Avoiding and Managing IVC Disruption during Difficult IVC Filter Retrieval.
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Disclosure Statement of Financial Interest
Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Company | Affiliation/Financial Relationship
--- | ---
Abbott Vascular | Scientific Advisory Board
 | Consulting agreement
 | Speakers fee / Honorarium
Medtronic | Scientific Advisory Board
 | Consulting agreement
 | Speakers fee / Honorarium
 | Research support / REALITY Trial National Co-PI
Boston Scientific | CLI Advisory Board
BD / Bard | CLI Advisory Board

Case Presentation

• 72 yo woman h/o R LE DVT, s/p IVC filter placement
• Presented with bacteremia and duodenal perforation

Filter strut in duodenum
Transferred from OSH for filter retrieval

What Now??

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Move from Plan A to Plan B and/or C
• Large bore IV access (femoral cordis)
• 16-18F bilateral femoral sheath placement
• Occlusion balloon placement (cava/bi-iliac)
• Call for / Communicate with Anesthesiologist
• Call for blood and begin resuscitation
• Aortic endograft / cuff deployment

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Underwent attempt at IVC filter retrieval under light sedation
• Snared filter from UJ-only access via co-axial 14F/18F sheath system
• Significant force applied to guidewire looped between filter struts
• Sudden onset hypotension (SBP 60)
• Interventional-suite without anesthesia
• No cross-matched blood
• Single 21 gauge IV access

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• Urgent Vascular Surgery consult and code activation; patient intubated
• Resuscitation and large bore access
• Occlusion balloon control (both iliacs)
• Anticoagulation once control of hemorrhage
• Placement of Gore TAG endoprosthesis x 2
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Avoiding & Managing IVC Disruption

Principals for Avoiding Catastrophic Caval Injury

1. Recognize various complications that can occur
   - Vasospasm
   - Thrombosis
   - Perforation

2. Consider your indication for removal carefully
3. Remove filters before they develop complications or become chronically embedded in first place.

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Common sense
Dissection technique with endobronchial biopsy forceps
Spectranetics 14F SLS Laser Sheath technique to reduce force required for removal
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Principals for Avoiding Catastrophic Caval Injury

Perforation

- Common sense
- Dissection technique (balloon-assisted, endobronchial biopsy forceps)
- Spectranetics 14F SLS Laser Sheath technique to reduce force required for removal

Stavropoulos SW, JVIR 2009

- 25 patients underwent complex retrieval
- Decreased force from 7.2lbs to 5.5lbs
- Technical success in 24 (96%)
- One (4%) major complication
  - Acute thrombosis requiring lysis
- Three (12%) minor perforations
  - All self-limited, no transfusions

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Lynch FC (JVIR 2011) 1127 59%
Irwin E et al (J of Trauma 2010) 118 70%
Kalina M et al (Am Surg 2012) 307 31.5% (15% pre-registry)
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**Conclusions**

- Awareness of the potential for various caval injuries can allow for strategies to mitigate the risk of complications.

- High-risk retrieval techniques for chronically embedded filters should probably be limited to patients where the rare but serious risks are justified.

- Continued focus on increasing overall retrieval rates soon after implantation should be a primary goal of interventionalists placing IVC filters.