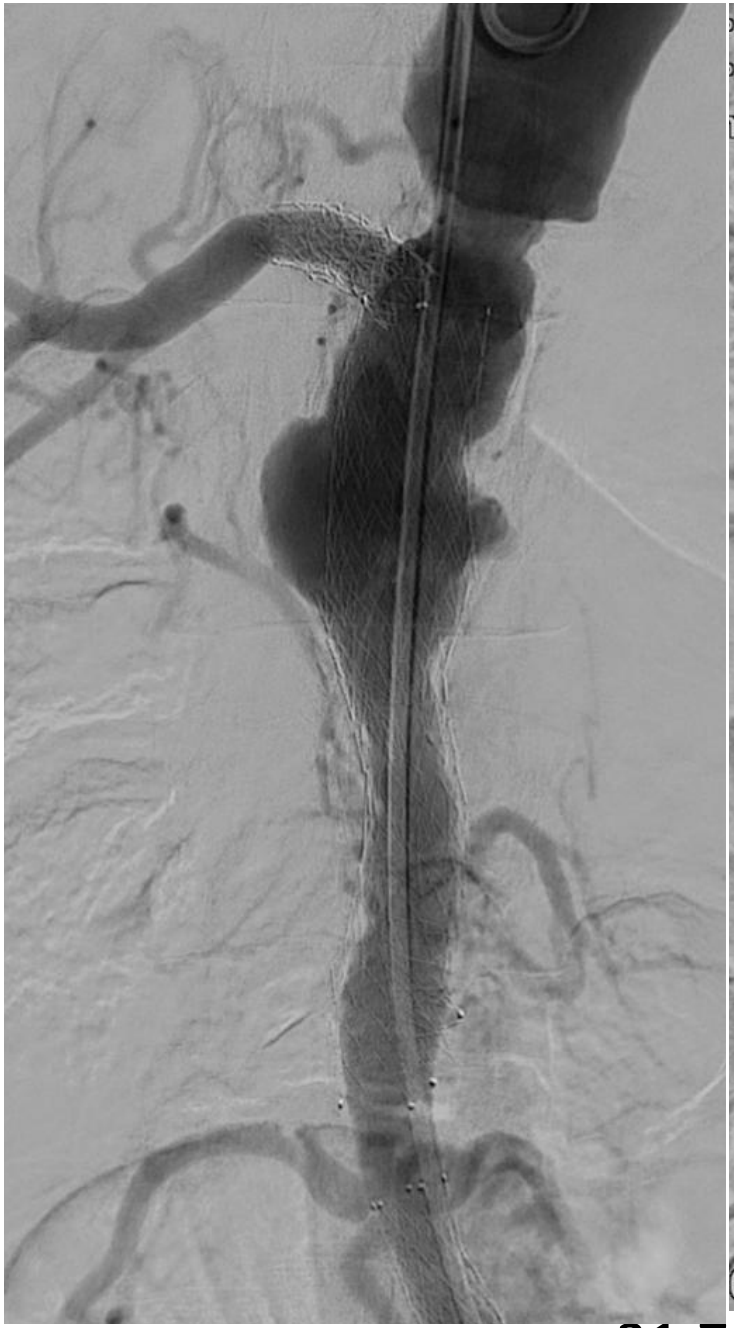
SK 333347F



ESR 55, CRP 13.7

21.7.2014

SK 333347F

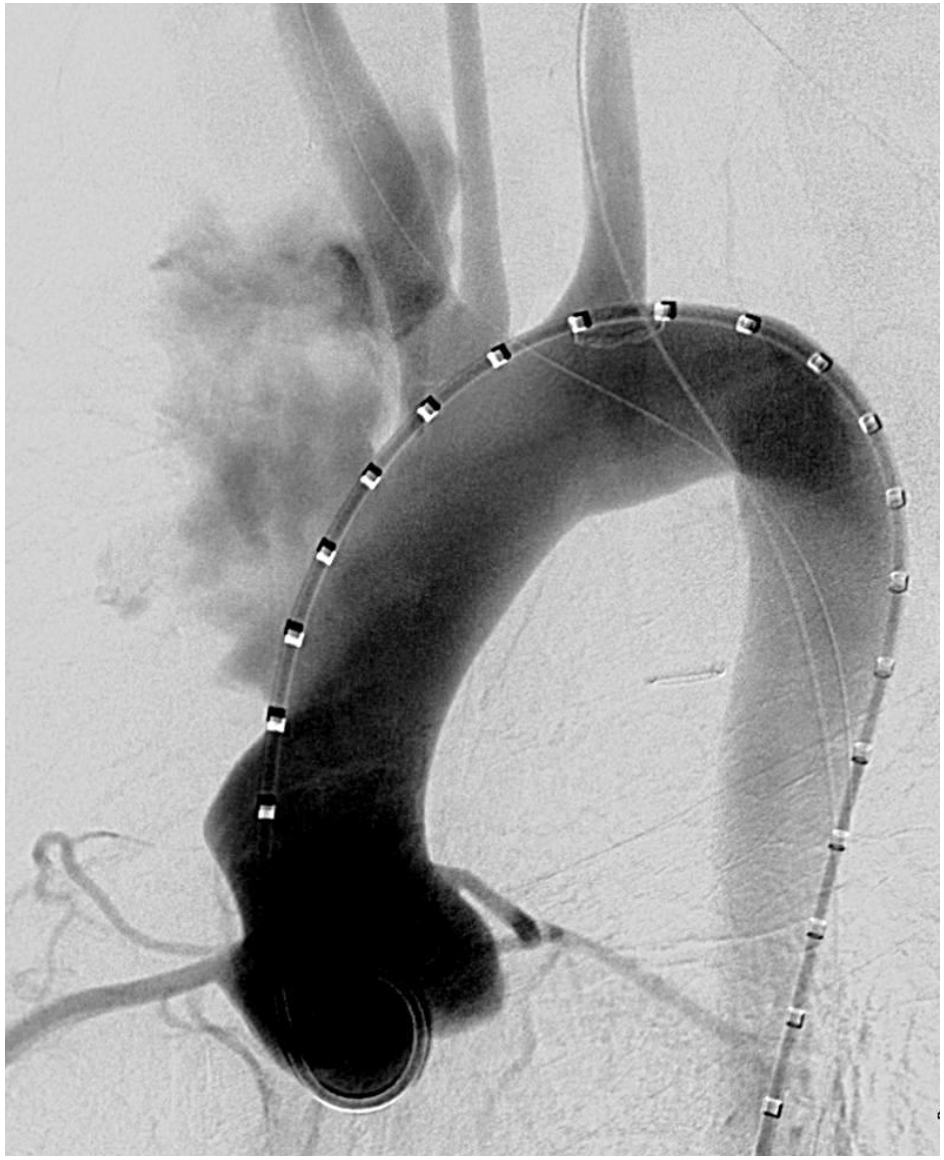


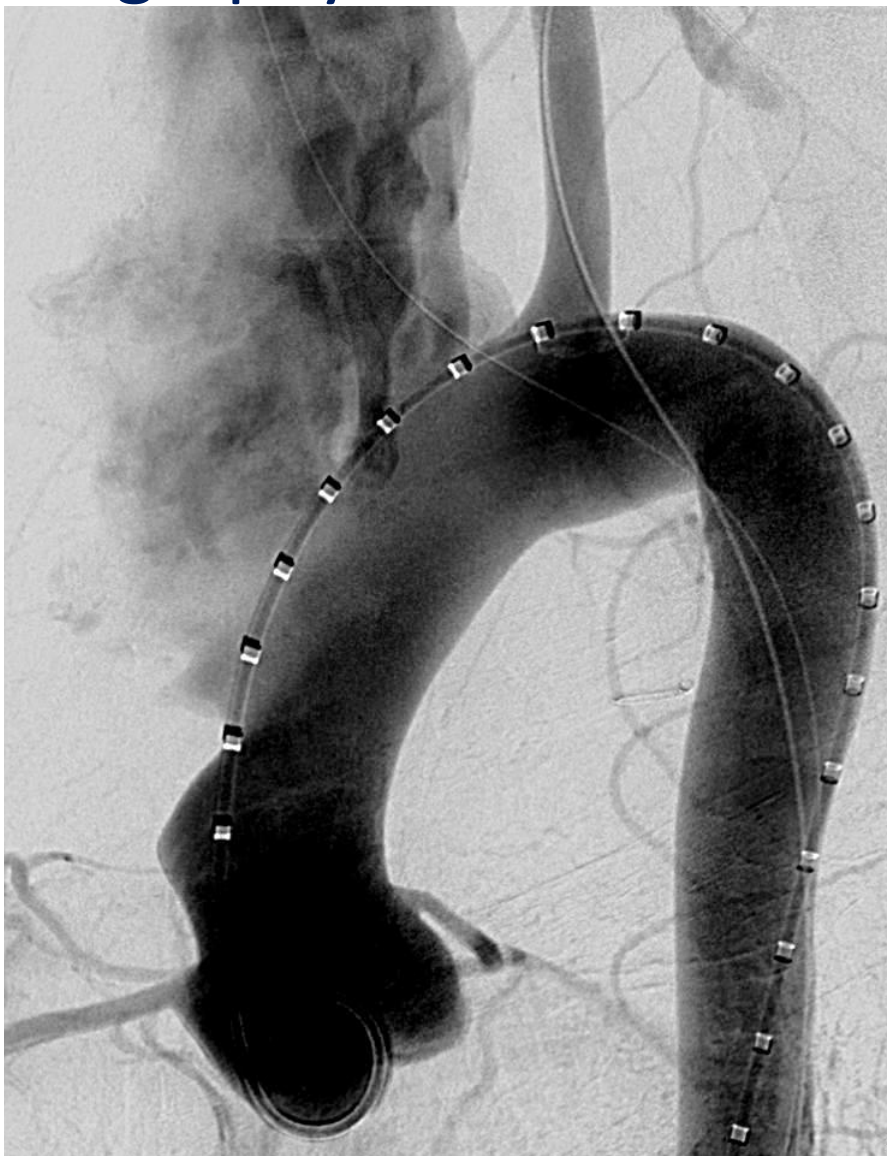

ESR 55, CRP 13.7

21.7.2014

KB 656375F

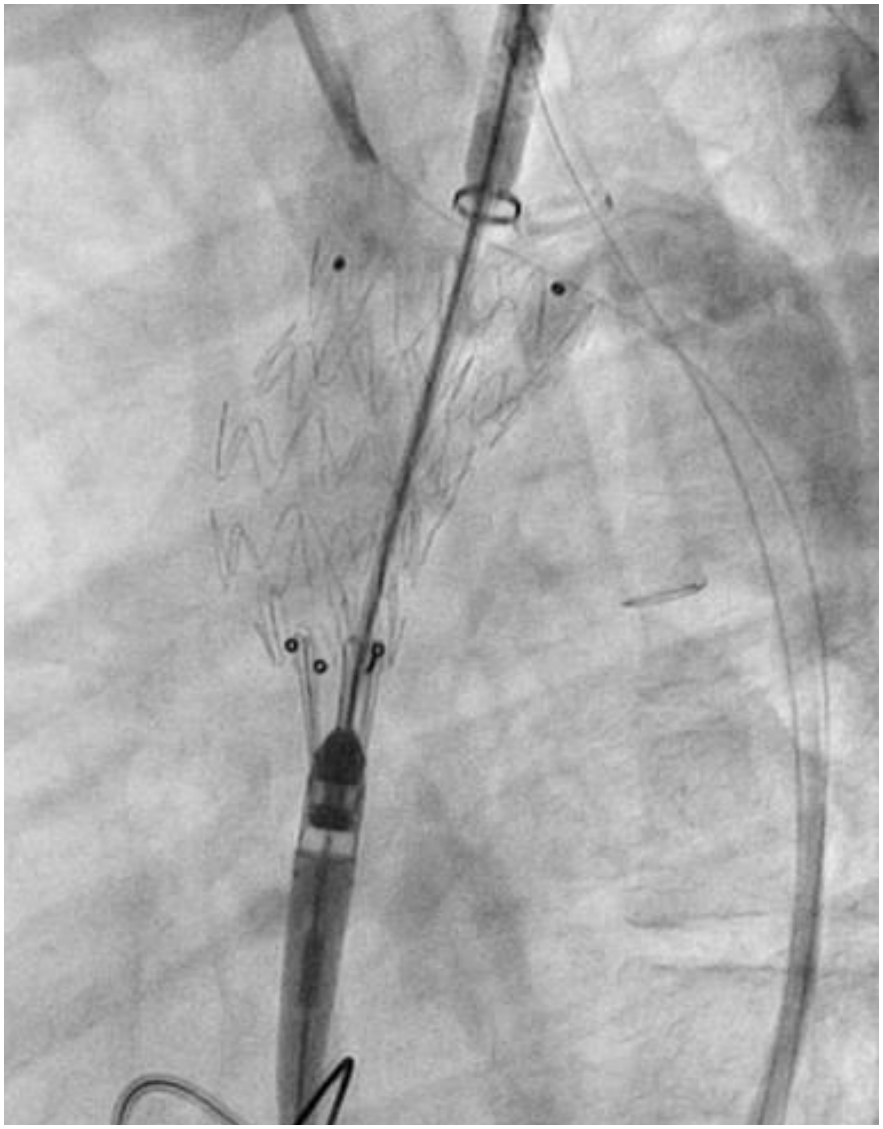
# Baseline aortography

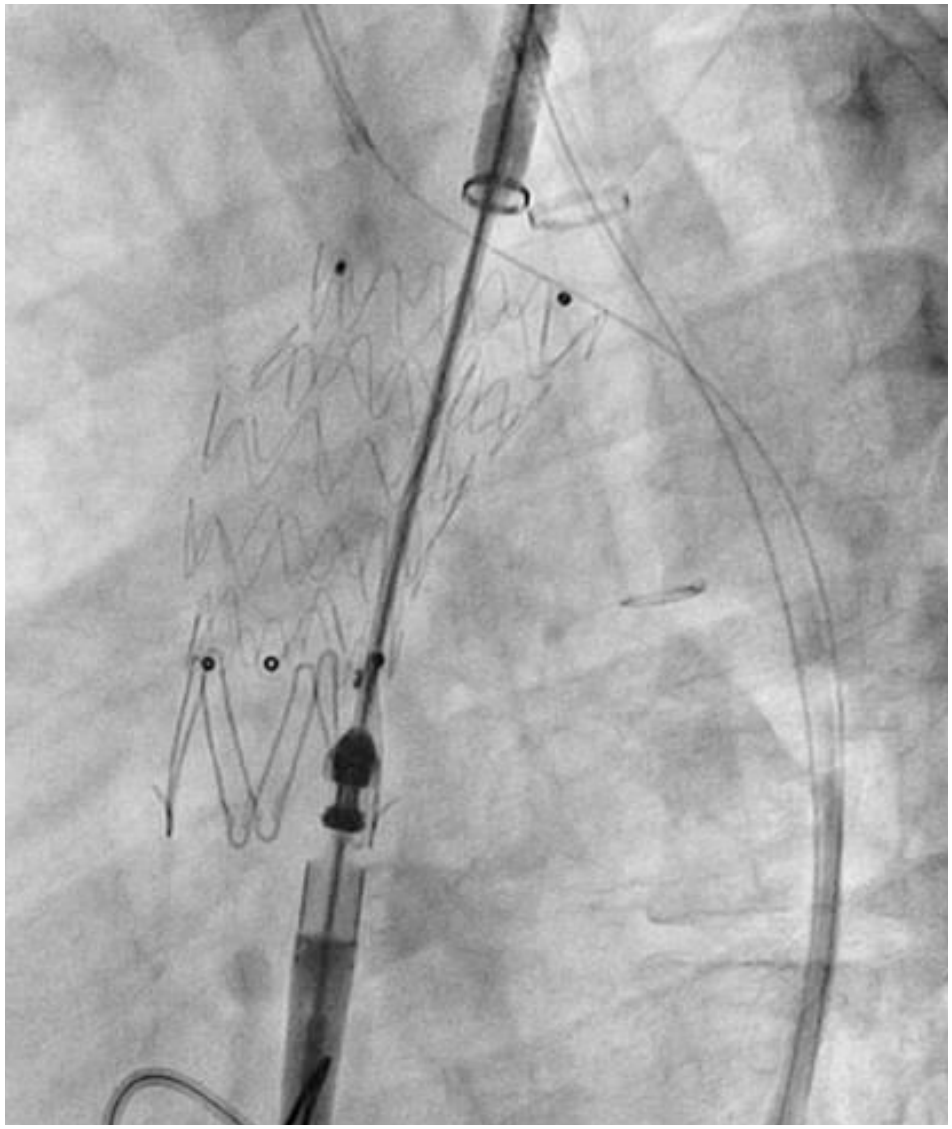




Early frame 7.9.2013 Late frame

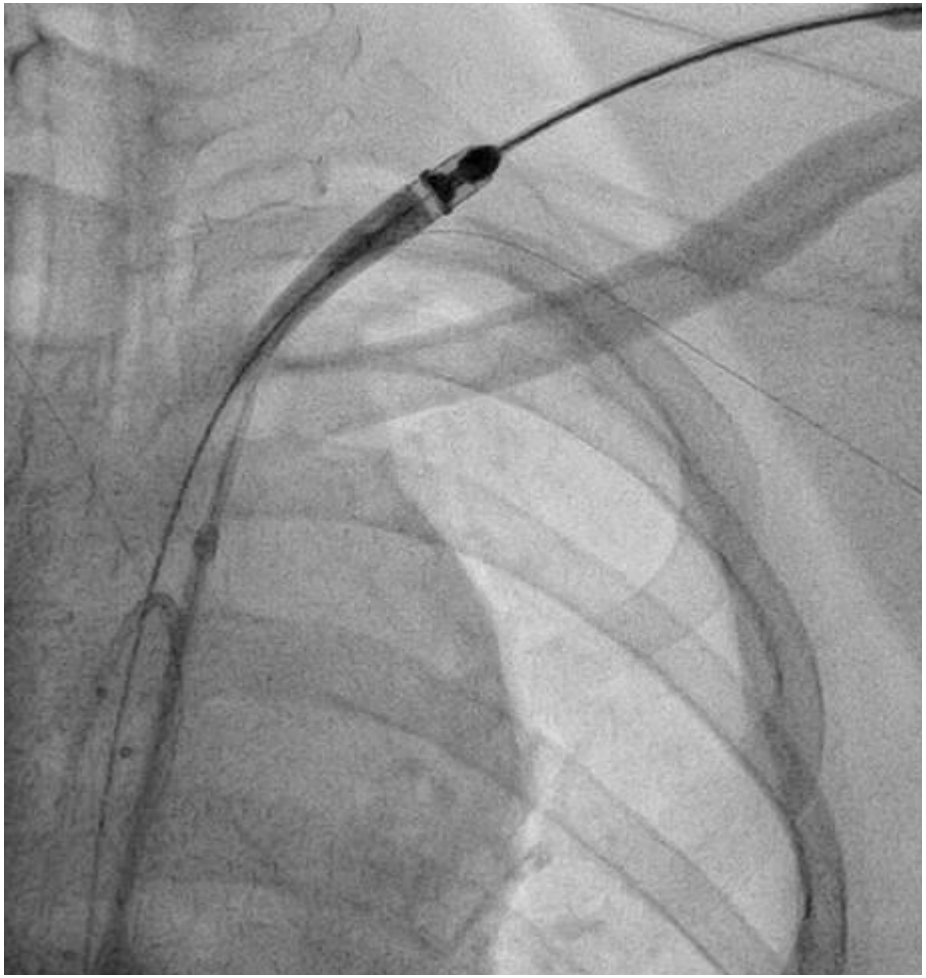
# Endurant release – introduced from LSA





7.9.2013

# Delivery system removal and LSA covered stent deployment



7.9.2013

KB 656375F

## Final - LAO

## Final - RAO

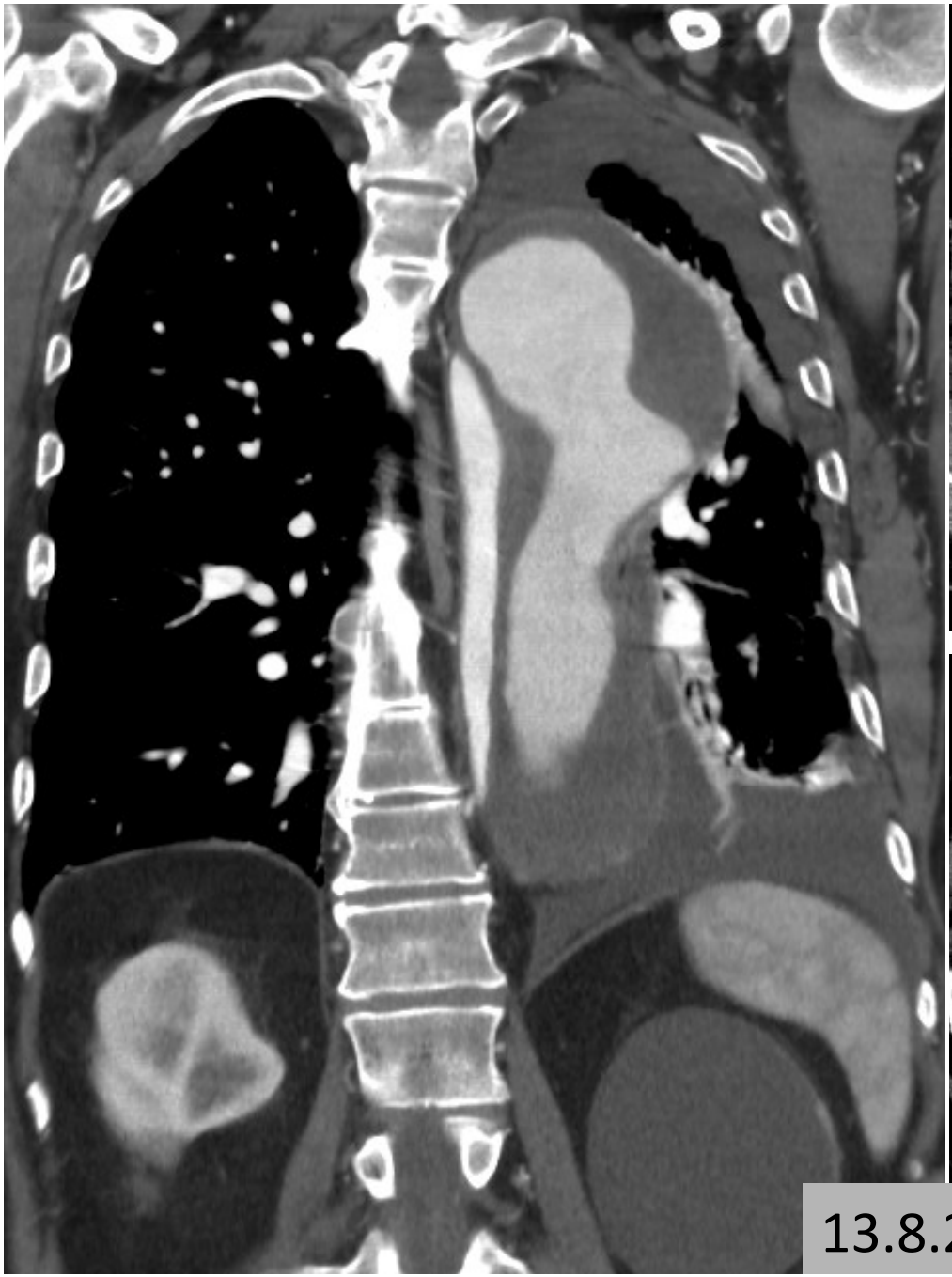
Trivial endoleak noted
in completion angiograms

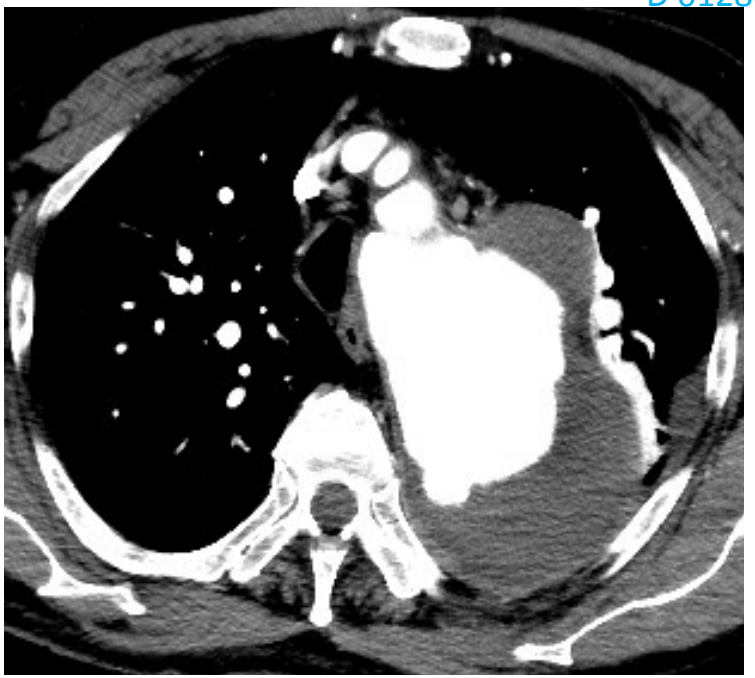
7.9.2013

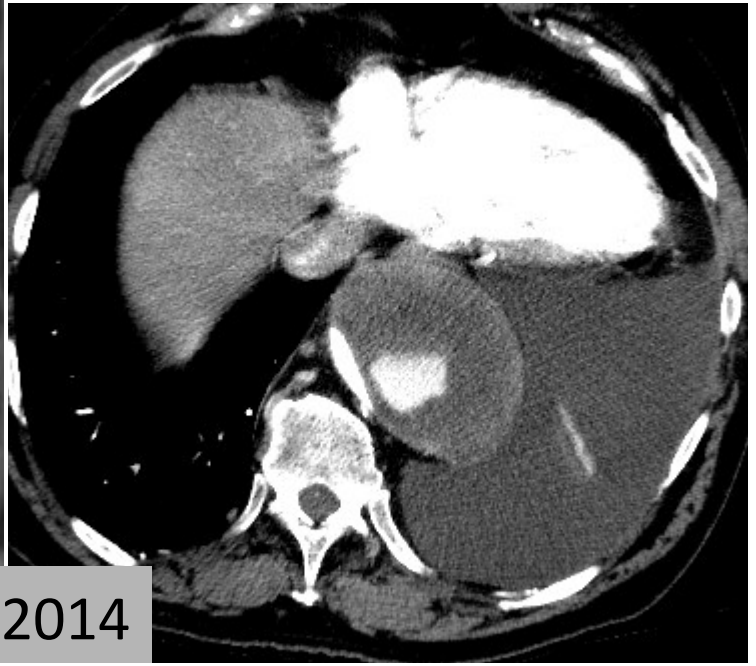
D 012807G

13.8.2014

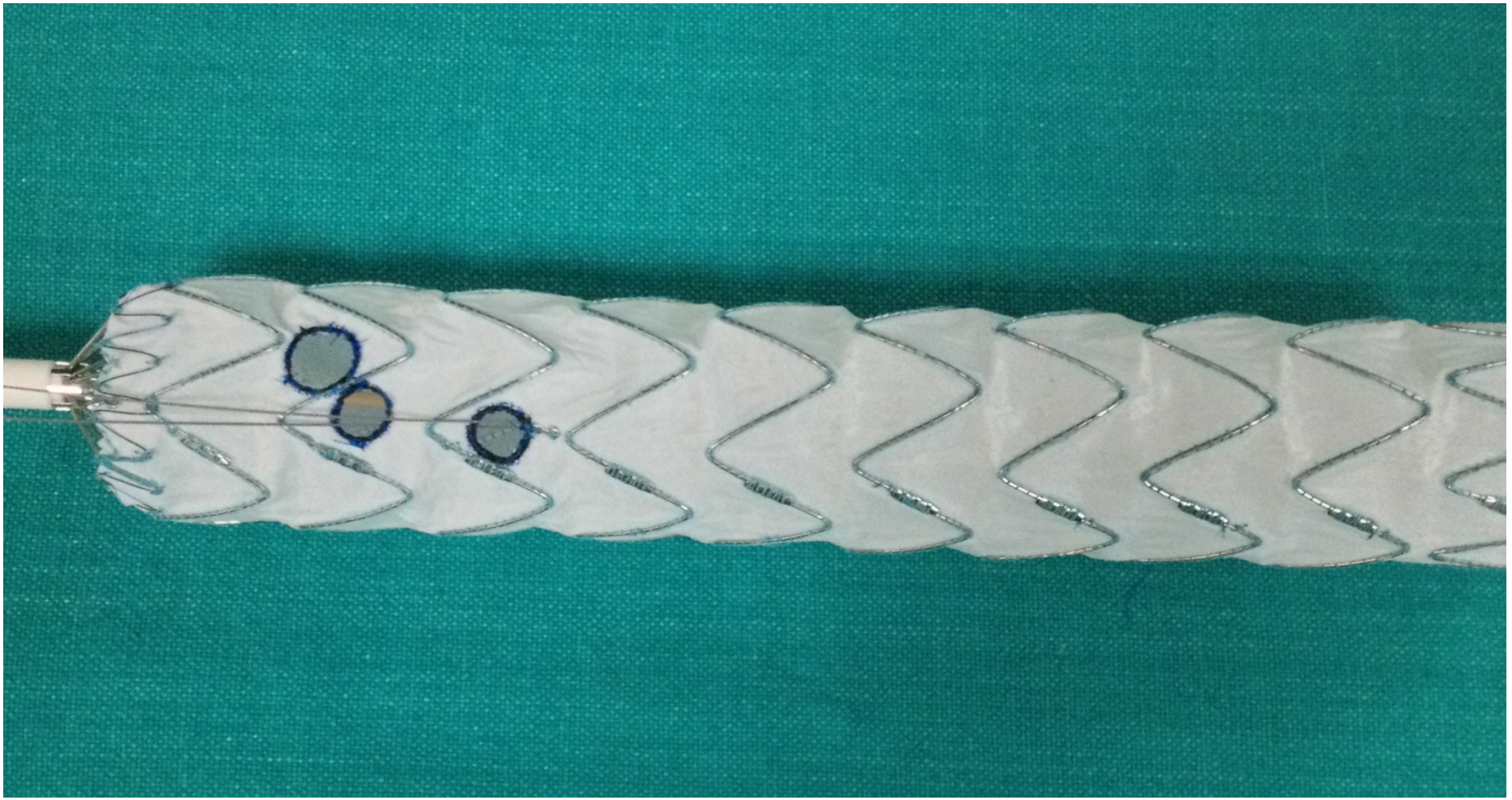
D 012807G

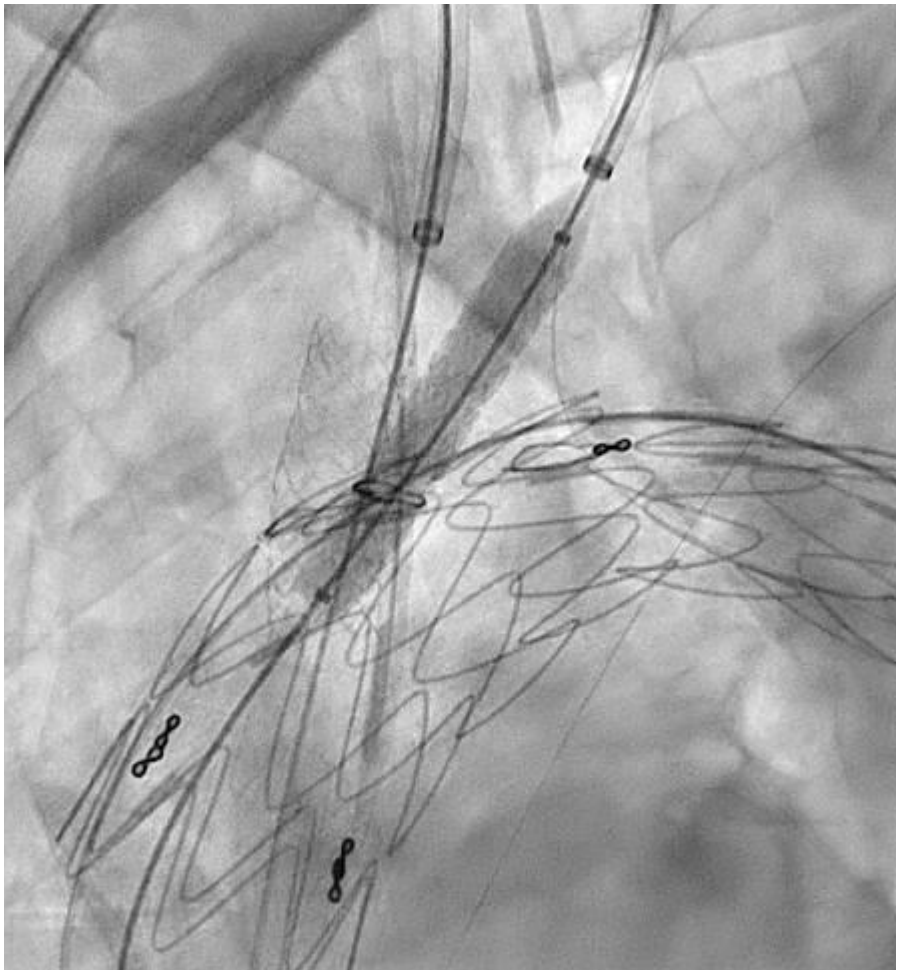


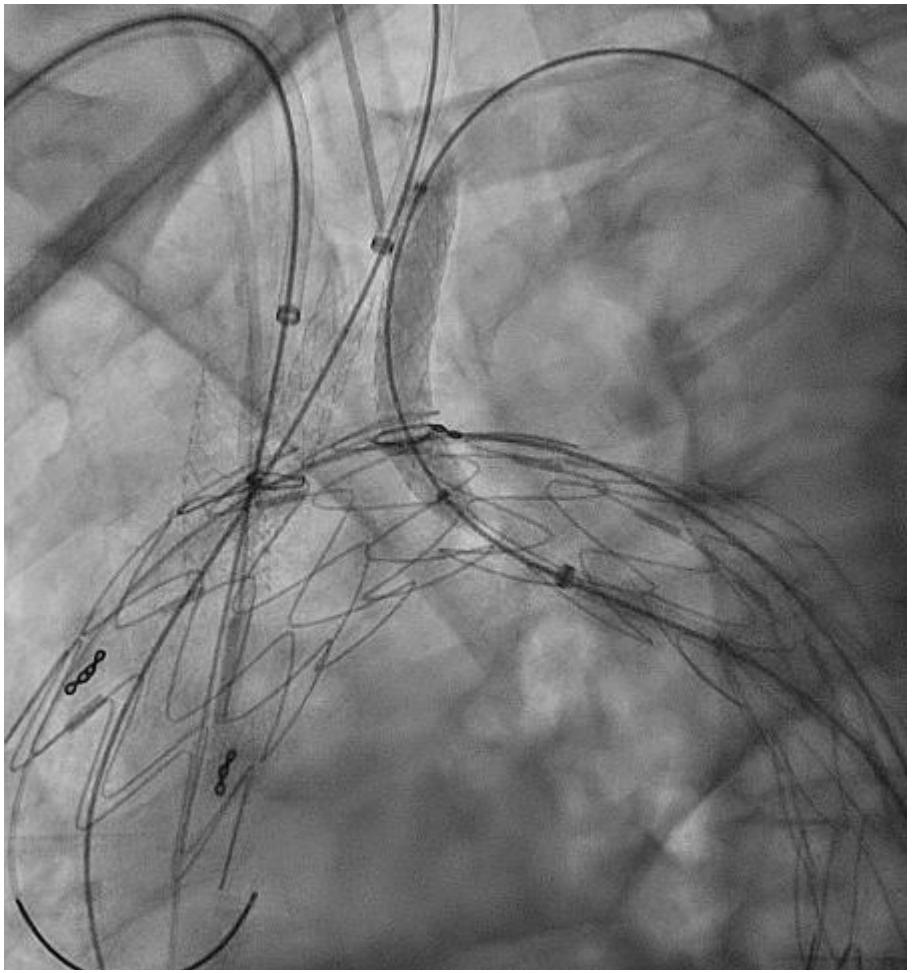




13.8.2014





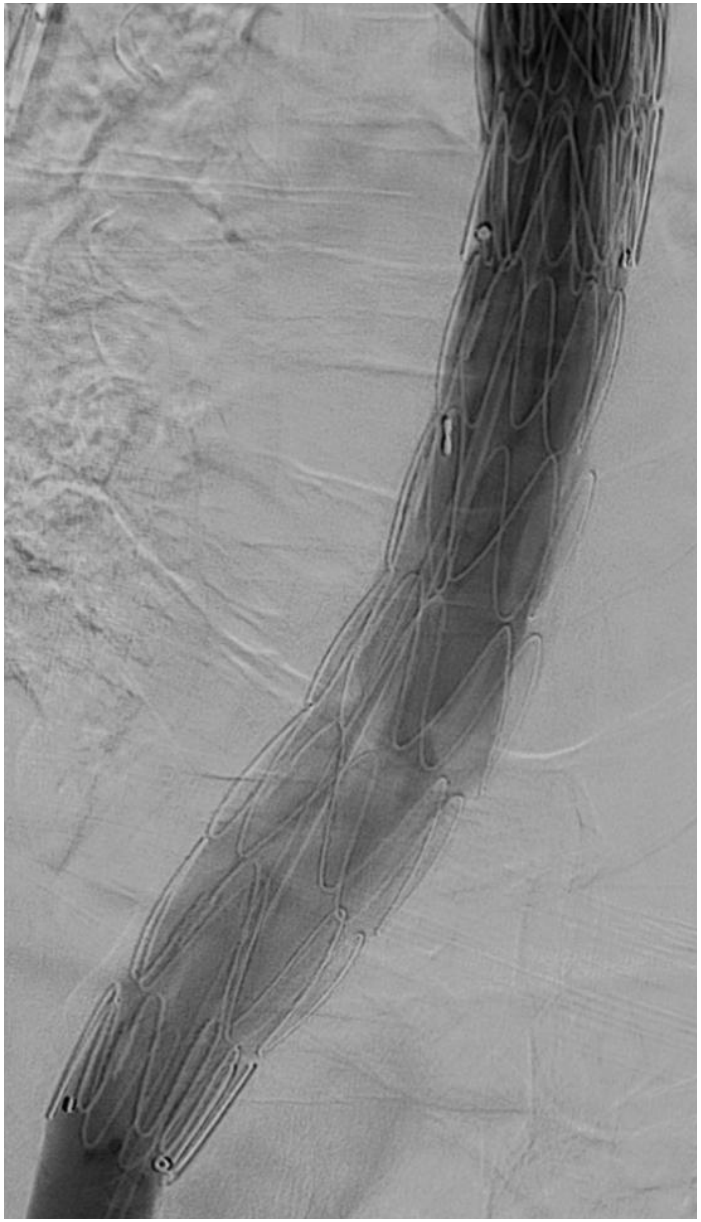


LCCA covered stent deployment

21.8.2014

LSA covered stent deployment

D 012807G

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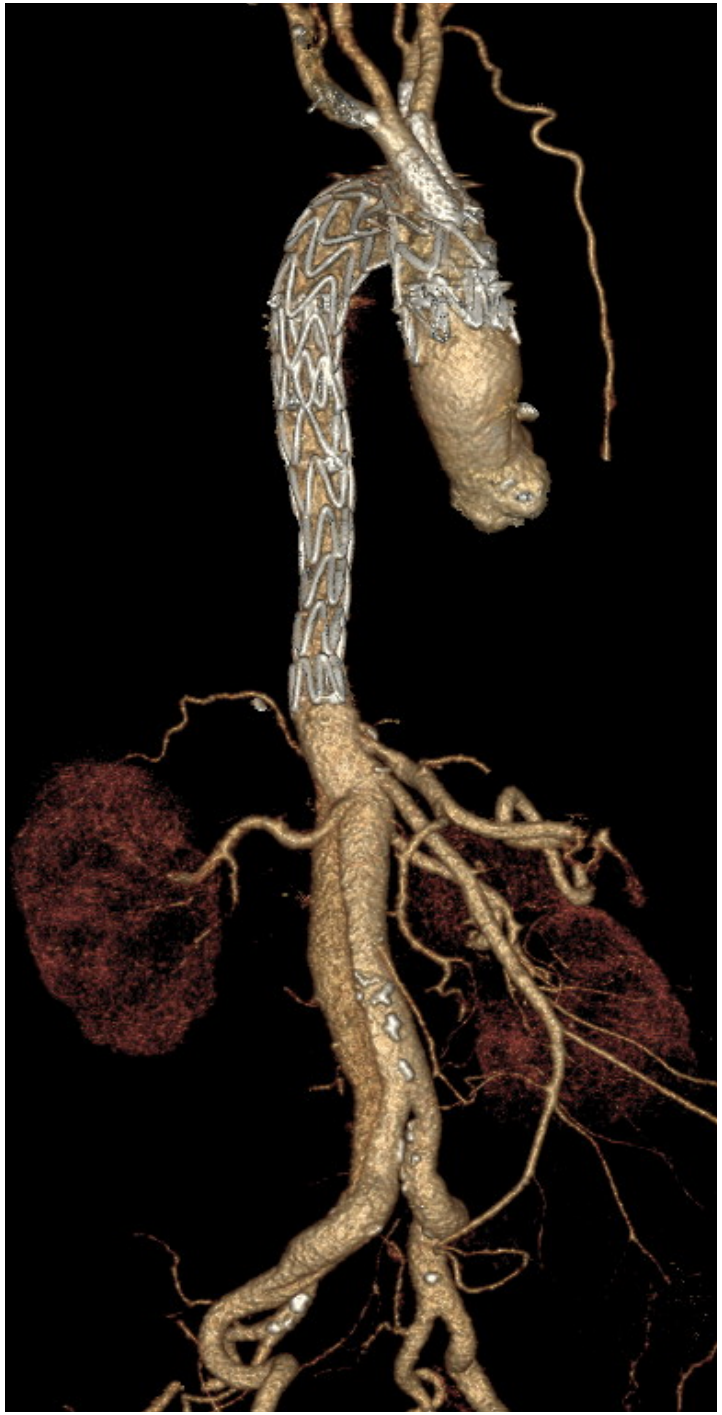
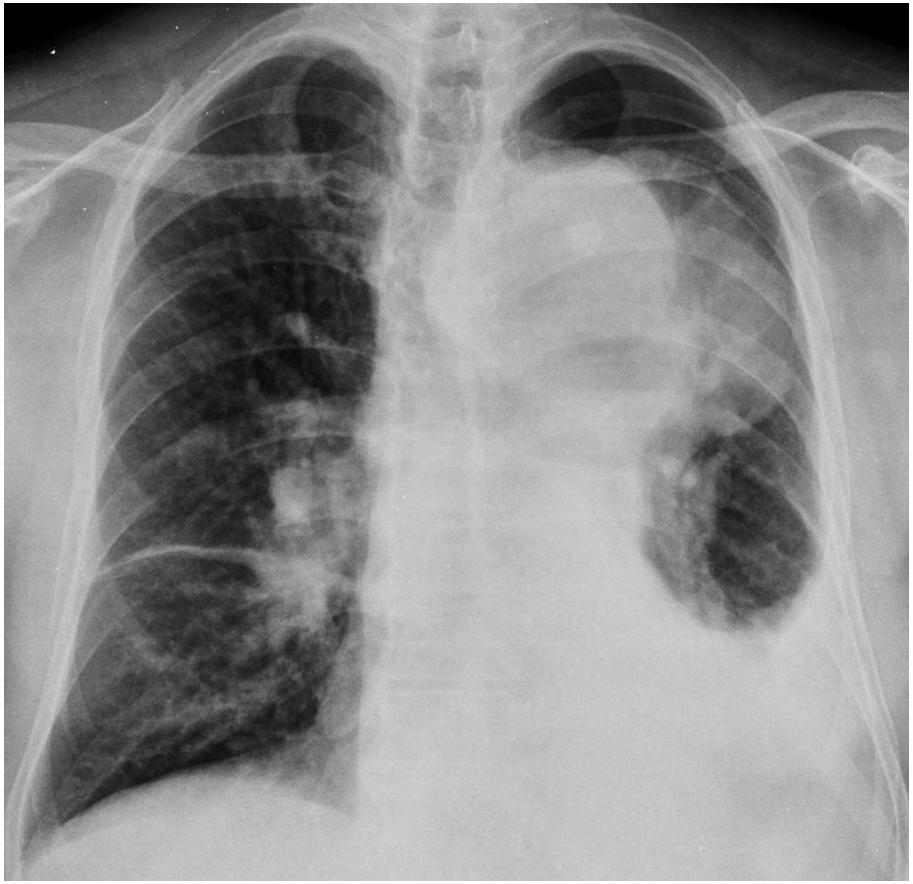
D 012807G



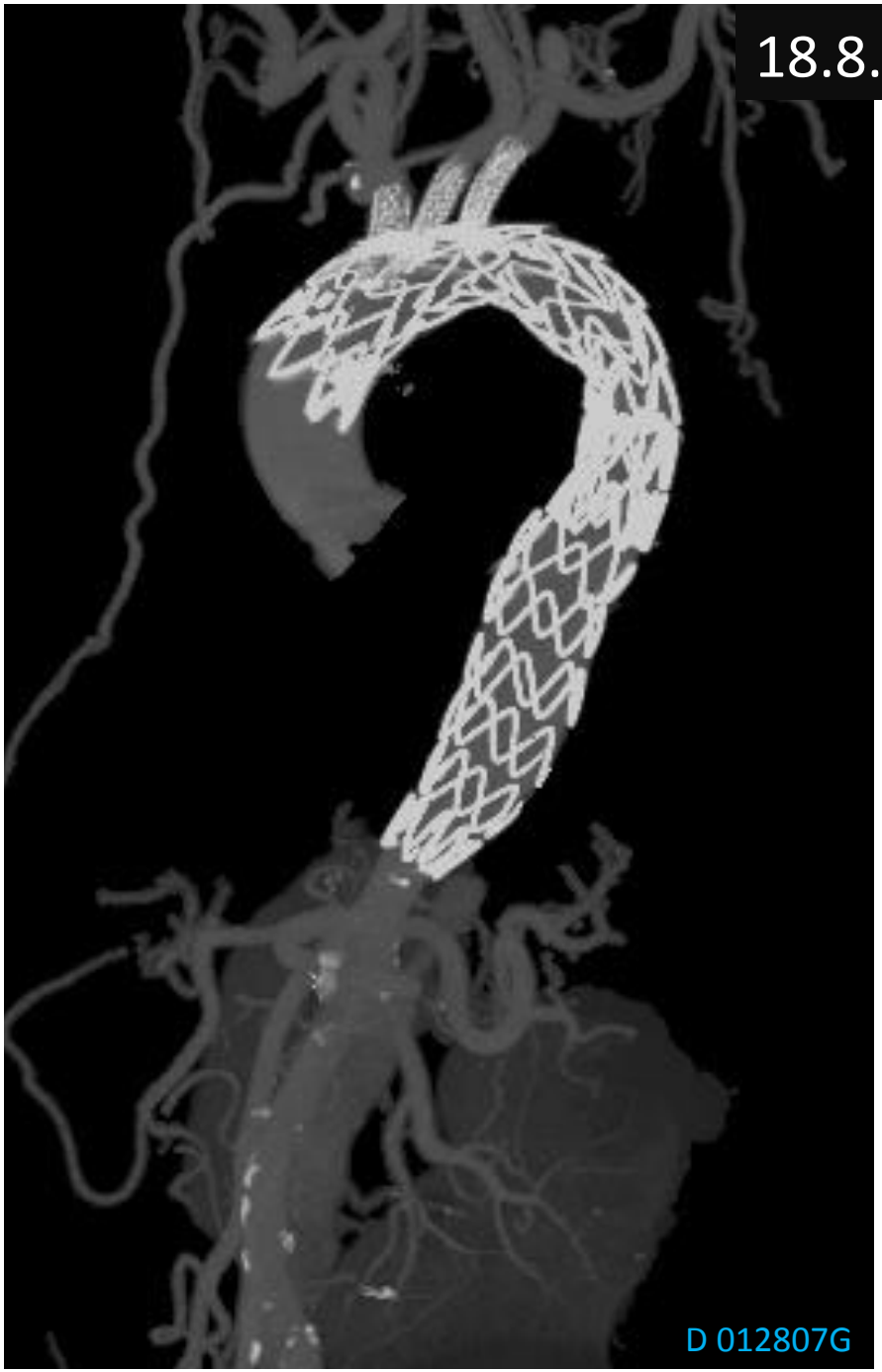
15.9.2014

D 012807G



18.8.2014

14.2.2015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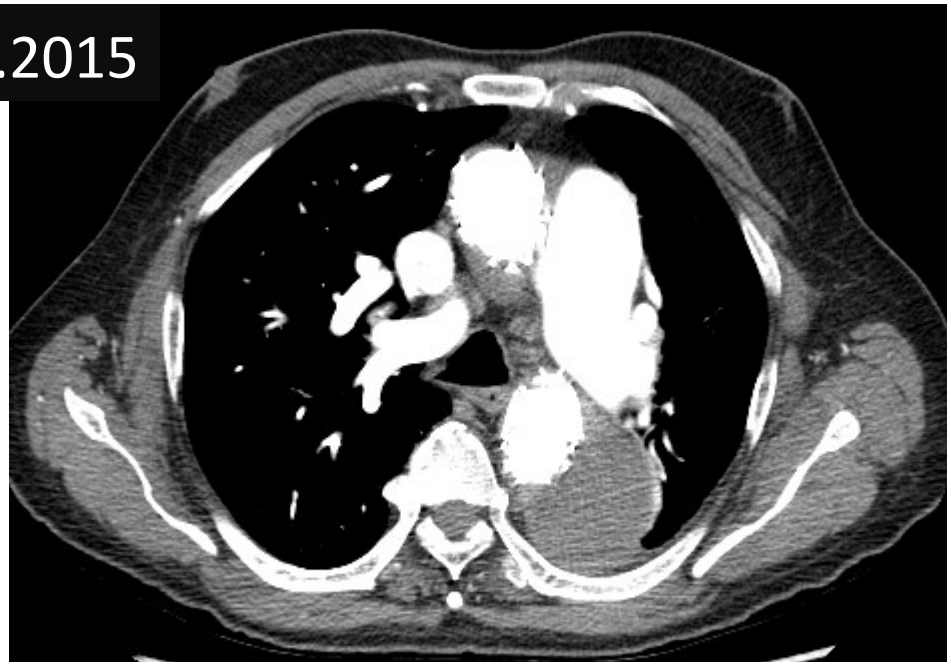
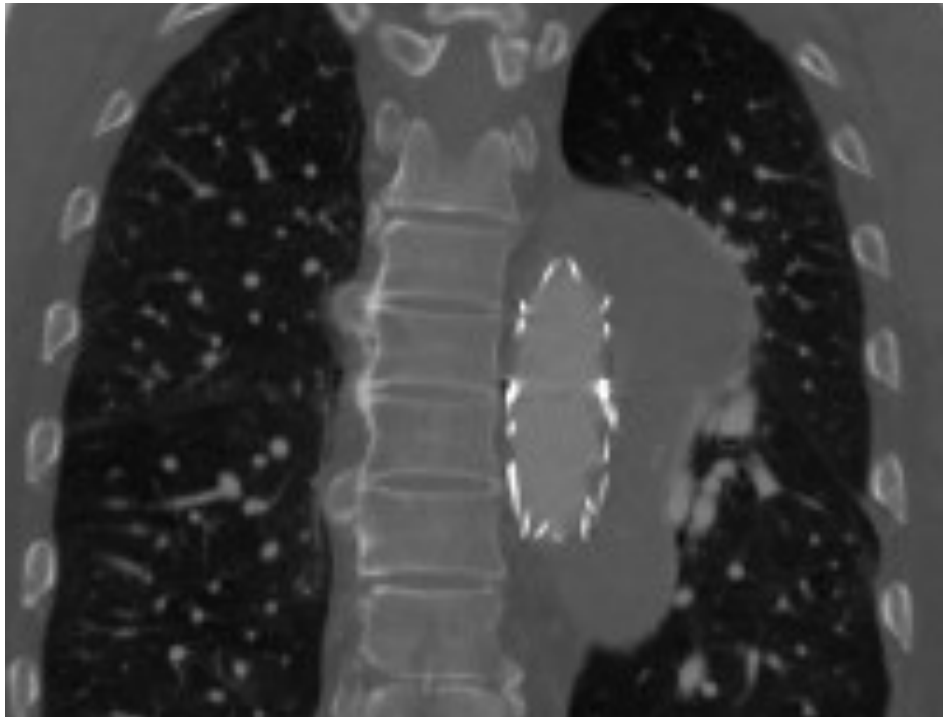
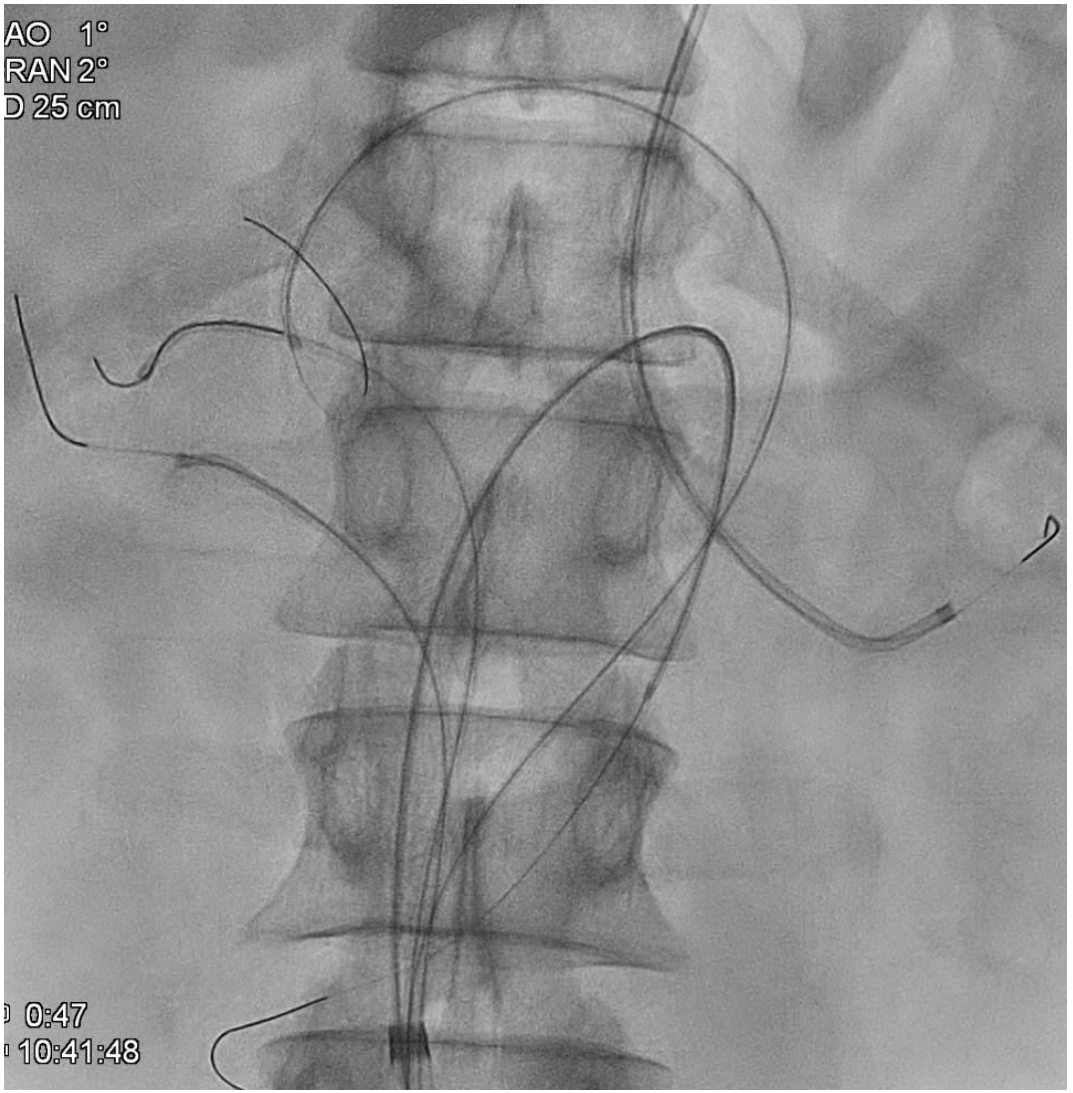
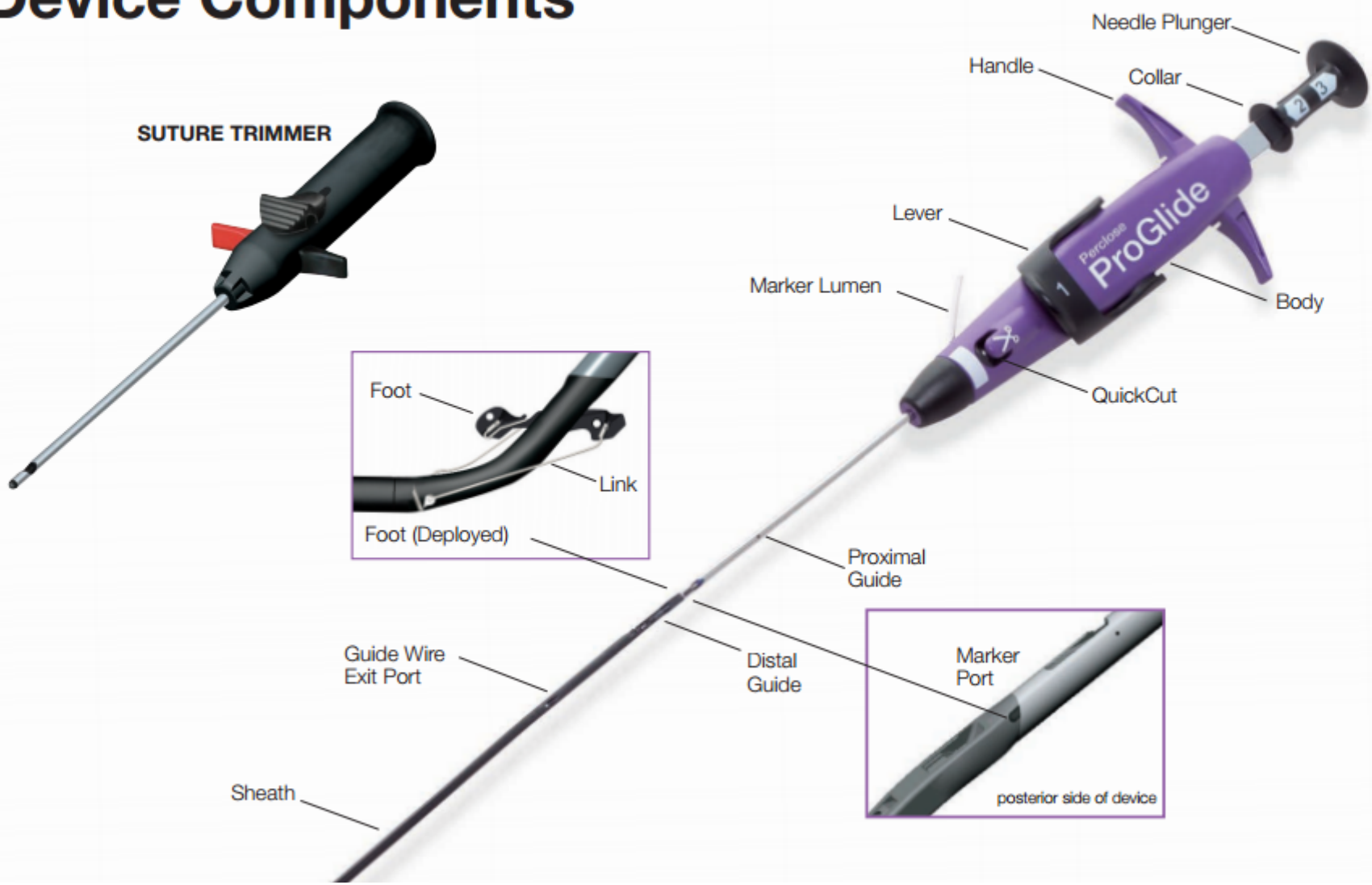



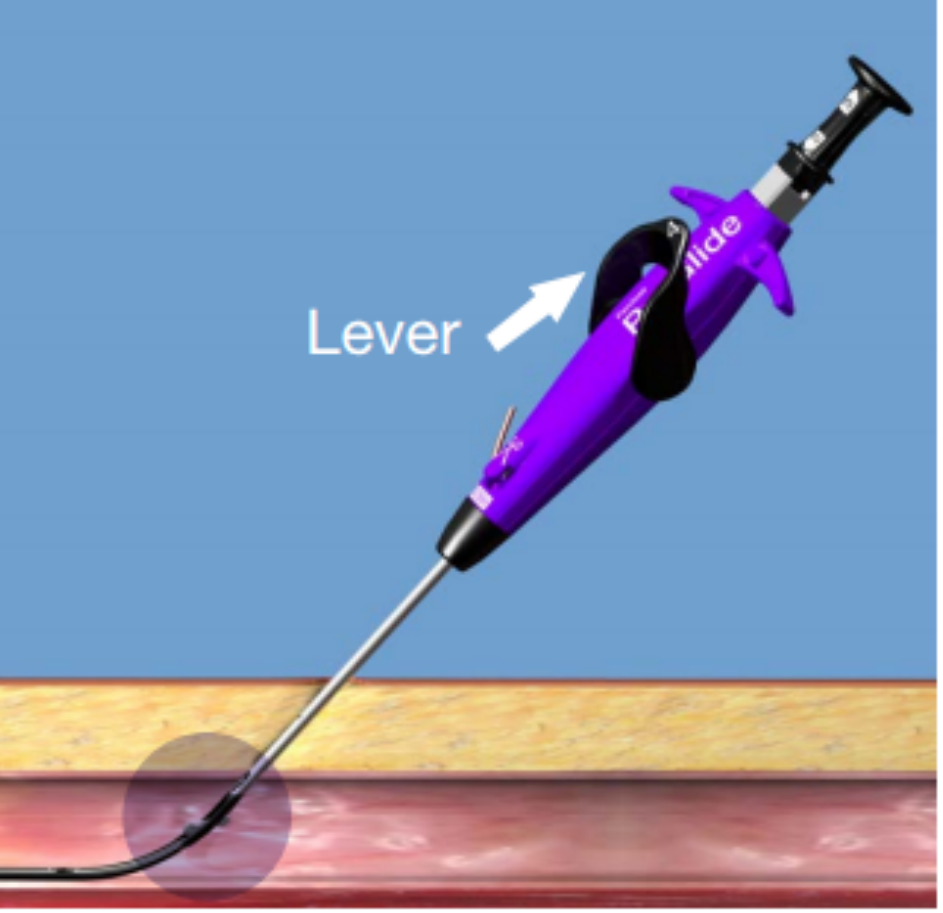
NR 966924F

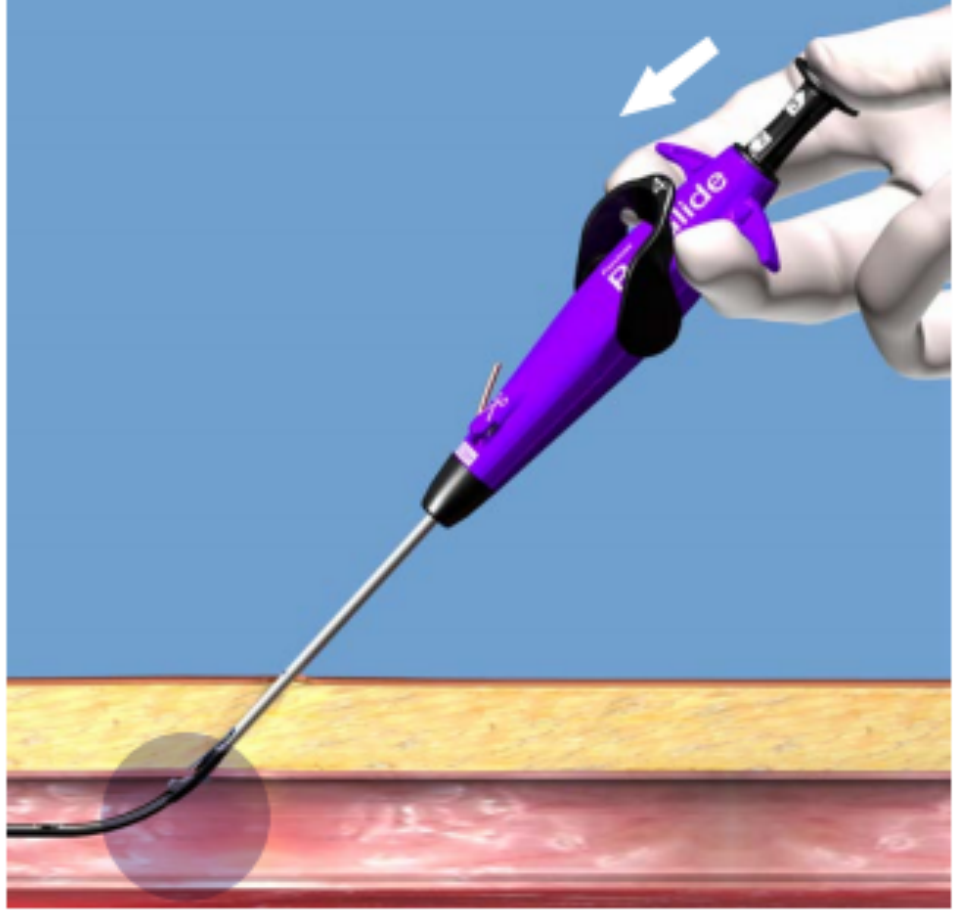


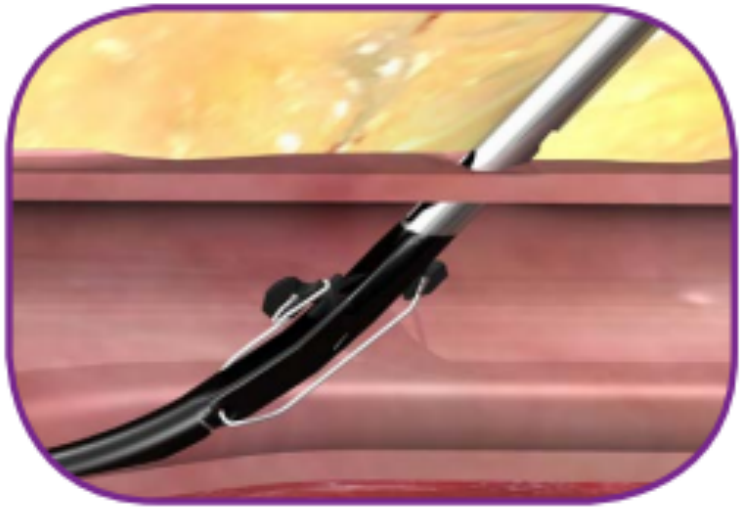

27.8.2015

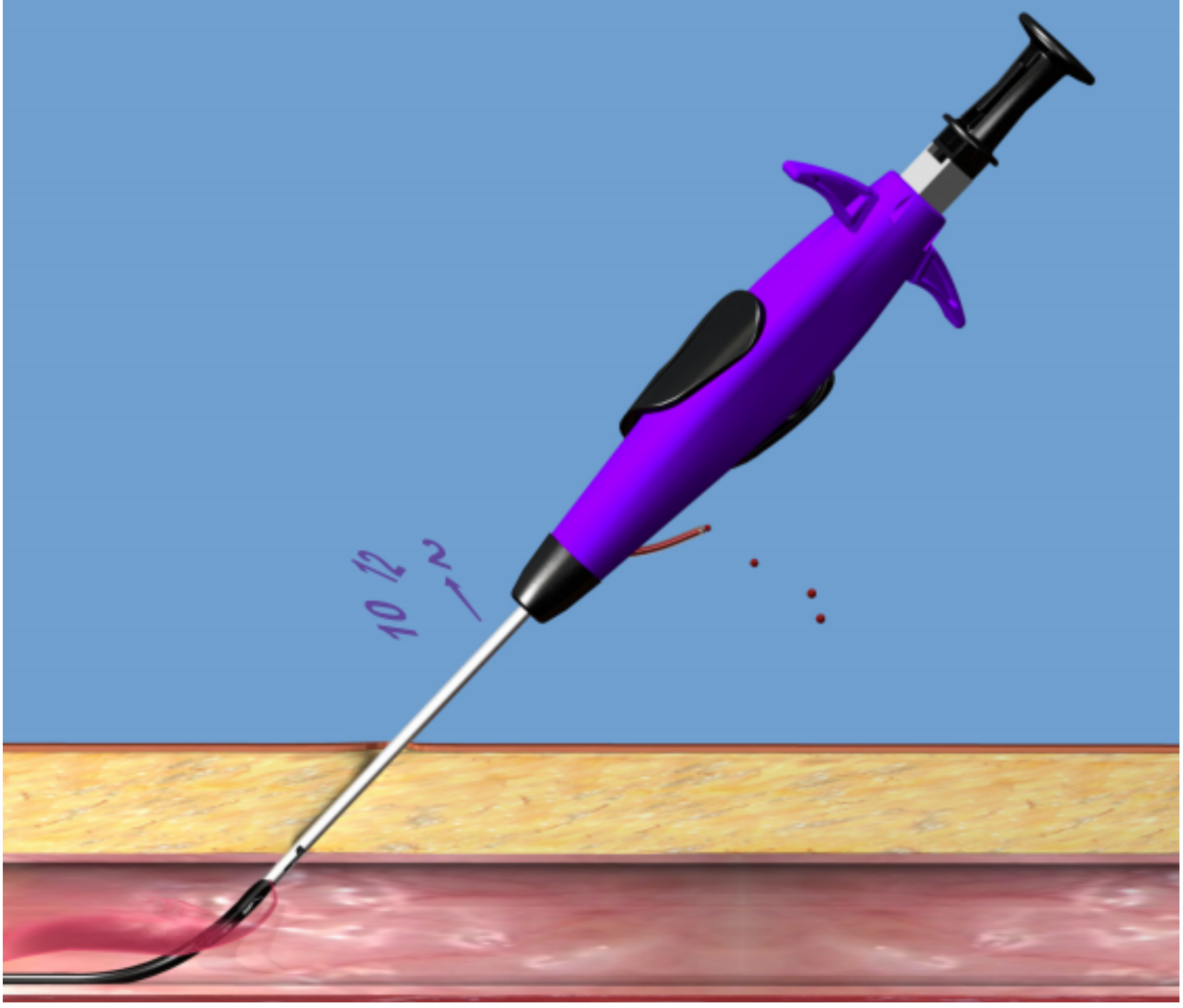
# Device Components

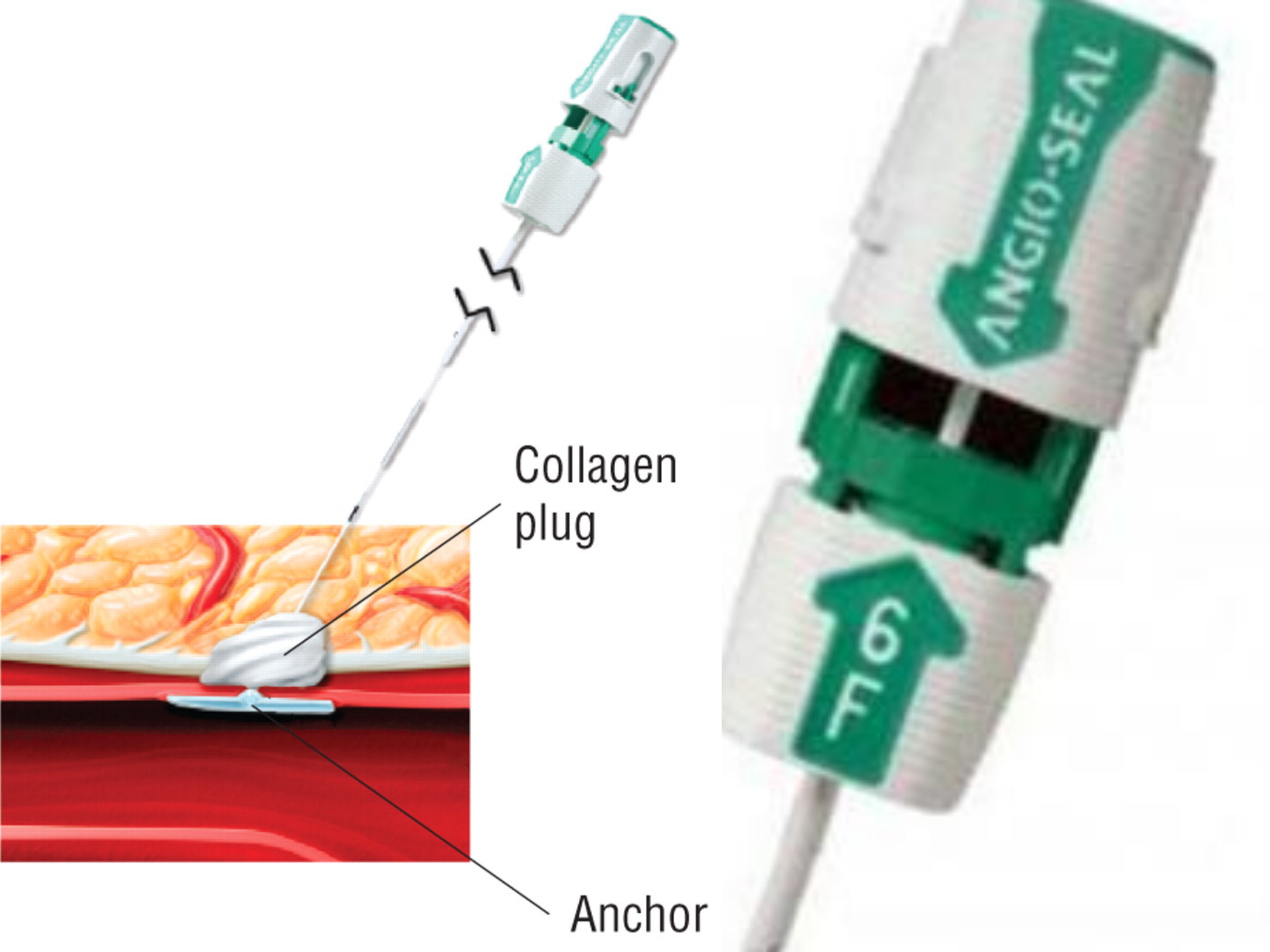



Lever






10 12
2


Collagen
plug
Anchor
ANGIO-SEAL
6
F

*Thank you for your attention*