SCAI TRIP 2014
Transradial Overview of Patient Set-Up

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Objectives

- Define patients that are ideal candidates for TR catheterization
- Verbalize contraindications/limitations to TR catheterization
- Identify pre-procedure assessment criteria
- Describe patient set-up for TR procedures
Disclosures

- Clinical Advisor–Abiomed Corporation
- Clinical Advisor–Teleflex/Arrow Company
- Clinical Advisor–Terumo Company
- Clinical Advisor–Medicines Company
- Clinical Advisor–Acist Medical Systems
- Presenter–HMP Communications
Patient Education

- Essential
- Radial first
- Preparation of radial (2) and femoral (1) sites
- Administration of local numbing agent
- Administration of sedation agents
- Positioning of arm during cath
- Benefits of TR
Patient’s Preferred Approach for Catheterization

Access Sites

- Radial: 93%
- Femoral: 7%

N=116
What Patient’s Like Most About Radial Catheterization

- 66% Can Sit Up
- 23% Less Pain
- 11% Simpler
Dual circulation
Patient Preparation

- The wrist hair clipped at possible access sites (right wrist, right femoral)
- IV access—contralateral—except if patient is also a candidate for RHC
- Arm band/jewelry removed from access site
- Modified Barbeau Test: Objective measurement to test dual circulation in hand
  “Normal or Abnormal”
  Objective
  Oximetric recordings
Performance: Modified (Plethysmography/Barbeau Test)

1) Place the oximetric probe on the first digit or thumb—note reading/record
2) Both the radial and ulnar arteries are occluded to notice obvious pallor of the hand. Note oximetric reading and record
3) Pressure on the ulnar artery is removed. Maintain pressure on the radial site
4) Record color of the hand and the oximetric reading
Note the waveforms disappear when both arteries are compressed and return when the ulnar artery pressure is released—"normal Barbeau test"
Abnormal Result

- If the color to the hand is delayed more than 8 seconds ("Allens" test)
- Differences in oximetric readings
Four Types of Ulnopalmer Arch Patency Findings

Barbeau et al. 2004
Figure 1: Abnormal waveform “C” of the ulnar artery

Figure 2: Normal waveform of the ulnar artery
# Access Site Check List

<table>
<thead>
<tr>
<th>Assessment Points</th>
<th>Yes/No</th>
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<tbody>
<tr>
<td>Past surgeries involving the wrist</td>
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<tr>
<td>Scaring of the wrist</td>
<td></td>
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<tr>
<td>Discoloration of distal fingers</td>
<td></td>
</tr>
<tr>
<td>History of Buerger’s disease</td>
<td></td>
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<tr>
<td>History of Raynaud’s disease</td>
<td></td>
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<tr>
<td>Dialysis access planned in arms</td>
<td></td>
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<tr>
<td>Upper extremity disease (subclavian stenosis)</td>
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<tr>
<td>Procedures requiring 8F sheaths</td>
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<tr>
<td>Procedures requiring IABP</td>
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Character of the Radial Pulse

- Doppler Pulse (D): Indicates the use of a doppler to locate the artery site
  - +1: Indicates a weak and thready pulse
  - +2: Indicates a normal pulse, easy to palpate
  - +3: Indicates a bounding pulse

- Dorsal Radial Artery: located in the “V” between the first finger and thumb
Dorsal radial artery of the thumb
Cath Lab Education

- Pulse oximetry placed on the index finger or thumb of access arm
- Wrist should be “cocked” (small towel, roll of tape, foam support)
- Tape the fingers down—prevents pronation (may pad tape)
- Use the natural fall of the wrist
Arm Set-up
Equipment to Consider

- Sheath—special radial sheaths
- Wires and Needles for access
- Catheters—special radial catheters available
- Drape—special radial drapes
- Support Board
- Monitors with saturation waveforms for the pre and post procedure areas
- Hemostasis device
Slide Board converted to a table extension
Creates a space for the equipment to set
“Lulu” drape developed at the JBVA
**Medication Preparation**

- **Sedation:**
  - Fentanyl
  - Versed

- **Antispasm**
  - Nitroglycerine: +/− (200 mcg IA)
  - Verapamil: (2.5 mg IA)
  - Diltiazem: (200 mcg IA)
  - Adenosine: significant arterial dilation/costs

- **Anticoagulation**
  - Heparin: (5000 units IV/IA) (minimum)
Right Heart Catheterization

Superficial veins of the right upper limb

- Subclavian Vein
- Axillary Vein
- Cephalic Vein
- Brachial Vein (with Brachial Artery)
- Basilic Vein
- Median Cephalic Vein
- Median Basilic Vein
- Radial Vein
- Ulnar Vein
Access in Cephalic/Basilic Vein

- **Pre:** 20–22g IV (accommodate 0.021 wire/16g accommodates .035 wire) and completed in Prep area

- **During:** Place tourniquet (under sterile drapes) on upper arm and access vein

- Utilize the “Lulu All Access Drape” (radial, brachial, and femoral access openings)
Right Heart Equipment

- 4 Fr PA Catheter
- 5 Fr Thermodilution
- Vein access
  - Basilic: ultrasound-guided
  - Cephalic: establish I.V. access

Post: TR band on right radial artery post procedure. Minimal artery occlusion with 13 cc air. Oximetric reading of radial 96% and ulnar 96% with reverse Barbeau testing. Fingers pink, blanch promptly, warm to touch with normal sensation. Dorsal radial pulse +1
**TR Band Flowsheet**

- If site oozes, inflate the TR Band with 1-2 cc of air or more to prevent oozing.
- When TR Band is deflated and no bleeding is noted, remove TR Band and apply a Tegaderm occlusive dressing. Additionally an Ace Wrap/wrist support device at the site may be utilized.
- Instruct patient not to bare weight on procedure site for 72 hours.
- Blood pressure or blood drawn to affected arm for 24 hours.
- Do not submerge hand for 5 days (no tub bath, no swimming, no dish washing)
Instruct the patient to watch for signs of infection, redress, swelling, fever

<table>
<thead>
<tr>
<th>Patient Received 5,000 units of Heparin or less</th>
<th>Patient Received Greater Than 5,000 units of Heparin or Angiomax</th>
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<tbody>
<tr>
<td>__ cc inflated @ _____________</td>
<td>__ cc inflated @ _____________</td>
</tr>
<tr>
<td>3 cc down @ ________________</td>
<td>1 Hour</td>
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<tr>
<td></td>
<td>3 cc down @ ________________</td>
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<tr>
<td>3 cc down @ ________________</td>
<td>30 Mins</td>
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<tr>
<td></td>
<td>3 cc down @ ________________</td>
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<td>3 cc down @ ________________</td>
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<td>3 cc down @ ________________</td>
<td>3 cc down @ ________________</td>
</tr>
<tr>
<td>Total deflated @ ____________</td>
<td>Total deflated @ ____________</td>
</tr>
</tbody>
</table>
Once the TR Band is in place on the Radial artery and inflated, oximetric waveforms should be monitored from the 1st finger or thumb of the accessed site.

You compress completely the ULNAR artery and watch the waveform. If the radial artery is patent, you will have a waveform with the ulnar occluded (radial artery blood flow).

If there is no waveform, the radial artery is occluded. You will need to slowly withdraw air from the band until the waveform appears. The waveform is somewhat delayed, so withdraw 1 cc very slowly. You should have a waveform to show you have compressed the radial artery, but it is not occluded.
Remember: It is about what is best for the patient!