What to do With Fractured Filters and Embolic Filter Fragments

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IVC Filter Utilization in the US

National Trends in IVC Filter Utilization

- Retrievable filters appear to prevent PE (1.7%)
- 2001-2011 concern for high rate of penetrations, fractures, migrations (MAUDE database)
- Filter removal rates are quite low (20% - 30%)

Complications of IVC Filters

- Device Related Complications
  - Migration
  - Embolization
  - Perforation
  - Fracture

Disclosures

- Advisory Board:
  - C. R. Bard
  - Boston Scientific
- Speaker/Teaching:
  - EKOS Corp., a BTG International group company
  - Cook Medical
  - Penumbra
  - Medtronic
  - C. R. Bard

What Is Present Controversy with IVC Filters?

- Retrievable filters appear to prevent PE (1.7%)
- 2001-2011 concern for high rate of penetrations, fractures, migrations (MAUDE database)
- Filter removal rates are quite low (20% - 30%)
IVC Filter Fracture - Why?
- Strut fractures reported in 1-3% of filters
  - thought to be related to perforation and longer dwell times
- How much of “FF” filter related and how much is patient related?

IVC Filter Fracture - What to do?
- Risk of filter embolization
- Risk of fragment embolization
- Risk of lethal or bleeding event
- Do we treat a fracture filter just like a filter; when deciding whether to remove?
- Does the efficacy change?

Why do we see fractures?
- Table 3: Coarse Filter Integrity and Correlation with Dwelling Times

Acute IVC Filter Fracture
- When removing a filter assume it may be fractured or going to fracture
- Obtain pre-removal scout films and oblique views
- Know the filter being removed! How many legs?
- Be prepared to remove fracture fragments

Tools for Removal
- Endobronchial Forceps
  - Grasping ability
  - Dissect tissue from an embedded filter top
- Snares
- 16 French Sheaths

Endo-bronchial Biopsy Forceps
- Use to dissect the filter from caval wall
- Grasp filter after dissection
- Comes in 1.5 mm (10Fr)/3 mm (12Fr)
- Lymol (model 4162)
- Use a Cook 16 French sheath
Rate of Success

- Not 100% successful if chronic
- May require a second attempt
- Acute fragment likely easiest at the time

65 yo asymptomatic female with a 10 year old Eclipse IVC filter and a filter fragment in the Right lower lobe PA branch
57 yo Female with history of Breast CA and Factor V Leiden presents with an IVC filter placed 8 years ago after a DVT on anticoagulation.
22 yo F with bilateral leg swelling with a filter placed 2 years previously after a MVC with liver laceration and DVT
Conclusion

- A fractured filter and filter fragment at risk for embolization
- May occur during standard removal
- Document, document, document!
- Removal of these filters usually requires proper tools and control of fragments

Thank You!