Technical Tips For The Management Of Cervical And Mediastinal Iatrogenic Artery Injuries: How to Avoid Disasters

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Disclosures
W.L. Gore:
TEVAR Training—course director
Prairie Research (Bard):
LEVANT-2—consultant
Silkroad:
Silkroad—consultant

Background
Central Venous Access
• Catheters range from 7-11 French
• Iatrogenic arterial injury 3-5%
• <1% incidence of pseudoaneurysm, fistula, dissection, or embolus

Institutional Review
5-year retrospective single center review
• All carotid, subclavian, and innominate artery injuries
• Excluded injuries treated with compression alone
• 12 cases
  - 8 treated with endovascular techniques
  - 4 treated with open repair

Case Example #1
75-year-old man 3 days after coronary bypass
9-Fr sheath in the left subclavian artery
Case Example #1
Dual access: right femoral + subclavian sheath
Treated with suture-mediated Proglide over 0.035 inch wire

Case Example #2
26 year old woman with vascular Ehlers-Danlos
Attempted right subclavian vein access with needle injury and pseudoaneurysm of right subclavian artery
Open right brachial access and stent graft exclusion
Persistent sac filling from internal mammary artery

Case Example #3
80 year-old woman with polycythemia vera
9-Fr plasmapheresis catheter in left subclavian artery (5 days)
Treated with thoracoscopic clipping
Case Example #3
Peri-catheter fresh clot
Acute cerebellar stroke

Case Example #3
Dual access
• Right femoral
• Left brachial
Vertebral filter
Distal subclavian occlusion
Stent graft exclusion
Suction thrombectomy

Case Example #3

Case Example #3

Case Example #4
47 year old woman
Attempted right subclavian vein catheter
Weeks later noted 3-cm subclavian artery pseudoaneurysm

Case Example #4
Treated with open subclavian artery repair
**Summary: Factors to consider**

Location: carotid, subclavian, or innominate artery
Complication: thrombus, fistula, pseudoaneurysm
Timeframe: pericatheter clot

Treatment options:
- Manual compression
- Closure device
- Stent graft exclusion
- Ultrasound-guided thrombin injection
- Open surgical repair

**Conclusions**

- Prevention with ultrasound guidance
- Early recognition and assessment
- Endovascular options
- Open surgical repair less frequently needed