Retrievable Inferior Vena Cava Filter – Removed but not Forgotten

2018 VEITH symposium

November 16, 2018
New York, NY

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Case Background

- 50 y.o. male
- Complicated PMH including intracranial aneurysm (2010) and PCA dissection with associated hydrocephalus (2014)
- No prior history of DVT or PE
- Temporary IVC filter:
  - Placed 2014
  - Removed 2016 with a patent IVC

Case Presentation

- Developed progressively increasing lower extremity edema
- Presented with bilateral DVT of the lower extremities
  - Anticoagulated but GI bleeding required discontinuation
  - Repeat IV filter placement was attempted revealing chronically occluded IVC with collaterals

IVC Occlusion with Collaterals

Nothing to Disclose

I have no relevant financial relationship(s) with any proprietary entity producing health care goods or services related to the content of my talk
Management of Venous Thromboembolic Disease

- High morbidity. High mortality.
- PE is a common cause of death in hospital patients

**Treatment:**
- Anticoagulation is first line
- Absolute indications for IVC filters:
  - DVT with a contraindication to anticoagulation
  - DVT with anticoagulation failure or complication


Relative Indications for IVC filter placement
- Free-floating thrombus in the IVC or iliofemoral segments
- PE and limited cardiac reserve
- Prophylaxis before surgery in patients with known DVT
- Poor anticoagulation compliance
- Protection during DVT thrombolysis
- Prophylaxis in patients with severe trauma or spinal cord injuries


IVC Complications

**Procedural:**
- Thrombosis at access site: 2-35%
- AVF formation: 0.02%
- Filter tilt: 5%
- Filter migration: Most <1%

**Post-procedural**
- Cava thrombosis: <10% (retrievable>permanent)
- DVT: as high as 43%
- Filter fractures: 1-2%
- Perforation


**Retrieval**
- Filter fracture
- IVC injury
- Intussusception
- Hemorrhage
- Dissection
- Failure to remove

*Higher incidences with longer durations*
IVC Complications

Procedural
Post-procedural
Retrieval

Post-Retrieval Complications?

Post-Retrieval Complications

- IVC filters may leave a lasting or permanent effect on endothelial cells
- Paucity of long-term studies in this area:
  - Incidence of vascular complications after filter removal
  - Duration in body compared to complication rate

Case Revisited

- Previously patent IVC which thrombosed and developed collaterals in the span of a few years
- Likely multifactorial
- Could the IVC filter have played a role?
- What did we do for this patient? ??????

Take Home Points

- IVC filters are increasingly used in patients for thromboembolic protection
- No long term studies are available for assessment of caval or vessel patency after IVC filters are removed
- Long term complications may occur- remember Virchow’s Triad
- Long term risks and benefits of IVC filter must be weighed for the individual patient