


- ▶ **RADIAL ARTERY
CATHETERIZATION**

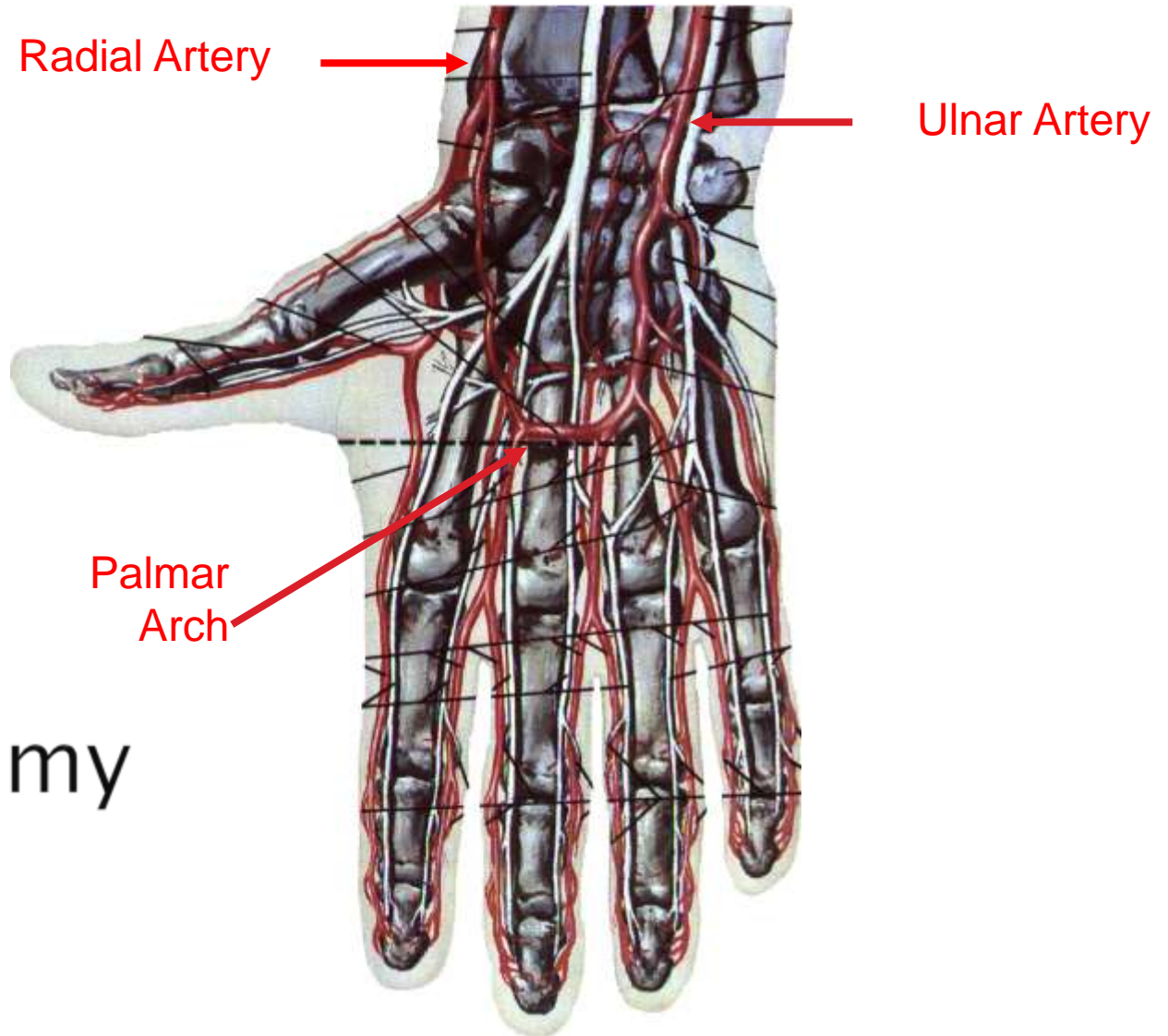
- ▶ **Technique,
Toolbox, Tips and
Tricks**



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Patient Selection

- ▶ Confirm dual blood supply to the hand
 - ▶ Previous LIMA or RIMA
 - ▶ AV fistula
 - ▶ Radial artery harvest
 - ▶ Vascular surgery/major trauma
- 



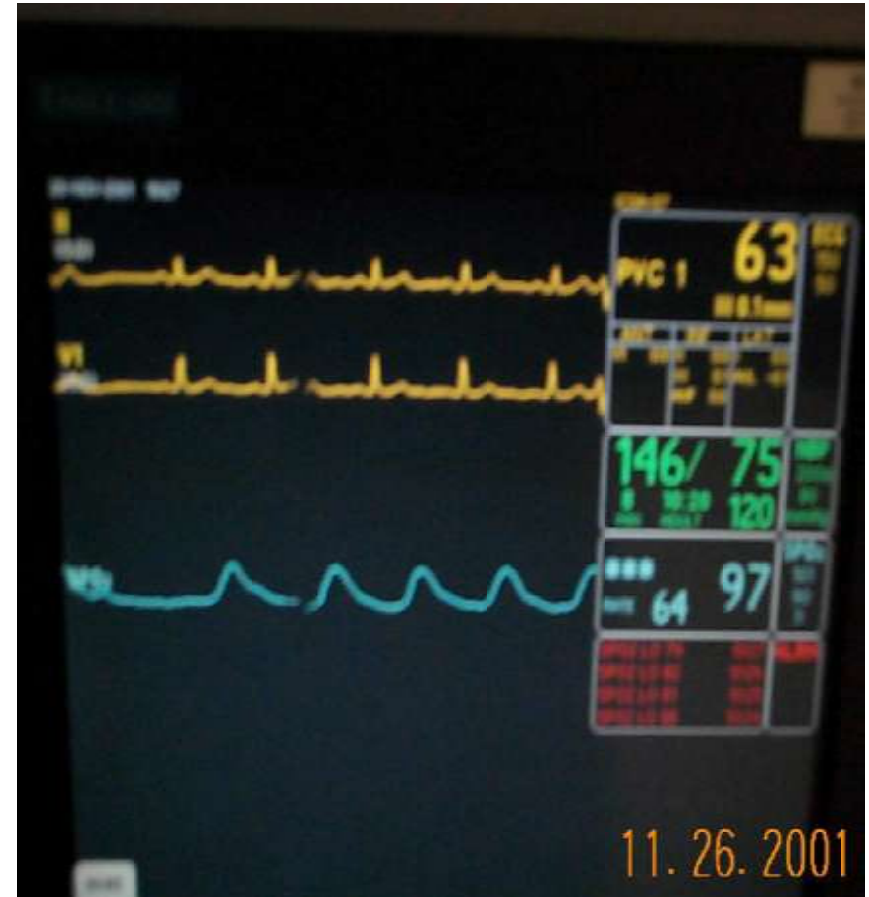
Anatomy

Patient Selection



Patel's Atlas

Barbeau Test



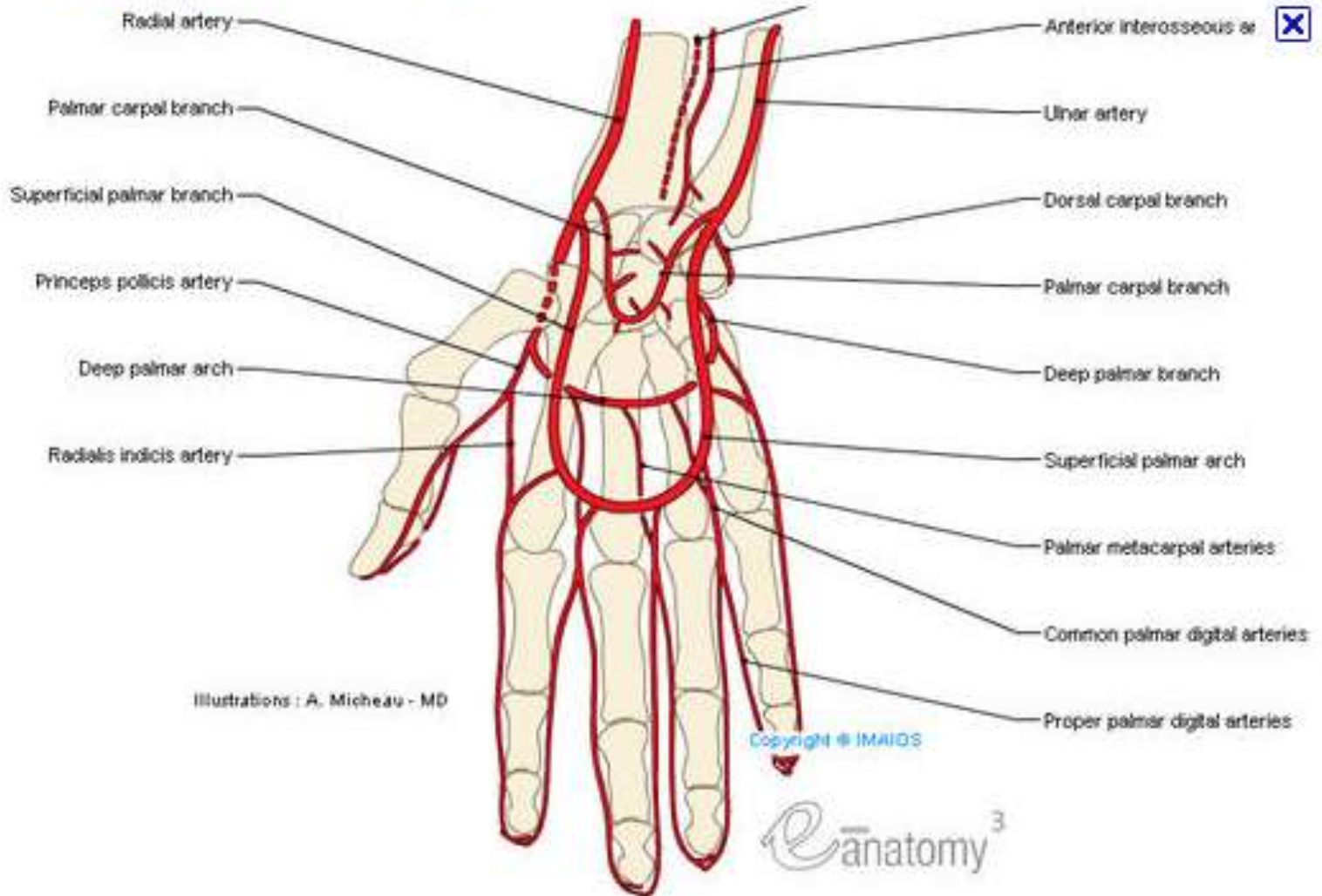
Barbeau Test (occlude both)



Barbeau Test (Release ulnar artery while radial still occluded)



Radial Artery Access



Local Anesthetic



1 ml TB syringe
26 Gauge
3/8" needle length

Inject 1 ml 2%
lidocaine

Superficial bleb

Radial Artery Access



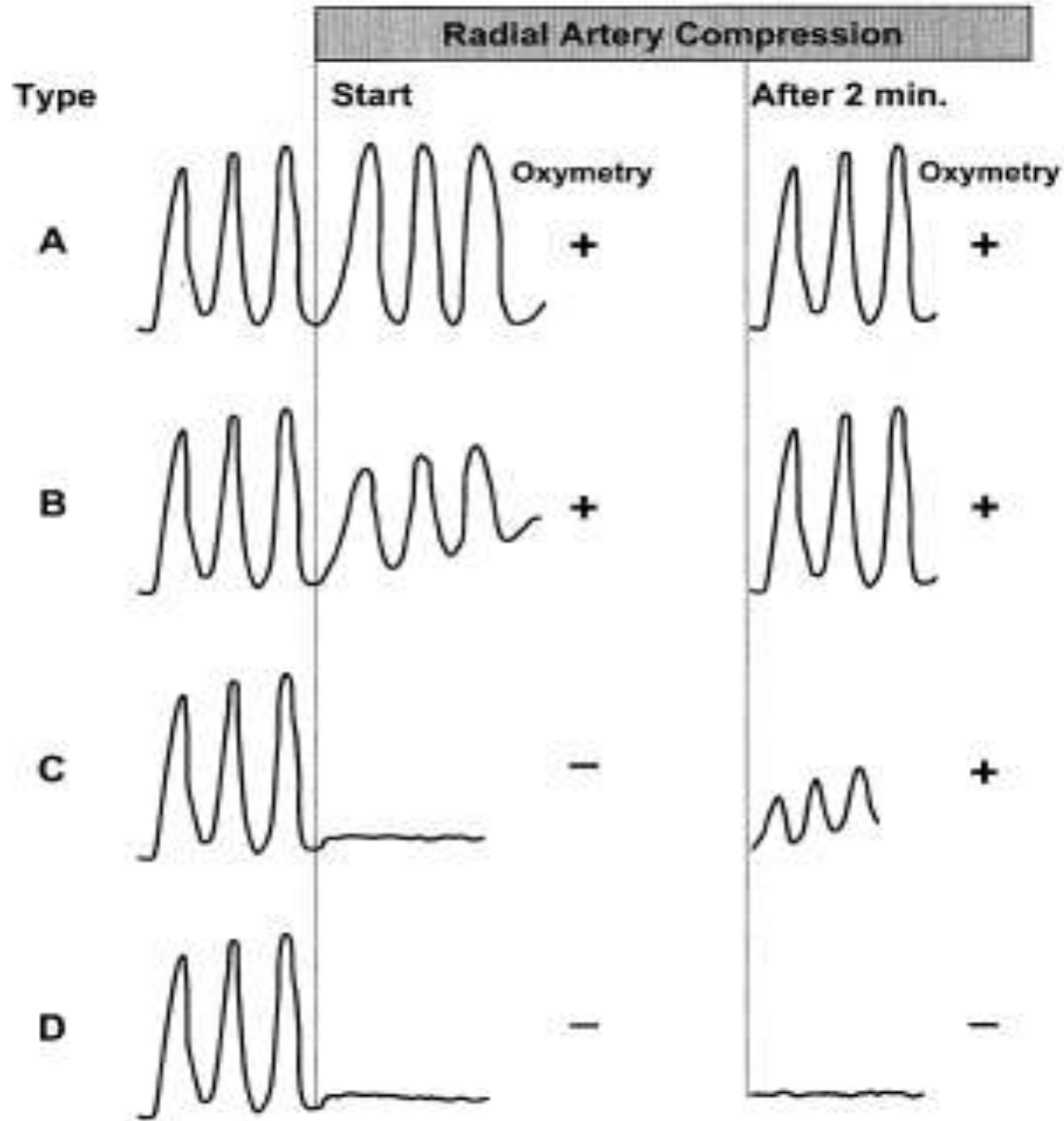
Glidesheath Nitinol Kit

- # .021" nitinol floppy wire and a
- # 21 gauge metal needle
- # Hydrophilic sheath

Barbeau Test



Barbeau. G et al;
Am Heart J
2004;147:489-93



=AVOID

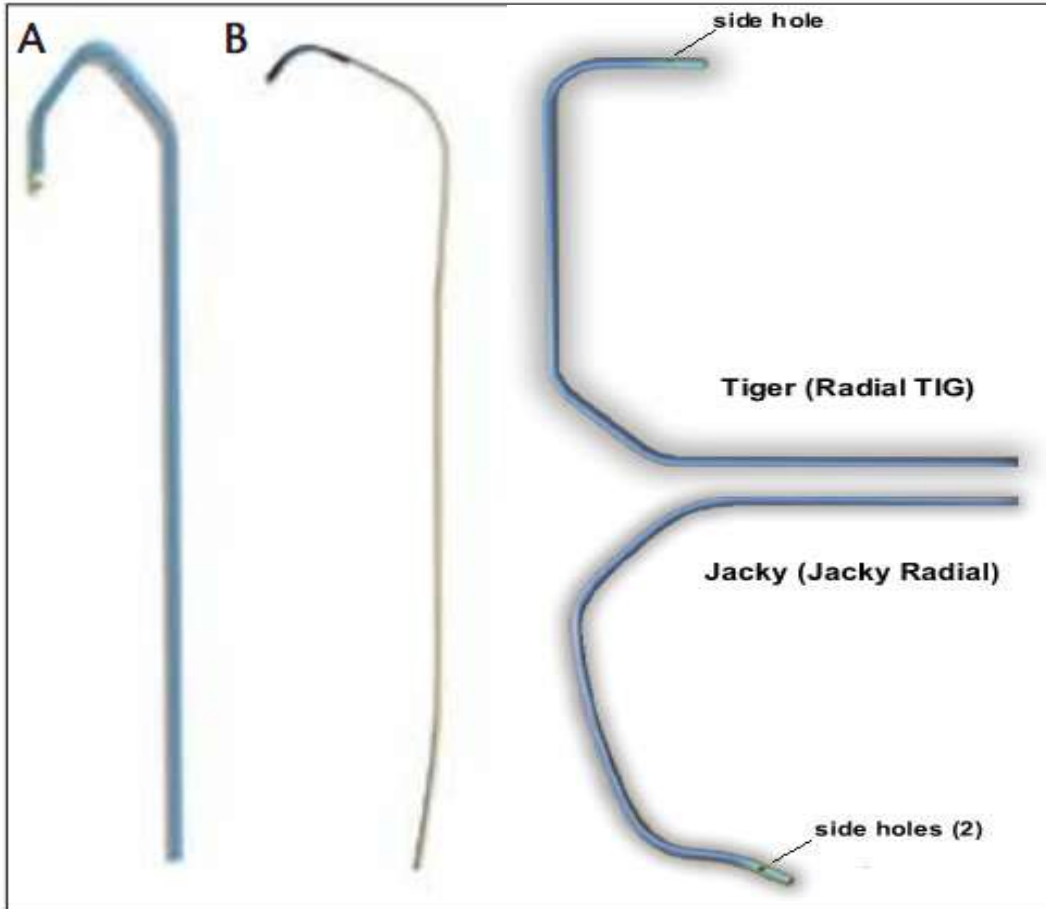
Procedure Details

- ▶ Generous Sedation
 - Reduces radial artery spasm
- ▶ Sheath size
 - –5 Fr (for diagnostic cath and simple PCI)
 - –4 Fr (automated contrast injector ACIST)
 - –6 Fr
- ▶ The “Cocktail”
 - Vasodilators
 - (e.g. verapamil 3mg, nitroglycerin 200mcg)
 - Given in sheath
 - Anticoagulation
 - heparin 70u/kg IV or bivalirudin if PCI

Access

- ▶ video

Catheter Selection



Universal Catheters

Designed to engage both coronary arteries from the radial approach

Figure 2. Specialty catheters designed specifically for use via the radial approach: Kimny (A), Tiger (B),

Diagnostic Catheter Selection

(Right Radial Approach)

- ▶ **Left Coronary Artery**
 - 5Fr Sara/Jacky universal catheter
 - 5Fr JL 3.5
 - 5 Fr JCL 3.0 guide (for superior takeoff)
 - Amplatz Left (AL1)


- ▶ **Right Coronary Artery**
 - 5Fr Sara/Jacky universal catheter
 - JR 4 (can use guide)
 - Amplatz Left (AL1)

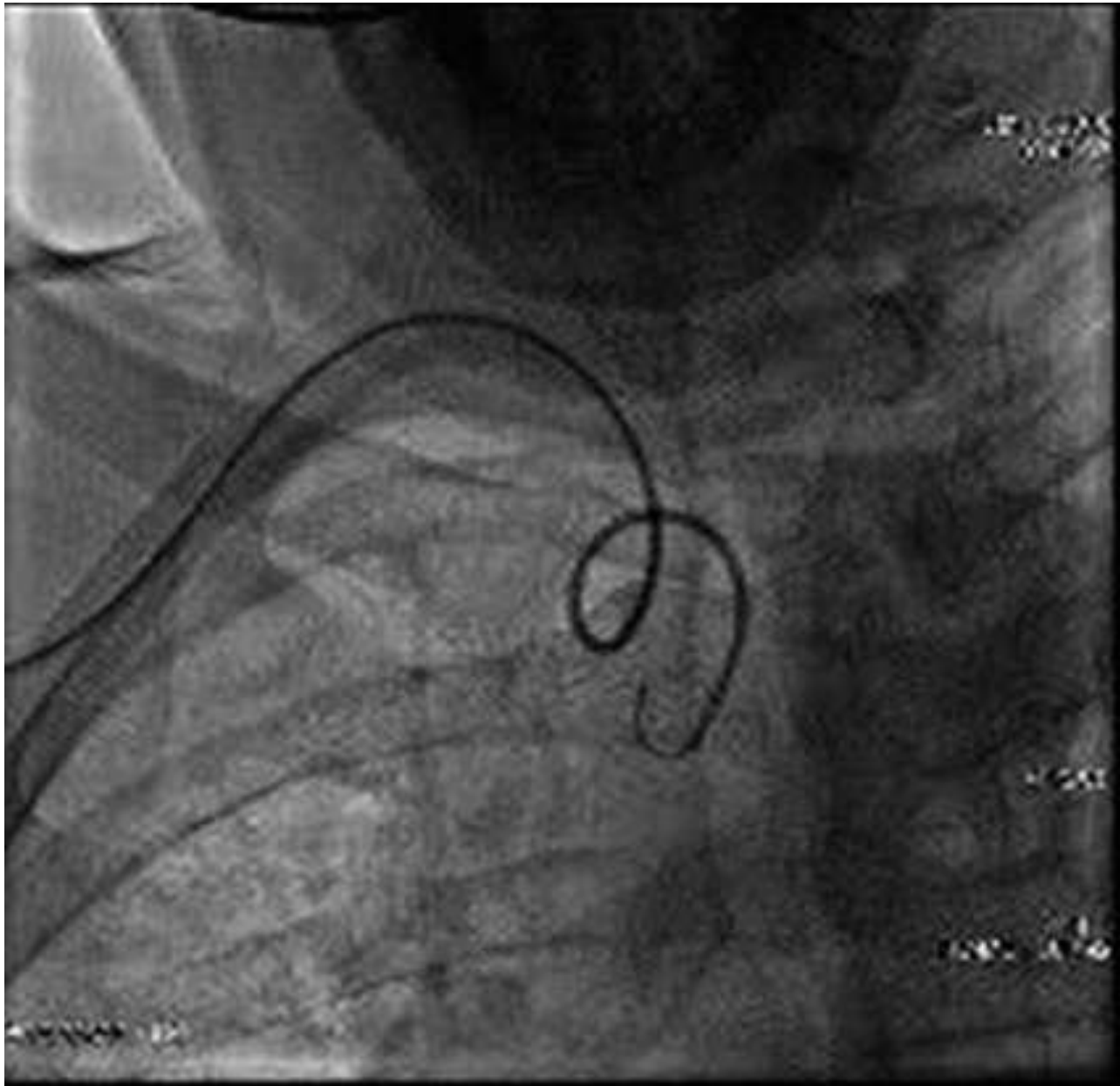
- ▶ **Guides: Limited support from radial**
 - Extra-backup guides, guideliner, deep seat guide

Jacky “video”



Navigating the arm and arch

- ▶ Standard J-tip 0.035" guidewire (or wholey)
 - ▶ Resistance in arm? (fluroscopy, angio, 0.014" coronary wire, gentle catheter advancement)
 - ▶ Deep breath to lower the heart to facilitate access to ascending aorta
 - ▶ Perform in AP projection (engage in LAO)
- 



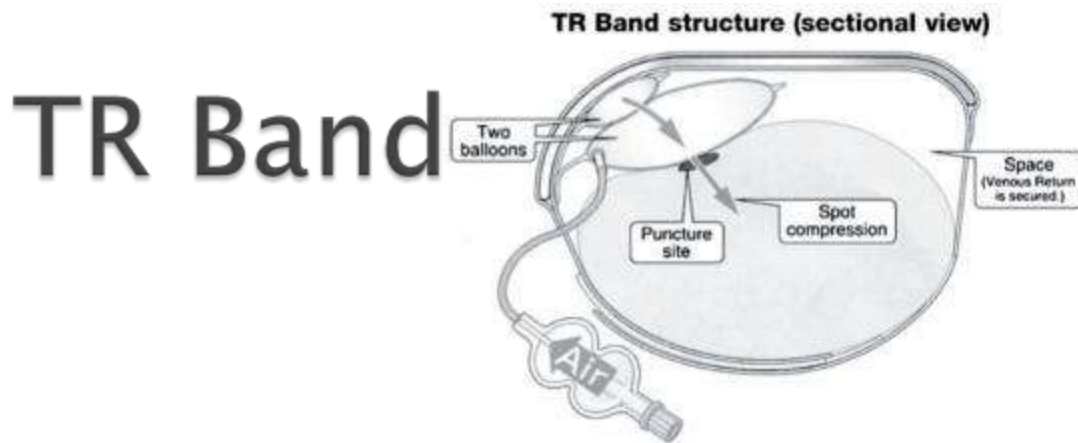
Tortuous Subclavian – Tips

- ▶ Difficult to enter ascending aorta
- ▶ Difficult to torque catheters to engage aorta
- ▶ Keep 0.035” J-wire in catheter while torquing (Amplatz)
- ▶ Use guide catheter with Y adapter (Tuohy) to puff with J-wire in
- ▶ Once in ascending aorta use exchange length (260cm) J-wire
 - “Don’t pay for the same real estate twice”

Kevin Hart 2012 (FWC)

Radial Artery Closure





- ▶ Inflate balloon over puncture site with syringe
- ▶ Transparent: visual control of puncture site at all times
 - Know exactly how much force needed to stop the bleeding, avoids overcompression
- ▶ Start deflating slowly after 2 hrs
 - If bleeds = reinflate

Patent Hemostasis Technique for Post-Procedural Hemostasis

1. Apply hemostasis device (e.g., HemoBand, RAD-Stat, TR-Band) to wrist
2. Place pulse oximeter on ipsilateral index finger or thumb
3. Tighten hemostasis device and remove sheath
4. Occlude ipsilateral ulnar artery
5. Loosen hemostasis device until plethysmographic signal returns or bleeding occurs

If bleeding occurs, use manual compression

If hemostasis is maintained in the presence of the plethysmographic signal, then leave hemostasis device in place for 2 h
6. Check for maintenance of plethysmographic signal every hour

Adapted from Pancholy et al. (39).

Complications

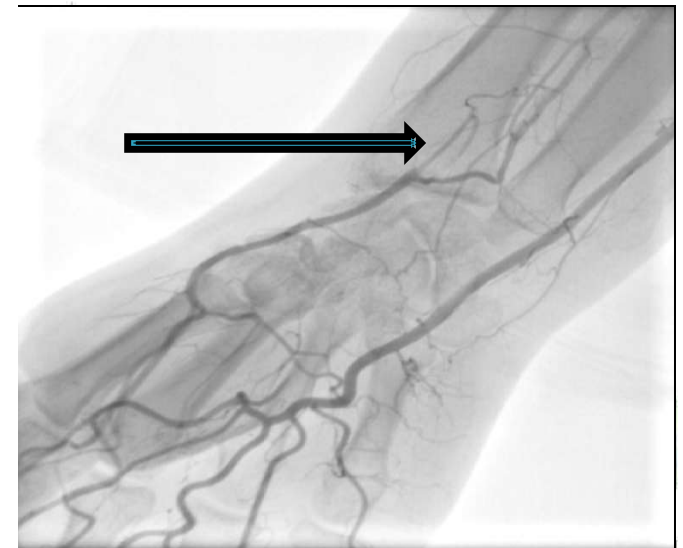
Hematoma



Spasm



Occlusion

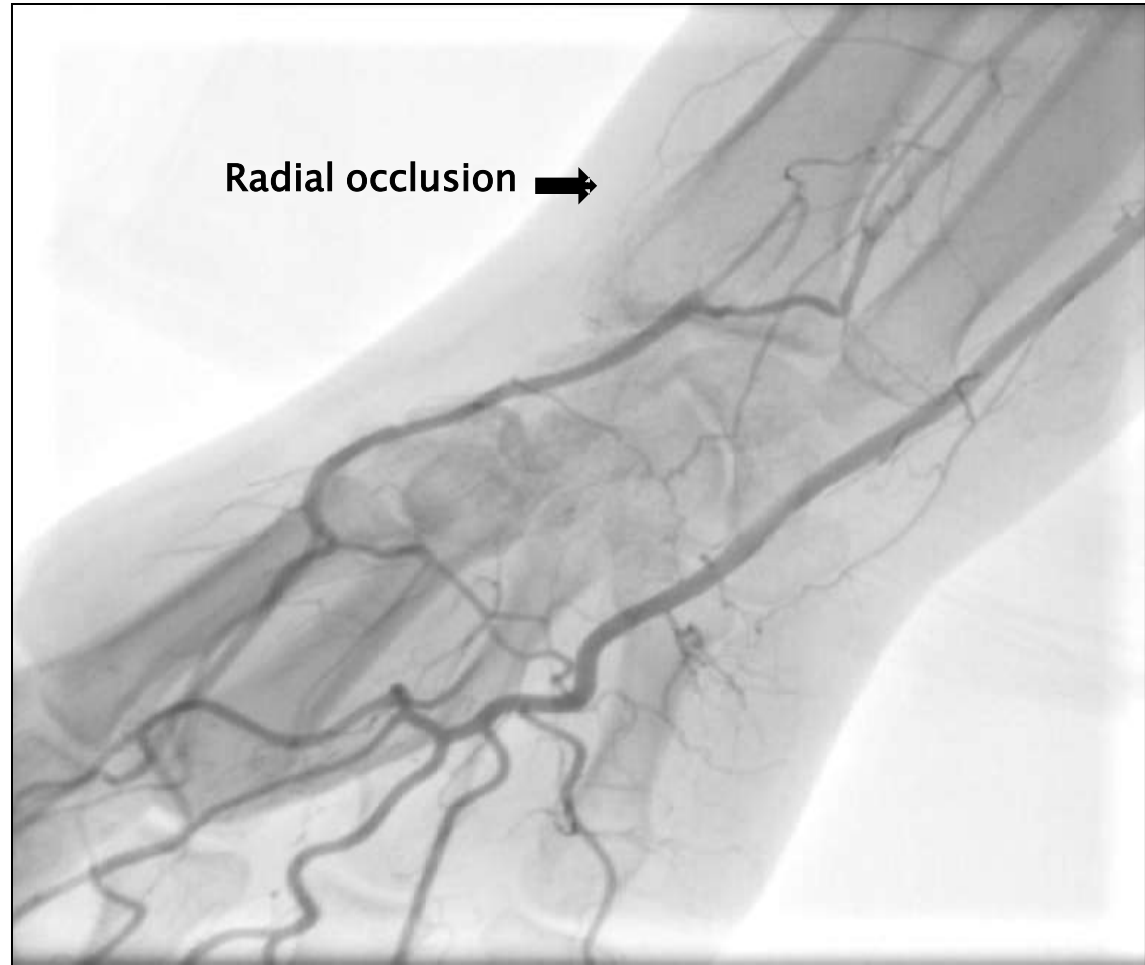


Radial Artery Occlusion

- ▶ Presentation: Most completely asymptomatic
- ▶ Incidence: Very variable
- ▶ Mechanism: Probably thrombosis
- ▶ Diagnosis: Absent pulse, confirm with duplex
- ▶ Treatment:
 - Spontaneous recanalization common
 - Ulnar compression if acutely discovered
 - Systemic LMWH (1–4 weeks)
 - Balloon Angioplasty
 - Balloon Angioplasty with Abciximab

Radial Artery Occlusion

Guide Catheter in
brachial artery via
femoral approach



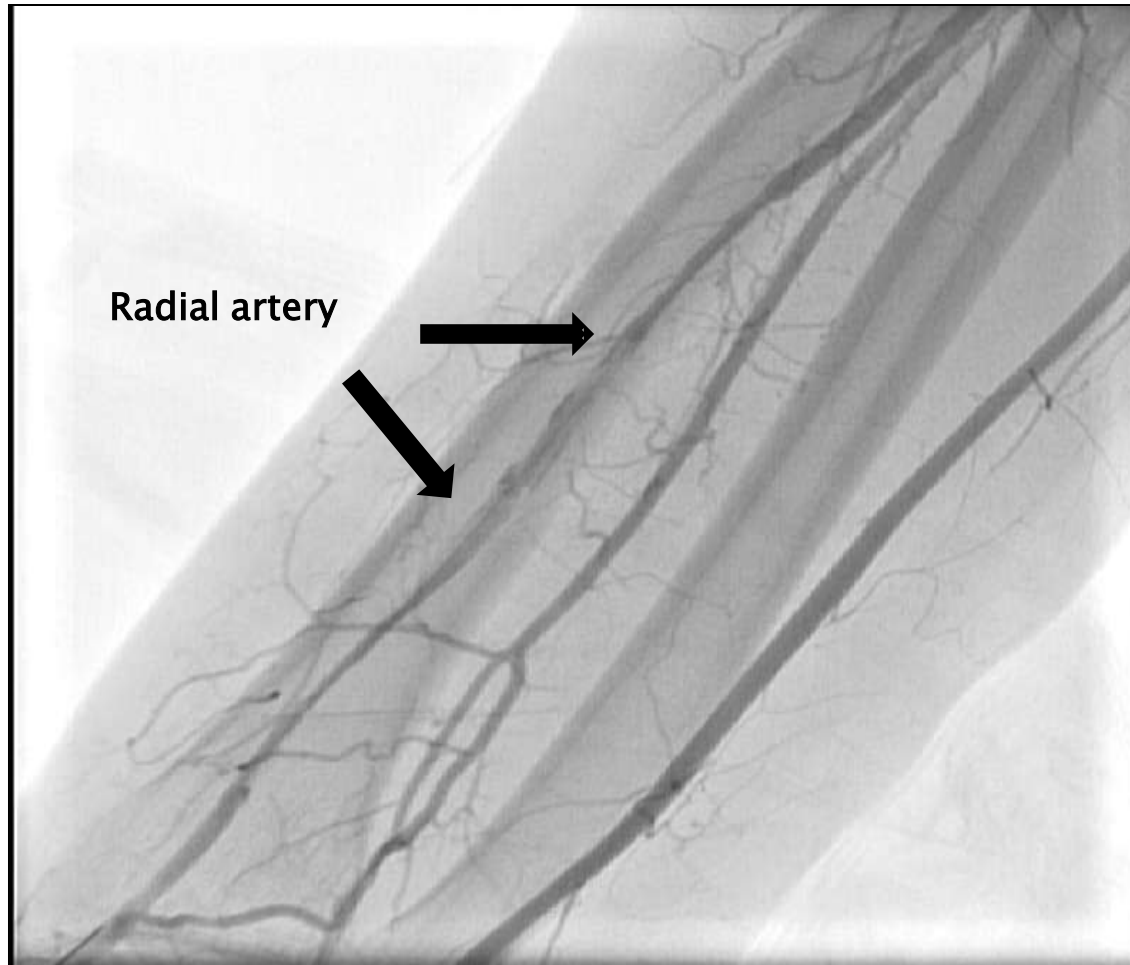
Jaradat Z, Revtyak G. Intra-arterial abciximab facilitates treatment of radial artery occlusion. TCT 2011

Radial Artery Recanalization



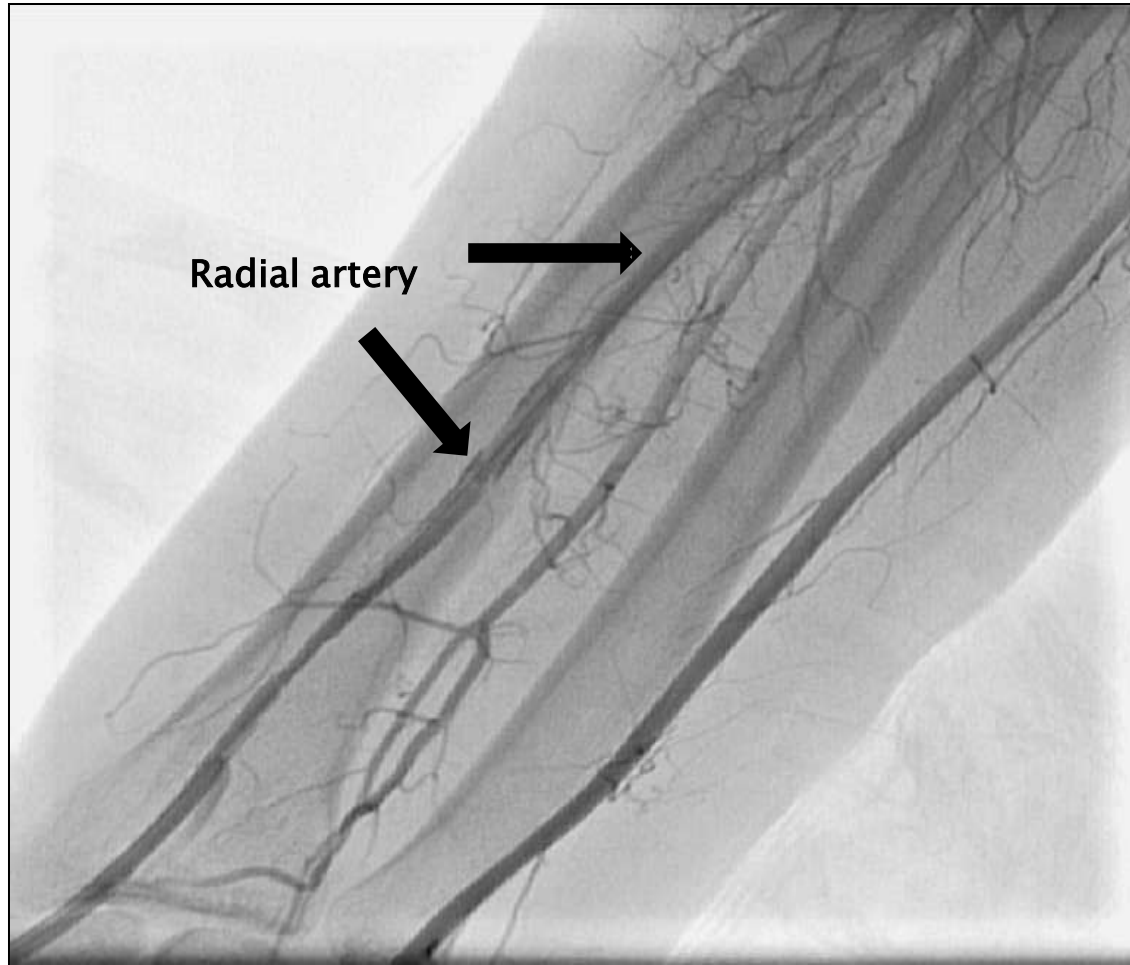
1. 0.014" Coronary wire across occlusion
2. Clearway infusion catheter (abciximab 90 sec)

Radial Artery Patency Restored




Balloon angioplasty then performed

Final Result: Return of pulse & symptoms resolved




Jaradat Z, Revtyak G. Intra-arterial abciximab facilitates treatment of radial artery occlusion. TCT 2011

Avoiding Radial Artery Occlusion

- ▶ Use the smallest sheath possible
 - ▶ Consider “sheathless” approach
 - ▶ Anticoagulation for diagnostic cases
 - ▶ Patent hemostasis technique for radial compression (avoids overcompression)
 - ▶ Removal of compression device ASAP (2hrs)
- 

Forearm hematoma

- ▶ Readjust TR band
 - ▶ Use second, more proximal TR band
 - ▶ Wrap arm with ACE bandage
 - ▶ Arm elevation
 - ▶ Cold compresses controversial
 - ▶ Sphygmomanometer on forearm
 - ▶ Pressure dressing
 - ▶ Compartment syndrome exceedingly rare
- 

Radial Artery Spasm

- ▶ During procedure:
 - Pain with wire or catheter manipulations
 - Inability to advance catheter up the arm
- ▶ After procedure:
 - The #@!\$ing sheath won't come out!



Radial Artery Spasm: Treatment

- ▶ Sedation
 - ▶ Vasodilators (nitro/verapamil) in sheath or wipe on catheter. IV Diltiazem
 - ▶ Use smaller French catheter
 - ▶ Warm compresses
 - ▶ Propofol
 - ▶ Papaverine
 - ▶ Extreme cases: General anesthesia or axillary nerve block.
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