VENA CAVA FILTER

OBJECTIVE:
To describe the indication for a vena cava filter (VCF), the most common and important complications, and the practical management of patients who have a VCF placed.

BACKGROUND:
Appropriately placed VCFs are designed to reduce the frequency of significant pulmonary embolism (PE) by trapping emboli arising in the deep veins before they reach the lungs. They do not prevent deep vein thrombosis (DVT).

INDICATION FOR VCF INSERTION:
Use of a VCF should be considered judiciously given the lack of high quality evidence that they prevent clinically important PE. VCFs are indicated in patients with a recent (approximately 2-4 weeks) proximal DVT in whom therapeutic anticoagulation is not possible because of high bleeding risk.

We do not support placing a VCF for the following reasons:
- Patients with PE who have a contraindication to anticoagulation unless there is a concomitant proximal DVT*;
- Patients with major PE who have limited cardio-pulmonary reserve who are anticoagulated;
- Recurrent DVT or PE despite usual therapeutic anticoagulation;
- As primary thromboprophylaxis in patients at high risk for VTE such as major trauma, major surgical procedures; or
- In thromboembolic pulmonary hypertension.

*this area is controversial; some clinicians would consider placing a VCF in patients with recent PE, cardiorespiratory compromise and contraindication to anticoagulation.

VCF OPTIONS:
There are 2 types of VCF:
1. Permanent (non-removable) filters
2. Retrievable (optional) filters, which are designed to be removable when they are no longer necessary or which can be left in place if they cannot be removed

We only recommend the use of retrievable filters. Unless there are extenuating circumstances, patients who receive a VCF should have the filter removed once appropriate anticoagulation is started.
ADVERSE EFFECTS OF VCF:

1) Adverse effects related to VCF placement:
   - insertion site hematoma or thrombosis
   - filter misplacement
   - acute filter embolization

2) Other possible complications of VCF:
   - inferior vena cava (IVC) thrombosis, occlusion or stenosis
   - increased rate of subsequent lower extremity DVT
   - filter migration
   - filter fracture and embolization of filter components
   - penetration of filter struts outside the IVC and into adjacent structures
   - inappropriate delay in provision of anticoagulation in patients with acute VTE
   - failure to retrieve the VCF

POST-VCF INSERTION MANAGEMENT:

1) Anticoagulation should be initiated to prevent extension of the DVT as soon as it is safe to do so (once the contraindication to anticoagulation has resolved).
2) Virtually all VCFs should be removed shortly after the patient has been appropriately anticoagulated. The longer a filter is left \textit{in situ}, the lower the success of retrieval.
3) If a VCF is not removed, the patient requires regular, long-term monitoring of clinical status and filter integrity.

SPECIAL CONSIDERATIONS:

- Very limited evidence supports the use of VCFs and there is no evidence that filters prevent fatal PE.
- The duration of anticoagulation is generally not affected by the presence of a VCF. Patients require anticoagulation for the appropriate duration for the DVT but not just because they have a filter in place.
- There are few studies of VCFs in children.

OTHER RELEVANT GUIDES:

- Deep Vein Thrombosis (DVT): Treatment
- Pulmonary Embolism (PE): Diagnosis and Treatment

REFERENCES:


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Please note that the information contained herein is not to be interpreted as an alternative to medical advice from your doctor or other professional healthcare provider. If you have any specific questions about any medical matter, you should consult your doctor or other professional healthcare providers, and as such you should never delay seeking medical advice, disregard medical advice or discontinue medical treatment because of the information contained herein.