Transradial Interventions

Marcelo Guimaraes, MD FSIR
Associate Professor Radiology and Surgery
Director, Vascular and Interventional Radiology
Disclosure

Consultant:

- Cook Medical Inc.
- Baylis Medical
- Terumo Interventional Systems
- Guerbet

Patents: Cook Medical Inc.
Is there any better access to perform vascular interventions?....
Radial access. Why?
Radial access. Why?

Patients perspective:

- Immediate ambulation
- Greater patient satisfaction
- Shorten length of stay
- Fewer access site complications
- Mobility is allowed: nausea/vomiting, chronic back pain, access to the restroom
Radial access. Why?

Technical perspective:

• Concept: “Patent hemostasis”
• Borderline coagulopathy in liver disease
  \( \uparrow \) INR, \( \downarrow \) platelets. Correction at the same levels?
• Favorable anatomy for catheterization from above
Visceral Arteries
Different approach for complex anatomy
COAGULOPATHY?
MANY PATIENTS HAVE COAGULOPATHY FROM LIVER DISEASE

- Splenic embolization
- Hypersplenism
- Thrombocytopenia 16K, 4 packs.... 22K.??
Coagulopathy ?
Radial access. Why?

Work-flow/business perspective:

• Supplies cost savings (no closure device)
• Quicker turn-over of recovery beds
• Optimization of the recovery area space
Radial access. When?

Suitable for everyone?

R Wrist - R Carotid = 65-70 cm
R Wrist - L Carotid (bovine arch) = 65-70 cm
L Wrist - Renal = 80-90 cm
L Wrist - Mesenteric = 80-90 cm
L Wrist - Superficial Femoral = 135-155 cm
L Wrist - Subclavian = 55-65 cm
L RA at Wrist level
L Wrist - Common Iliac = 105-115 cm
L Wrist - Common Femoral = 125-135 cm
L Wrist - Popliteal = 155-170 cm
L Wrist - Foot = 200-230 cm
Radial access. When?

Suitable for everyone?

Patients > 70 years

History of stroke

Calcified aortic arch
Risk of stroke

- Femoral access: Mikaelson catheter reformat in the aortic arch...
- Not free from having a stroke
Risk of stroke

Influence of access site choice on incidence of neurologic complications after percutaneous coronary intervention

Karim Ratib, MB, ChB, Mamas A. Mamas, MD, Helen C. Routledge, MD, Peter F. Ludman, MD, Douglas Fraser, MD, James Nolan, MD on behalf of the British Cardiovascular Intervention Society and the National Institute for Cardiovascular Outcomes Research

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5-year period: ~ 500,000 patients

Rate of stroke 0.11-0.20% radial access
Patient selection in clinic
Triple check - Eligibility for RAVI access

Physical exam: Allen’s test

Radial artery > 2.0mm
* Female, smoker
Triple check - Eligibility for RAVI access

Physical exam: Allen’s test
Triple check - Eligibility for RAVI access

Physical exam: Barbeau’s test
Evaluation for eligibility anywhere...

Masimo iSpO2(TM) Pulse Oximeter for iOS Platform (iPhone, iPad & iPod touch) for Consumers* to Debut at CES

IRVINE, Calif. – Masimo makes its debut at CES in Las Vegas next week with iSpO2(TM), the pulse oximeter cable and sensor utilizing Masimo SET(R) technology for use with iPhone, iPad or iPod touch with 30-pin connector.

Masimo iSpO2(TM) pulse oximetry cable and sensor (available at iSpO2.com) is compatible with the iPhone, iPad, or iPod touch. (PRNewsFoto/Masimo)
Triple check - Eligibility for RAVI access
Radial artery US exam

Radial artery > 2.0mm (AP diameter): good for 5-Fr sheath
* Female, smoker
Radial Artery Diameter vs Devices

Radial artery mean diameter in ultrasound: 2.6mm (1.8 - 3.4 mm)

<table>
<thead>
<tr>
<th>Introducer sheath</th>
<th>Outer diameter</th>
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<tbody>
<tr>
<td>6 - Fr</td>
<td>2.6 mm</td>
</tr>
<tr>
<td>7 - Fr</td>
<td>3.1 mm</td>
</tr>
<tr>
<td>6 – Fr (Slender)</td>
<td>2.4 mm</td>
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</table>
Material for radial access

- Ultrasound
Material for radial access

- Micropuncture kit
  - Introducer sheath
  - Needle
  - 0.018” wire

Shorter needle:
  - standard needle
  - jelco
Radial access - SET UP

- Arm positioning in 90 degrees abduction
Radiation safety

- Distance from the radiation source
- Shield: between the operator and patient/radiation source
Radial access step-by-step

Advance the sheath completely

Secure hydrophilic sheath: Optsite
Radial access step-by-step

Medications

- Vasodilator through the radial sheath (beginning / end of the case)
  Nitroglycerine, 200 ug each time

- Nicardipine (25mg vial mixed with 250cc saline), inject 3cc each time

- Every time the catheter is exchanged
Radial access step-by-step

Radial arteriogram after vasodilator:

- Hand injection
- 5-6 cc
- End point
Radial access step-by-step

After vasodilator, Radial arteriogram:

- Variations of the anatomy
- Difficult anatomy
Uterine Fibroid Embolization

hypogastric angiograms
Devices: 4 or 5 Fr Multipurpose catheter
Progreat 2.8 Fr, 150 cm + Advantage microwire 0.018” 180cm
Goiter - Thyroid Embolization

Devices: 5 Fr Simmons 2 catheter (pre-curved catheter)
Progreat 2.8 Fr, 130 cm
GASTROINTESTINAL BLEEDING

Devices: 5 Fr Multipurpose catheter
Progreat 2.8 Fr, 150 cm + Advantage microwire 0.018” 180cm
SPLENIC EMBOLIZATION

Devices: 5 Fr Jacky catheter
Progreat 2.8 Fr, 150 cm (tortuosity) + Advantage microwire 0.018” 180cm
BRONCHIAL EMBOLIZATION
Subclavian Angioplasty
Carotid Angioplasty

Left carotid artery

Right radial approach
Visceral angioplasty
RENAL ANGIOPLASTY, AFTER TRANSFEMORAL FAILURE

- 5 Fr Jacky catheter, 0.035” 150cm 1.5mm J hydrophilic, 300 cm Amplatz stiff wires,
- 5 Fr Multipurpose guiding catheter
- 0.035 or 0.018” 4-6 mm 120 cm balloon / 6 Fr 5-7 x15-25 mm balloon expandable stents
- Alternative: Advantage microwire 0.018” 300 cm
SFA: balloon PTA, DEB, STENTING

5 Fr Multipurpose catheter, 0.035” 1.5mm J hydrophilic, 300 cm Advantage stiff wires, 6-7 Fr long (100-120 cm) Slender sheath (on the way…)
0.035 or 0.018” 5-7 mm 130-180 cm DE balloons / 6 Fr self-expandable stents
Alternative: Advantage microwire 0.018” 300 cm, mow profile balloons and stents
Small diameter SFA 5-6mm Balloon PTA
RENAL ANGIOPLASTY

AFTER TRANSFEMORAL FAILURE

Radiation exposure
Procedure time
Contrast volume
Number of devices

> Global cost
End of the procedure: aspirate the sheath Vasodilator and final forearm arteriogram (sheath)
End of the procedure...

Radial compression devices
Radial compression devices
MUSC Nursing Protocols

• 5-Fr: patient is discharged in 2h

• Within the 1 h: deflation of 3-4 cc every 15’

• Full deflation should be completed in 1 h

• Second hour: TR band left in place, not insufflated. Observation, reinflate as needed
Radial artery access complications

- Hematoma, bruising
- Occlusion
- Infections
- Dissection
- Pseudoaneurysm
- AVF fistula
- Hand ischemia
Randomized Clinical Trial
MUSC

TACE under Radial vs Femoral artery access

- Age
- Diagnosis
- Diameter of the radial artery
- Procedure #1
- Procedure #2
- Procedure #3
- Total number of procedures
- Patency
- Smoker Y/N
- Complications Y/N
- Dissection
- Hematoma
- Bruising
- Infection
Randomized Clinical Trial
MUSC

TACE under Radial vs Femoral artery access

Study design (3 procedures):

- TACE #1: FEMORAL
- TACE #2: RADIAL
- TACE #3: PATIENT’S SELECTION

PATIENT’S SELECTION?
Patients satisfaction.
Work-flow efficiency...

- Discharge in 2 h
- Comfortable environment
- Maximize space
Radial lounge
MUSC
Future for radial access in peripheral interventions…

- Simple and safe technique (follow the steps !!)
- Patient’s satisfaction
- Potential reduction of costs
- Industry: longer devices, similar performance