

## Post trauma: to filter or not to filter

Pulmonary embolism (PE) remains a significant cause of death in trauma patients. However, this patient population is also at risk of ongoing bleeding, making anticoagulation (Heparin, Coumadin, etc.) impractical. This puts trauma surgeons and vascular surgeons alike in a dilemma: to anticoagulate, which could worsen bleeding, or to defer anticoagulation, which could result in potentially life-threatening PE.

Some have suggested inferior vena cava filter (IVCF) placement as a solution. This device is a small “metal umbrella” placed in the inferior vena cava (IVC), stopping blood clots from travelling to the lungs, preventing PE without risk of additional bleeding. However, previous studies on this subject have been mixed. Several studies have shown decreased mortality and PE with prophylactic IVCF placement. However, there are also studies that have shown no difference in mortality, even in carefully selected high-risk patients. It is also important to remember that placing an IVCF is not a benign procedure, as there can be complications, including venous thromboembolism (VTE) at the insertion site, device migration, and IVC thrombosis. It has also been previously noted that significant numbers of retrievable IVCFs placed in trauma centers were never removed after it was no longer required.

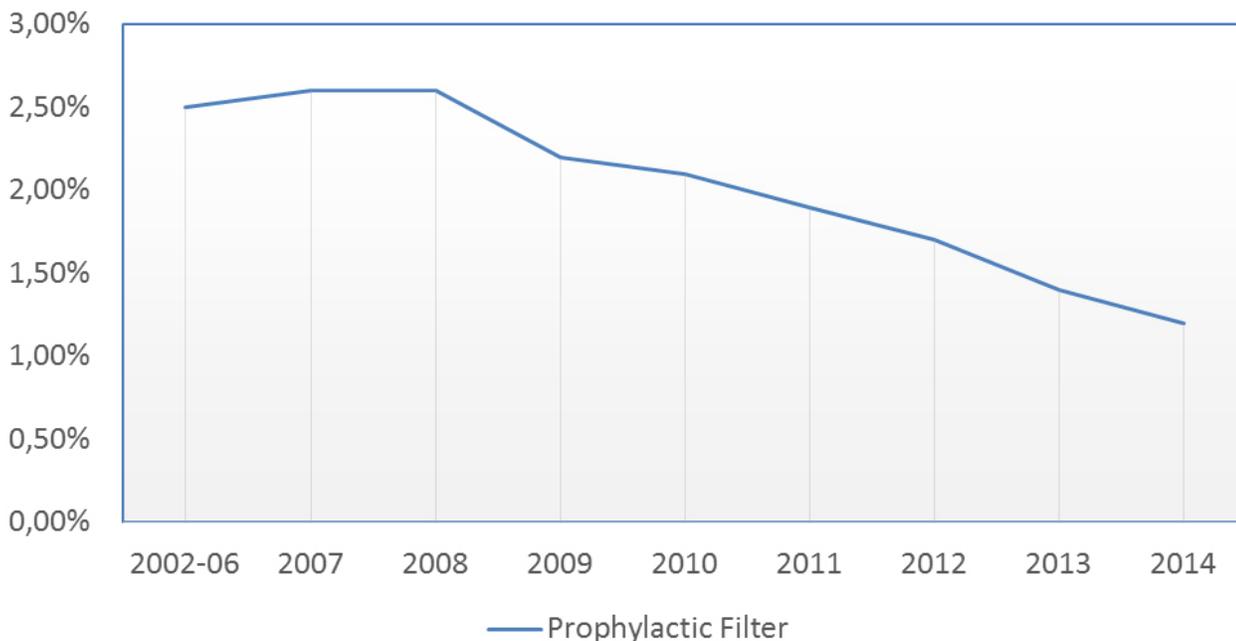


Fig. 1. Rate of Prophylactic Inferior Vena Cava Filter from 2002 to 2014.

There were no guidelines concerning placement of IVCF in patients with no evidence of PE or VTE until 2008, when the American College of Chest Physicians recommended against routine

placement of prophylactic IVCF. The purpose of this study was to examine recent trends and risk factors present in prophylactic IVCF placement in trauma patients.

The authors queried the National Trauma Database (NTDB), a database in which over 700 facilities voluntarily submit trauma-related outcomes, for patients who received an IVCF from 2002 to 2014. Pediatric patients, burn patients, and those pronounced dead on arrival were not included in the analysis. The cases were then divided into two groups: those who were diagnosed with VTE were considered to have a therapeutic IVCF, while those who did not have VTE diagnosis were considered to have a prophylactic IVCF.

Of over 2 million patients in the NTDB, 2.5% had received an IVCF during their hospitalization. Seventy-seven percent of these were placed prophylactically, and the proportion of prophylactic IVCF decreased over the study period (Fig. 1). Demographic information and information about injuries were also collected.

Demographic factors that were associated with prophylactic IVCF placement included male gender and African American race. Patients with severe injuries (spinal cord injury, long bone fracture, solid organ injury, etc.), especially those with an injury severity score >24, had both increased risk of VTE and prophylactic IVCF. Other factors associated with prophylactic IVCF placement included treatment at a large hospital (> 200 beds), at least partial medical insurance coverage, and treatment at a level II trauma center. Interestingly, while African American race and treatment at a level II trauma center were associated with increased IVCF placement, there was no corresponding increase of risk for VTE.

Based on this data, the authors were able to conclude that prophylactic IVCF placement in trauma patients has been steadily decreasing, which may be due to guidelines released in 2008 that recommend against it. There were also factors associated with IVCF placement that did not correspond with increased risk of VTE, which warrants further examination.

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## **Publication**

[Evaluating the Utilization of Prophylactic Inferior Vena Cava Filters in Trauma Patients.](#)

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