VALUE AND OPTIMAL TECHNIQUE FOR UPPER EXTREMITY ACCESS IN STANDARD AND COMPLEX ENDO AAA REPAIRS
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Disclosures
None

- Upper extremity access frequently required for complex endovascular aortic procedures
- Reported complications for cardiac or peripheral vascular procedures
  - All procedures:
    - 2% local complications femoral (bleeding), brachial (bleeding), and radial (technical failure, occlusion)
    - Increased complications for females, non-femoral access, and >5F sheath
  - Endovascular:
    - Percutaneous brachial: 4.9F-6.5% local complications (thrombosis, pseudo), greater in women
    - Open: FEVAR with upper extremity, median 12F, 4% local complications, 1% stroke

Need for upper extremity access
- Branch treatment in caudally oriented branch cuffs in F/BEVAR
- Body floss technique to facilitate navigation in tortuous vessel anatomy
- Re-intervention after previous endoaortic procedures

Left Brachial-Femoral Wire
- Infra-renal EVAR: very helpful for the severely angulated neck (>45 degrees)
- Percutaneous femoral and brachial access
- 6 Fr, 45cm sheath for brachial artery to prevent injury to subclavian-aorta junction
- Snare wire in distal thoracic aorta

Access options
- Sheath size, determined by the task needed
  - 4-5 Fr: Body floss
  - 6-8 Fr: Individual branch treatment
  - 12 Fr: Sequential multi-branch treatment
  - 18-20 Fr: Simultaneous branch treatment
Brachial access

Multi-sheath access: Axillary/High Brachial

Parapuncture vs Buddy

Percutaneous axillary access

• Full heparinization for type 2, 3 arches, prior to needle access
• US guided – 1st or 3rd portion of axillary. Avoid traversing pec minor

Percutaneous axillary access

• 14 consecutive patients
• 100% Technical success
  – No neurologic issues
  – No occlusion
  – 1 Patient with need for additional proglide placement
  – 2 Patients with stable hematoma

Special Considerations

• Arch II/III
  – Sheath stability
  – Target vessel anatomy
    • Tortuosity
    • Stenosis
    • Proximity to the arch
• LIMA-LAD: consider a conduit, parallel sheaths
Vascular Complications
- Thrombosis
- Dissection
- Pseudoaneurysm
- Hematoma
- Wound infection

Neurological Complications
- Motor or sensory deficit
- Stroke

Access Location and Technique

Access Location and Technique

Median Sheath Size/Range

Complications by Location

Stroke
- 72F repeat TEVAR for PAU with stent migration
  - Left brachial percutaneous, 5F
  - Passed wire through prior subclavian-carotid transposition
  - Left MCA stroke

- 79M branched TEVAR
  - Conduit from left chest to carotid-subclavian bypass, 12F
  - Body floss, single vessel branch treatment
  - Left PCA stroke

Periscope Technique
**Setting up for future**
- Facilitates proximal extension with fenestrated/branched arch TEVAR
- Facilitates distal extension TEVAR
- Preserves L SCA path to visceral/renal targets for fenestrated/branched EVAR
- Avoids subsequent carotid instrumentation inherent in surgical debranching

**Results of Sandwich Periscope TEVAR @ USC**
- N=20
- All for LSCA incorporation
- 17 TBAD, 2 TAAA, 1 Pseudo
- 2 pts with periop complications
  - 1 TIA
  - 1 distal SINE causing visceral/renal malperfusion
- No arm ischemia, no branch stent occlusion at 4 months median F/U (0-18 months)

**Upper Extremity Access**
- Facilitates antegrade renal/mesenteric cannulation
- Allows brachial-femoral wire ("body floss")
- Larger sheaths > 7Fr requires more proximal access i.e. upper brachial, axillary
- Percutaneous vs open access
- Periscope technique preserves left subclavian access for later procedures