



VENA CAVA FILTER

TARGET AUDIENCE: All Canadian health care professionals, acute care and primary care physicians and other health care providers who care for patients with venous thromboembolism.

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.

ABBREVIATIONS:

DVT	deep vein thrombosis
IVC	inferior vena cava
PE	pulmonary embolism
VCF	vena cava filter
VTE	venous thromboembolism

MECHANISM OF ACTION:

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). See DVT treatment and PE guides.

INDICATION:

Vena cava filters are indicated in patients with a recent (within 2-4 weeks) proximal DVT or possible PE in whom therapeutic anticoagulation is not feasible because of a high risk of bleeding. Some experts, including the author, do not support placing a VCF in patients with PE and where there is a contraindication to anticoagulation, unless there is a concomitant proximal DVT. Use of filters should be considered judiciously given the lack of high quality data that VCFs prevent clinically-important PE.

OPTIONS:

There are 2 types of VCF:

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

Retrievable filters are strongly preferred. Unless there are extenuating circumstances, all patients who receive a VCF should have the filter removed once appropriate anticoagulation is started.

ADVERSE EFFECTS:

Adverse effects related to VCF placement include:

- insertion site hematoma or thrombosis,
- filter misplacement
- acute filter embolization

Other possible complications are:

- inferior vena cava (IVC) thrombosis, occlusion or stenosis
- increased rate of recurrent lower extremity DVT
- filter migration, 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 DVT or PE
- failure to retrieve the VCF

POST-VCF INSERTION MANAGEMENT:

Anticoagulation should be initiated as soon as it is safe to do so (once the hemorrhagic risk is minimized) to prevent extension of the DVT (i.e. once the absolute contraindication to anticoagulation has resolved). Virtually all VCFs should be removed shortly after the patient has been appropriately anticoagulated. The longer a filter is left in situ, the lower the success of retrieval.

SPECIAL CONSIDERATIONS:

We do not consider the following to be appropriate indications for VCF insertion:

- major PE in patients with limited cardio-pulmonary reserve
- recurrent DVT or PE despite therapeutic anticoagulation
- primary prophylaxis in patients who are at increased risk for DVT and PE such as those with major trauma, cancer or undergoing bariatric surgery

Long-term anticoagulation is generally not indicated simply because of the presence of a filter. However, decisions should be individualized, and patients do require anticoagulation for their DVT or PE for the appropriate duration (see Duration of Anticoagulation Therapy guide).

PEDIATRICS:

There are few studies determining the safety and efficacy of VCF in children. Current recommendations suggest placement of a retrievable VCF in children > 10 kg body weight with lower-extremity venous thromboembolism (VTE) and a contraindication to anticoagulation. In children who receive a filter, the filter should be removed as soon as possible if thrombosis is not present in the basket of the filter and when contraindication to anticoagulation is resolved. In children who receive an IVC filter, appropriate anticoagulation for the DVT should be initiated as soon as the contraindication to anticoagulation is resolved.

Pediatricians with expertise in thromboembolism should manage, where possible, pediatric patients with thromboembolism. When this is not possible, a combination of a neonatologist/pediatrician and an adult hematologist, supported by consultation with an experienced pediatric hematologist, is recommended. See Pediatric guide.

REFERENCES:

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