M&M: Nightmare Management

Guy S Mayeda, MD
Keys to Managing Complications in the Office Interventional Suite

• Anticipate complications in every case and have a strategy planned ahead of time
• Maintain all the inventory necessary to deal with complications
• Train support staff on their individual roles in the event of an emergency
• Don’t panic
Arterial Perforation – Infrainguinal

86 yo male with history of CAD, prior MI and endarterectomy of right SFA in 1990 admitted with acute ischemic rest pain in right leg and newly diagnosed A-fib
Post Rheolytic Thrombectomy

SFA occlusion treated with AngioJet thrombectomy + tPA

Residual underlying stenosis treated with balloon angioplasty
Post Balloon Angioplasty

- Occlude common femoral artery by external compression or low pressure balloon inflation
- 260-300 cm long 0.035” wire
- Localize site of perforation or length of arterial tear
- Oversize diameter of covered stent by 1-2 mm
Self Expanding Covered Stents

• Viabahn 0.035”
  – 5-8 mm dia x 15-79 mm length 7F sheath
  – 9-11 mm dia x 29-79 mm length 8F sheath
  – Shaft Length 80-135 cm

• Viabahn 0.018”
  – 5-6 mm dia x 2.5-25 mm length 6F sheath
  – 7-8 mm dia x 2.5-25 mm length 7F sheath

• Fluency 0.035”
  – 6-7 mm dia x 40-120/60 mm length 8F sheath
  – 7-10 mm dia x 80/40-120 mm length 9F sheath
  – 12-13.5 mm dia x 40-120 mm length 10F sheath
  – Shaft Length 80-117 cm (Bareback option)
Post Covered Stent Deployment

• Successful Bailout with Covered Stent

• However....
Arterial Perforation - Infrapopliteal

- Wire perforation

- Be mindful of distal wire tip during femoral interventions; especially hydrophilic wires
Post Prolonged Balloon Inflation

- Embolic thrombus within the tibioperoneal trunk helped seal the perforation site after a prolonged balloon inflation at 2 atm pressure.

- Jomed/Graftmaster balloon expandable covered coronary stent (Less desirable 2nd option)
Arterial Perforation - Iliac

- Occlude arterial inflow with oversized low pressure balloon inflation within common iliac artery; or
- Occlude abdominal aorta with compliant balloon (Gore Q-50) via contralateral groin 12F sheath
- Deploy covered stent that is oversized 1-2 mm diameter
- Simultaneously arrange emergency transport to hospital
Venous/Fistula Perforation

• Extrinsic compression at arterial anastomosis of fistula to occlude inflow

• For central venous perforations, deploy covered stent via femoral venous access
  – Larger sheaths create less of a hemostasis issue
  – Obviate risk of stent embolization to right heart
Cephalic Vein Post Covered Stent
Wire Fracture

Patient with nonhealing ulcer on left 4th toe and multisegmental calcified stenoses in left popliteal artery
Orbital Atherectomy with 1.5 Solid Crown

• While removing 1.5 crown post atherectomy, distal wire tip noted in tibial peroneal trunk
Endovascular Snare Devices
Fractured Wire Retrieved With 4 mm Snare
Stent Embolization into Right Heart

- 150 mg IV Lidocaine
- Occlude arterial anastomosis of fistula
- Access femoral vein with minimum 14 French sheath
- Minimum 20-30 mm snare
- May need to cutdown on femoral vein if unable to retrieve stent through or together with venous sheath
No Reflow From Micro Emboli

Right popliteal artery pre and post orbital atherectomy and 3.5 mm balloon angioplasty
Severe No Reflow in A-Tib Artery

- Dual function of aspiration thrombectomy devices
  - Aspiration of micro debris from distal vascular bed
  - Delivery of vasodilator drugs selectively into distal artery without sacrificing wire position
- Allows injection of contrast into distal vascular bed without sacrificing wire position
Aspiration Thrombectomy Devices
Mechanical and Pharmacologic Treatment of No Reflow

- Aspiration thrombectomy
- 600 mcg IA Nitroglycerin
- 200 mcg IA Adenosine
- 200 mcg IA Cardene or Verapamil
Embolic Complications

- Always easier to avoid embolic complications by utilizing embolic protection devices during high risk cases
Capturing an Overfilled Filter

- Utilize a 5F x 90 cm sheath through the 7F sheath (or 4F x 90 cm sheath through the 6F sheath to:
  - Aspirate debris floating above the filter
  - Retrieve the filter trying to minimize compression of the filter basket
Post Images of SFA and P-Tib
Plaque Retrieved and Debris Captured by Filter
Filter Wire Retrieval in Thrombus

• Especially important not to compress the filter when filled with friable thrombotic debris
Arterial Sheath Won’t Pull Back

• Unable to retrieve contralateral arterial sheath due to iliac tortuosity and calcification
  – Don’t pull harder
  – Reinsert sheath introducer with stiff 0.035” wire
  – Extrinsic pressure over iliac artery loops under fluoroscopy
Femoral Pseudoaneurysms

- Usually preventable if using ultrasound and fluoroscopic guidance + MicroPuncture Kit during arterial access

- Use ultrasound guided compression to occlude pseudoaneurysm neck (or direct thrombin injection into pseudoaneurysm)
Cardiopulmonary Arrest

• Essential that all staff are familiar with “code blue” policy and procedures
  - Invest in an AED and make sure all staff know how to use it
  - Run mock codes in the office quarterly
  - Review crash cart inventory and medications monthly
  - If ventricular ectopy occurs during a fistula intervention make sure the guide wire is not in the right ventricle
Thank you!