



Are all complications preventable?

NO!

- Distal embolisation
- Vessel dissection etc.
- Things break!

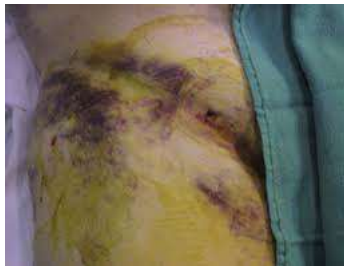
Decide that most are: what could I do differently
next time?

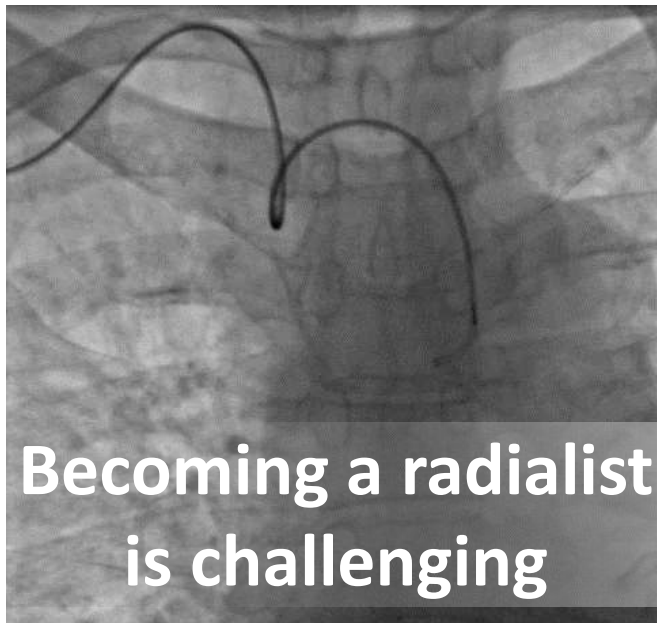
Always plan for disaster

We love to minimise

“Cardiac cath is usually very safe. A small number of people have minor problems. Some develop bruises where the catheter had been inserted (puncture site). The contrast dye that makes the arteries show up on X-rays causes some people to feel sick to their stomachs, get itchy or develop hives.”

http://www.heart.org/HEARTORG/Conditions/HeartAttack/SymptomsDiagnosisofHeartAttack/Cardiac-Catheterization_UCM_451486_Article.jsp#.V_1jJTJ7HdQ





And is absolutely worth the hassle of
the learning curve...

Patients like it more

They are less likely to bleed

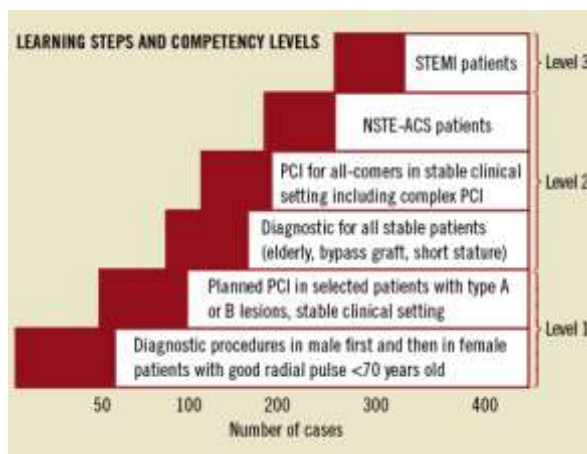
They are less likely to die, especially during after
STEMI and PPCI

Hospital stay and healthcare costs can be
reduced...

In my hospital - I had no choice!



EuroIntervention



EuroIntervention 2013;8:1242-1251 published online ahead of print January 2013

Consensus document on the radial approach in percutaneous cardiovascular interventions: position paper by the European Association of Percutaneous Cardiovascular Interventions and Working Groups on Acute Cardiac Care** and Thrombosis of the European Society of Cardiology



Access

Calm, well informed patient

Sedation

Testing for integrity of palmar arch?

Puncture site: 3-5cm proximal to wrist crease,
proximal to the radial styloid.

Nitrates, topical or SC

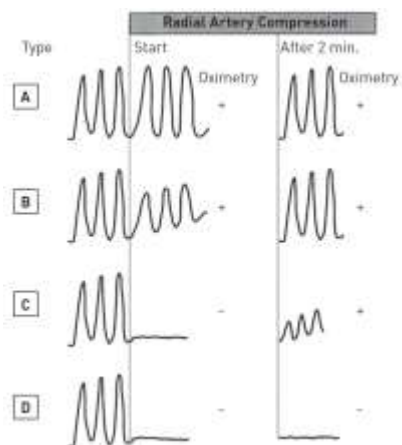
Open or closed needle?

PCR



EDUCATIONAL CONTENT ENDORSED BY EAPCI, A REGISTERED BRANCH
OF THE EUROPEAN SOCIETY OF CARDIOLOGY

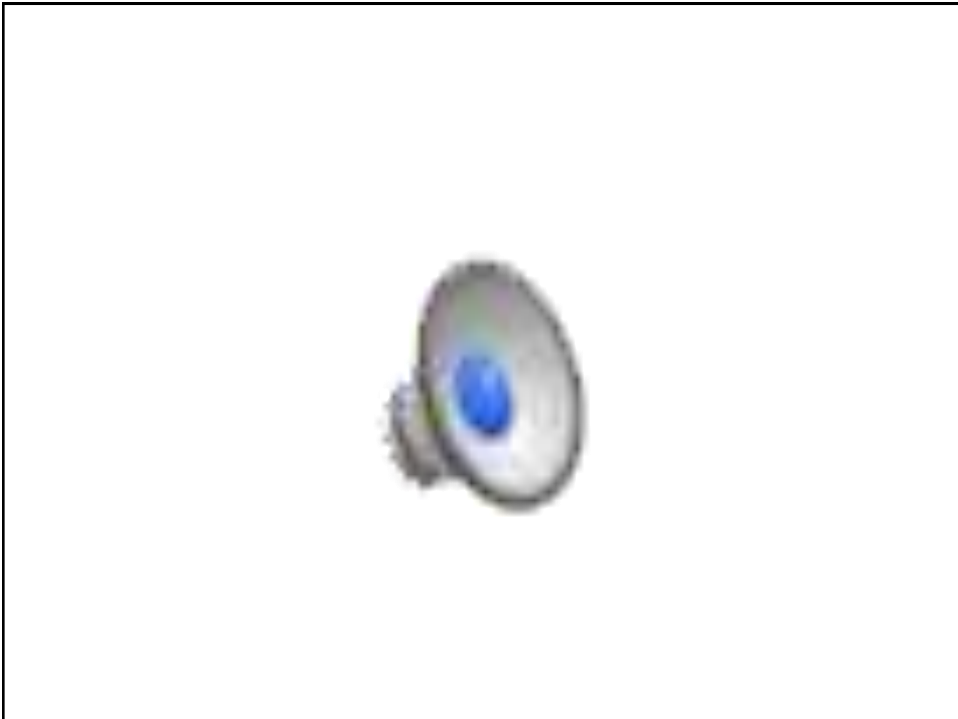
Figure 9



The PCR-EAPCI Textbook – Percutaneous interventional cardiovascular medicine

Vascular access

Olivier Bertrand, Rodney de Palma, David Meerkin



Access

'Cocktail' Drugs (intra-arterial):

Enlarges the arterial lumen and reduces spasm

nitrocine 200 mics, verapamil 2.5mg

Shorter sheaths/hydrophilic sheaths

Complication alert: radial artery occlusion

- Three factors:
 - Sheath size
 - Heparin/heparin dosage
 - Time of occlusion/removal technique
- Solutions
 - Small as possible
 - Heparin 5000 routine: once in the root
 - 'Patent haemostasis'
 - Sheath removal technique/protocol

Next steps: traversing the arm

Small 'J' tip wire

NOT hydrophilic as routine

ANY resistance: screen the arm

wire redirect, or angiogram

Loops and kinks:

Soft hydrophilic wire and 4Fr catheter: can be
straightened

Do not try too hard: FA access works!

Radial loop/recurrent radial



PCR
EAPCI

EDUCATIONAL CONTENT ENDORSED BY
EAPCI, A REGISTERED BRANCH OF THE
EUROPEAN SOCIETY OF CARDIOLOGY

PROCEDURAL CLASSIFICATION	INCIDENCE (ANGIOGRAPHY)
Radio-brachial arterial axis	
Radial artery pulse absent	<0.03%
Significant (> 50%) radial artery atherosclerotic stenosis	0.43%
Radial and brachial artery tortuosities (bend > 45°)	5.93%
Radial artery loops (D&F loop in the arterial course not located at anastomotic sites)	0.30%
Radio-ulnar loops (D&F loop at the anastomosis with brachial-ulnar artery)	0.33%
Brachial artery loops (D&F loop in the arterial course not located at anastomotic sites)	0.13%
High angle of the radial artery (from brachial or axillary artery)	2.43%
Other variants (not or marginally affecting TRA)	0.01%
Accessory brachial artery (two brachial arteries arising before branching in the two normal forearm arteries)	
Axillary-subclavian arterial axis	
Severe tortuosities (Bend of more than 90° in the contour of the vessel)	1.33%
Significant (> 50%) atherosclerotic stenosis of the axillary-subclavian anastomous arterial axis	0.40%
Aortic arch	
Barro-oesophageal right subclavian artery (BORSA or arteria lusoria)	0.13%
Aortic arch elongation	0.10%
Other anatomical abnormalities (not or marginally affecting TRA)	0.33%
Distortion of the ascending aorta associated to distortion of its orientation (creating sharp angulation between ascending aorta and aortic arch long axis)	

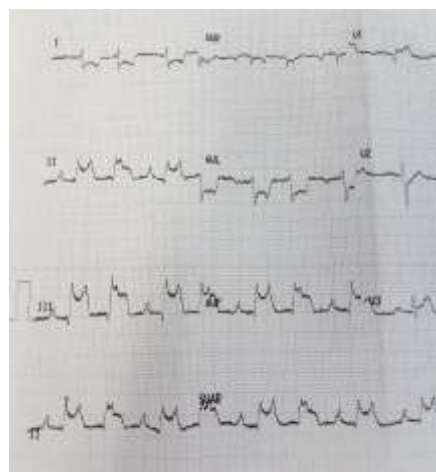
The PCR-EAPCI Textbook – Percutaneous interventional cardiovascular medicine
Vascular access
Olivier Bertrand, Rodney de Palma, David Meerkon

© 2014 Europa Digital & Publishing. All rights reserved.

Mrs J A

STEMI treated with
streptokinase, aspirin,
clopidogrel, clexane

Transferred to PCI centre
for rescue PCI



Mrs J A

TRANSRADIAL ACCESS

- 6F sheath
- JL 3.5 diagnostic catheter shows ectatic left system vessels with no significant stenoses



PCI to culprit RCA

- 6F JR4 guide
- Unable to pass guide catheter beyond the elbow
- Severe pain at the elbow!



What is the next step?

- Compress, reverse drugs?
- Use left arm, or femoral approach without reversing drugs (to treat occluded RCA)
- Continue on the same arm?

Cross the lesion in the arm, use the guide to tamponade and complete the case!

Balloon assisted tracking

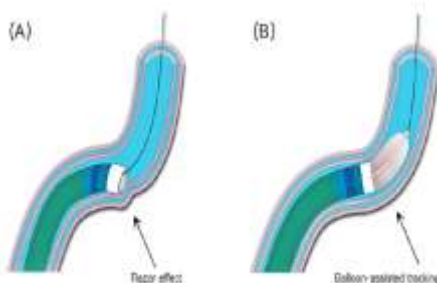
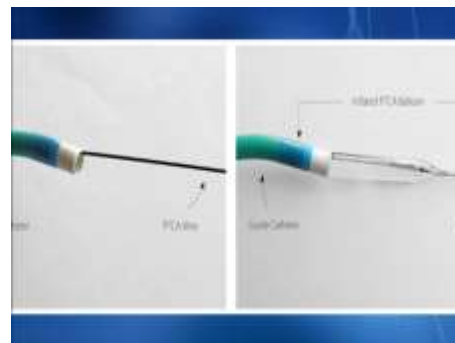
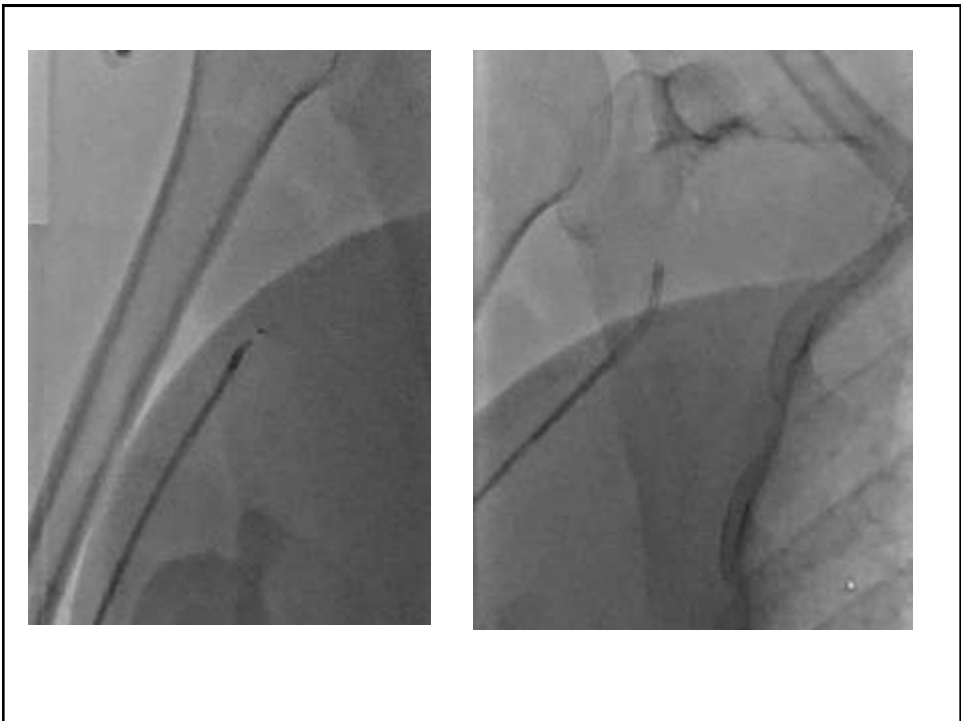
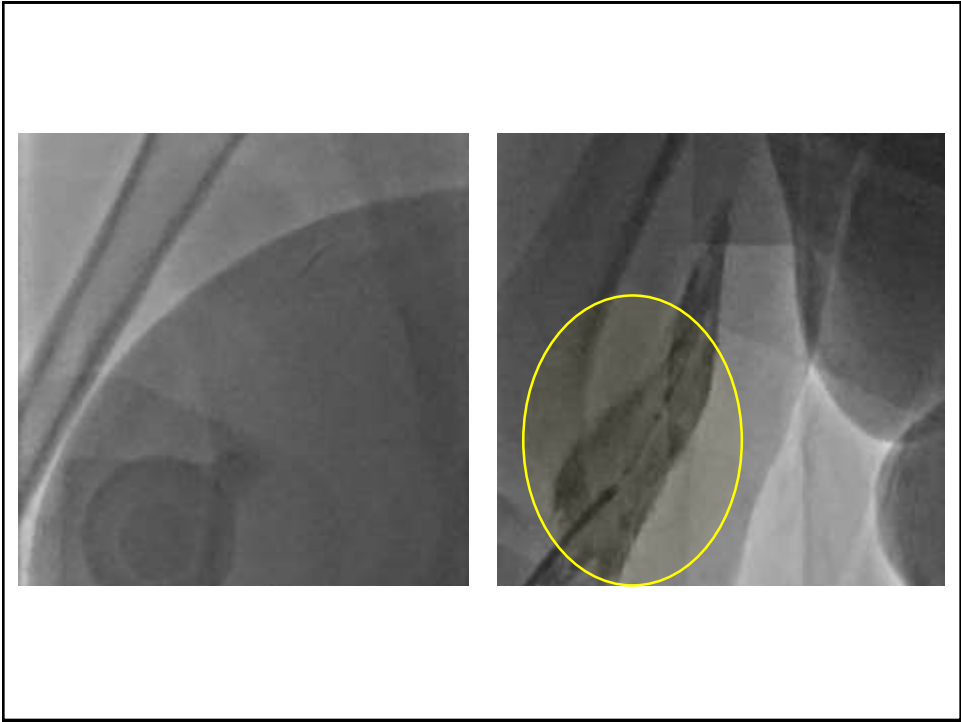



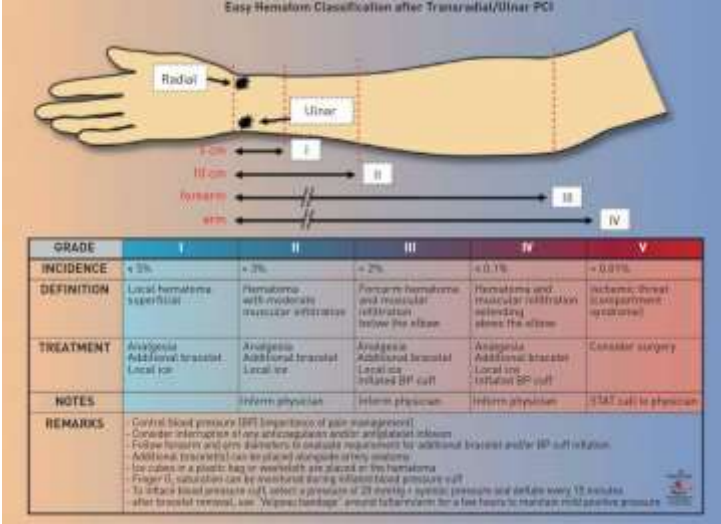
Fig. 7. Schematic representation of "razor effect" and balloon-assisted tracking. [Color figure can be viewed in the online issue, which is available at [wileyonlinelibrary.com](http://www.wileyonlinelibrary.com).]





PCR  EDUCATIONAL CONTENT ENDORSED BY EAPCI, A REGISTERED BRANCH OF THE EUROPEAN SOCIETY OF CARDIOLOGY

Easy Hematoma Classification after Transradial/Ulnar PCI



GRADE	I	II	III	IV	V
INCIDENCE	< 3%	< 3%	< 2%	< 0.1%	< 0.01%
DEFINITION	Local hematoma superficial	Hematoma with moderate muscular infiltration	Forearm hematoma and muscular infiltration below the elbow	Hematoma and muscular infiltration extending above the elbow	Extensive thorax (axillary) hematoma
TREATMENT	Analgesia Additional braced Local ice	Analgesia Additional braced Local ice	Analgesia Additional braced Local ice Infused BP cuff	Analgesia Additional braced Local ice Infused BP cuff	Consider surgery
NOTES		Inform physician	Inform physician	Inform physician	STAT call to physician
REMARKS	<ul style="list-style-type: none"> Control blood pressure (BP) importance of pain management Consider infusions of analgesics and/or antispasmodics Follow hematoma and arm dimensions to evaluate requirement for additional bracing and/or BP cuff inflation Additional bracing can be placed alongside other systems Ice cubes in a plastic bag or equivalent are placed on the hematoma Frage II, inflation can be maintained during inflation/deflation procedure To inflate blood pressure cuff, select a pressure of 20 mmHg > systolic pressure and deflate every 15 minutes after braced removal, use "Vegas technique" around the bracing for a few hours to maintain mild positive pressure 				

The PCR-EAPCI Textbook – Percutaneous interventional cardiovascular medicine
Vascular access Olivier Bertrand, Rodney de Palma, David Meerkin

© 2014 Europa Digital & Publishing. All rights reserved.

Getting to the aortic root

Deep breath

Always screen at least from the shoulder (carotids)

Very gentle catheter manipulation

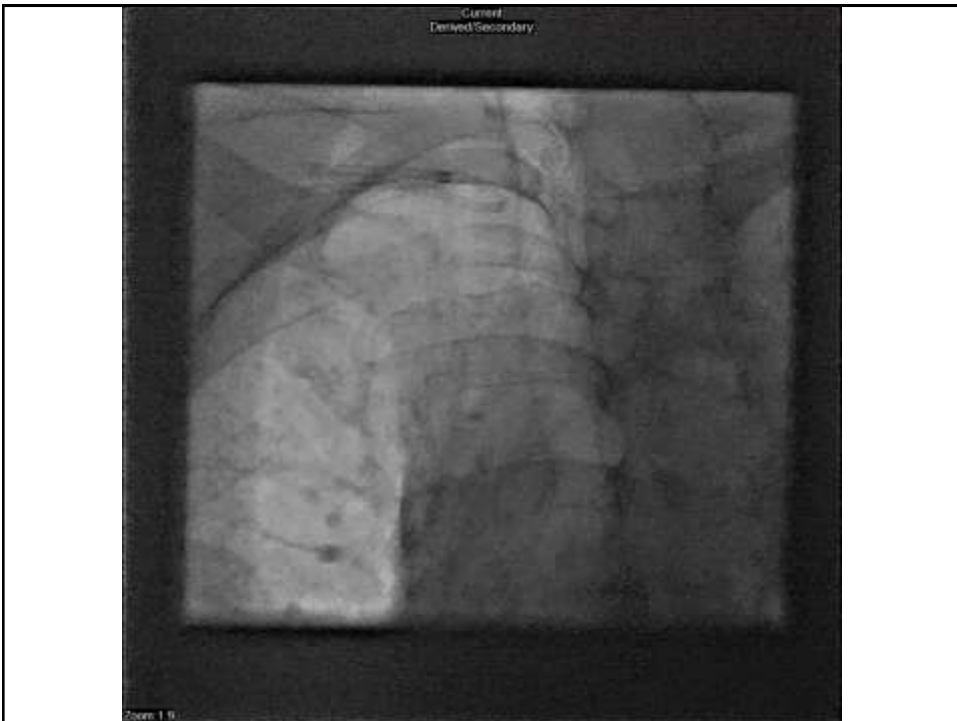
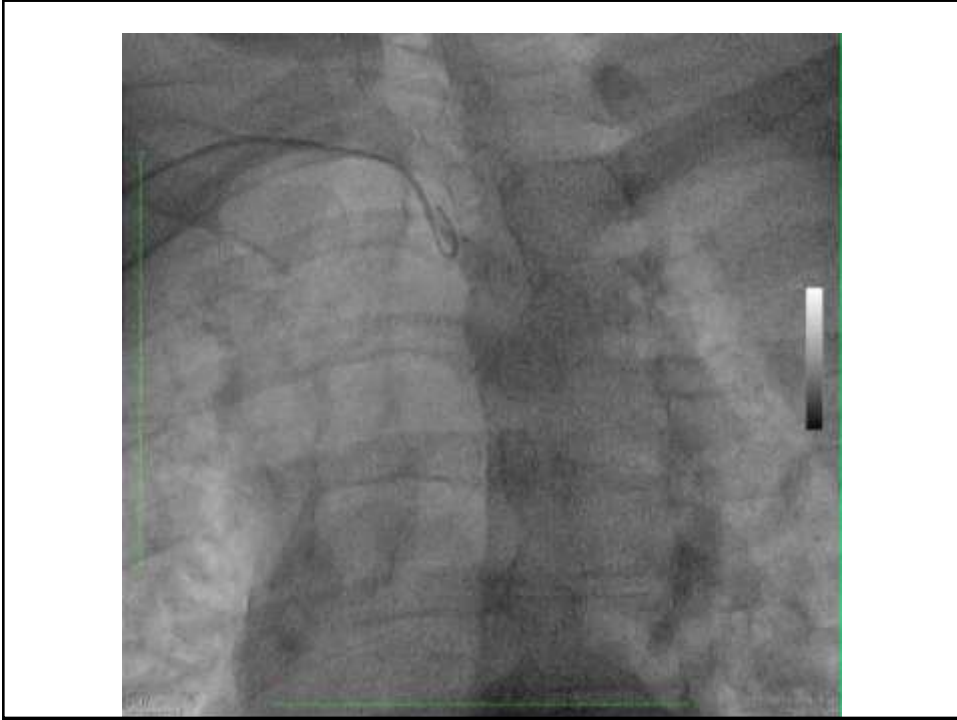
Direct the wire, LAO view

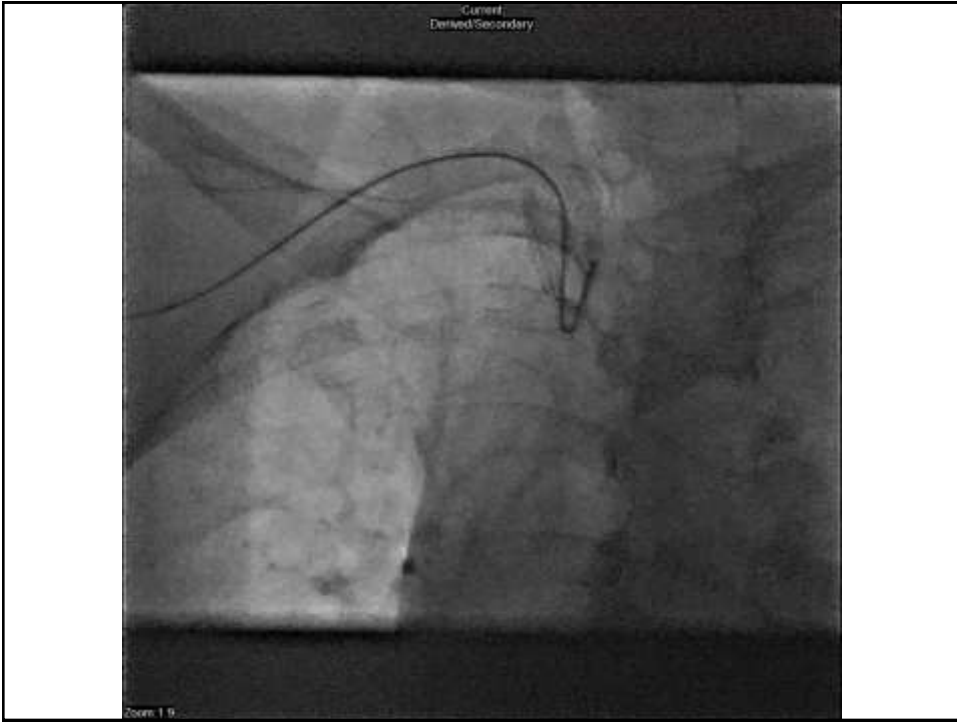
Don't repeat unhelpful manoeuvres

Difficult case: exchange length wire

Slowly remove the wire: avoid forceful intubation

Occasionally: soft hydrophilic wire – be very careful







CT angio: dissection of right subclavian artery

Engaging the coronary ostia

Get used to your standard tools

The keys to safety are :

Gentle manipulation, aiming for coaxiality

Change the curve when needed

Persistent and stubborn are not the same

Catheters are cheap, left mains are expensive

Be aware of time: routine clock

Reintroduced catheters carry particular hazard

Guiding catheters

Adequately sized, coaxial, necessary backup and a stable and controllable tip.

Back up is less simple than from the femoral approach

Tips for guiding stability:

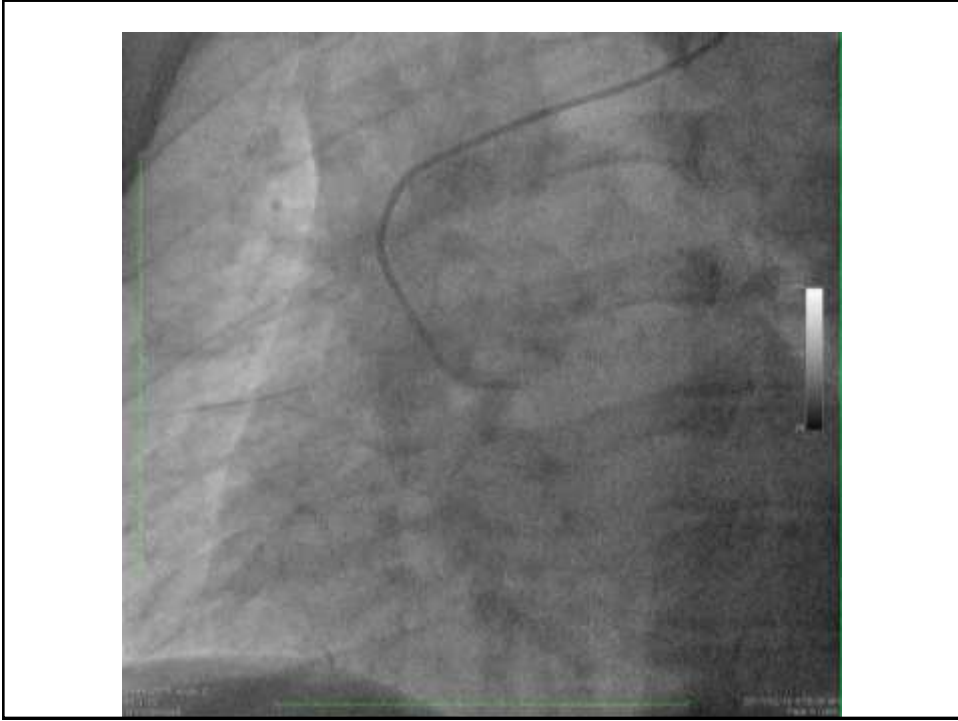
Additional wires

GC extension

trapping balloons in conus RCA

Common choices: 6F EBU 3.5, AL 0.75/JR/RCB/WRP

Femoral crossover is not a crime against humanity





It's you that matters...

Plan, be self aware and collaborative
Focused on safety
Fast (enough), flexible,
Never flippant
Finesse rather than force
Forward momentum
Anticipate and problem solve before the
complication occurs

Thank you

