Avoiding and Managing IVC Disruption during Difficult IVC Filter Retrieval.
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Disclosure Statement of Financial Interest
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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

Avoiding & Managing IVC Disruption

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What Now??

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

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

Underwent attempt at IVC filter retrieval under light sedation
- Snared filter from IJ-only access via coaxial 14F/18F sheath system
- Significant force applied to guidewire looped between filter struts
- Sudden onset hypotension (SBP 60)
- IR-suite with no anesthesiologist
- No cross-matched blood
- Single 21 gauge IV access

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Avoiding & Managing IVC Disruption

**Principals for Avoiding Catastrophic Caval Injury**
1. Recognize various complications that can occur
   - Vasospasm
   - Thrombosis
   - Perforation

- Intermittent relaxation of filter
- Full anticoagulation for complex retrieval attempts

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Avoiding & Managing IVC Disruption

**Principals for Avoiding Catastrophic Caval Injury**
1. Recognize various complications that can occur
   - Vasospasm
   - Thrombosis
   - Perforation

- Anticoagulation
- Periodic venogram from femoral access to assess caval collapse vs intussusception
- Gentle traction on iliac balloons

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Avoiding & Managing IVC Disruption

**Principals for Avoiding Catastrophic Caval Injury**
1. Recognize various complications that can occur
   - Vasospasm
   - Thrombosis
   - Perforation
Avoiding & Managing IVC Disruption

Principals for Avoiding Catastrophic Caval Injury

- Common sense
- Dissection technique with endobronchial biopsy forceps
- Spectranetics 14F SLS Laser Sheath technique to reduce force required for removal

25 patients underwent complex retrieval
- Decreased force from 7.2lbs to 5.5lbs
- Technical success in 24 (95%)
- One (4%) major complication
  - Acute thrombosis requiring lysis
- Three (12%) minor perforations
  - All self limited, no transfusions

1. Recognize various complications that can occur
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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<th>Study Details</th>
<th>Retrieval Rate</th>
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<tr>
<td>Lynch FC (JVIR 2011)</td>
<td>59%</td>
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<td>Irwin E et al (J of Trauma 2010)</td>
<td>70%</td>
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<tr>
<td>Kalina M et al (Am Surg 2012)</td>
<td>31.5% (15% pre-registry)</td>
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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.