



Deep Vein Thrombosis Treatment Options


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Who




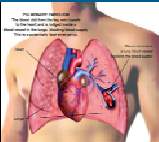

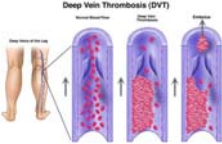
- ❖ More than 2 million suffer from venous thromboembolism each year
- ❖ Over half are hospital acquired are within 30 days post hospitalization



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Deep Vein Thrombosis

- ❖ 1 in 10 of the more than 2 million Americans developing DVT's goes on to perish from Pulmonary Embolus




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Thromb Res. 2015 Feb;136(2):303-10. doi: 10.1016/j.thromres.2014.11.024. Epub 2014 Dec 4.

Daily hospitalization costs in patients with deep vein thrombosis or pulmonary embolism treated with anticoagulant therapy.

Dasta JE¹, Pilon D², Mody SR³, Loebato J³, Laliberte E², Germain G², Bostman RS³, Lefebvre E², Nutescu EA⁴

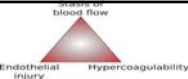
- ❖ The incremental LOS and costs of treating a case of a preventative VTE are substantial.
- ❖ In patient Costs:
 - ❖ \$10,000 per DVT
 - ❖ \$20,000 per PE
- ❖ The Centers for Medicare and Medicaid Services is currently considering Inclusion of Hospital -Acquired DVT and P.E. in the list of Events for which Hospitals will no longer be reimbursed.





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Risk Factors



Venous Thrombosis
Endothelial Injury Hypercoagulability





- ❖ Age: > 40 years
- ❖ Surgery / **Especially Spine**
- ❖ Heart Failure
- ❖ Malignancy
- ❖ Prior history of DVT/PE
- ❖ Immobility/ paralysis
- ❖ Inflammatory disorders
- ❖ Obesity
- ❖ Varicose Veins
- ❖ Respiratory Failure
- ❖ Infections
- ❖ Active Collagen Vascular disorders
- ❖ Multi- trauma
- ❖ Chronic lung disease
- ❖ Thrombophilia
- ❖ Estrogen use
- ❖ Ischemic stroke
- ❖ Smoking








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Thromboprophylaxis for Spine Surgery Patients

- ❖ Traditional Measures:
 - ❖ SCD's/ early ambulation
- ❖ Anticoagulation/ Antiplatelet Medications
 - ❖ Long term anti-coagulation medication
 - ❖ Eliquis (Apixaban)
 - ❖ Pradaxa (Dabigatran)
 - ❖ Arixtra (Fondaparinux)
 - ❖ Heparin
 - ❖ Non-fractionated
 - ❖ LMWH Lovenox or Pramin
 - ❖ Xarelto (Rivaroxaban)
 - ❖ Warfarin (Coumadin)
 - ❖ Antiplatelets
 - ❖ Aspirin
 - ❖ Plavix (Clopidrogel)
- ❖ Mechanical DVT Filters
 - ❖ Retrievable vs. permanent

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Devastation to the Patient

- ❖ Increased Hospital Stay
 - ❖ 5-7 days after diagnosis
- ❖ Potential Bleeding Issues
- ❖ Frequent Lab Draw's
- ❖ Costs



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Complications of Thromboprophylaxis in Spine Patients

- ❖ Bleeding
 - ❖ Epidural Hematomas
 - ❖ Neurological Deficits
 - ❖ Gastric Bleeding/Ulcers
 - ❖ Thrombocytopenia
 - ❖ Wound Hematomas



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Semin Intervent Radiol. 2012 Mar; 29(1): 29-35.
doi: 10.1055/s-0012-1302449

PACID: PAC3348757

Inferior Vena Cava Filters for Primary Prophylaxis: When Are They Indicated?

Erc. Wehrenberg-Klein, M.D. * and S. William Stavropoulos, M.D. †

- ❖ Not only do patients with VTE suffer a 30% cumulative risk recurrence
- ❖ Also at risk for potentially disabling Post-Thrombotic Syndrome
 - ❖ Chronic disabling condition
 - ❖ Peripheral edema
 - ❖ Chronic pain
 - ❖ Venous ectasia
 - ❖ Skin Induration issues
- ❖ Significant loss in Quality of Life



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Indications for Placement of Inferior Vena Cava Filters

- ❖ History of Thromboembolism
- ❖ Diagnosed Thrombophilia
- ❖ Malignancy
- ❖ Bedridden > 2 weeks prior to surgery
- ❖ Staged Procedures or multiple levels
- ❖ Combined anterior/posterior approaches
- ❖ Expected need for significant ilio caval manipulation
- ❖ Single-stage anesthetic time > 8 hours.



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IVC Filter Complications

- ❖ Issues with Implantation
- ❖ Retrieval
- ❖ Long term use
- ❖ Complications
 - ❖ Filter migration
 - ❖ Filter fracture
 - ❖ Filter perforations
 - ❖ Filter has tilted
 - ❖ Filter cannot be retrieved
 - ❖ Pulmonary embolism
 - ❖ Inferior vena cava syndrome
 - ❖ Death



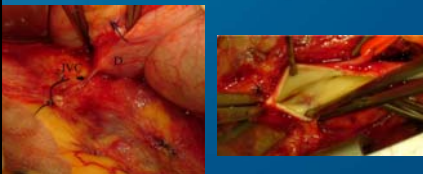
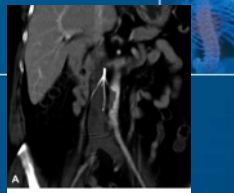
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Late complication from a retrievable inferior vena cava filter with associated caval, aortic, and duodenal perforation: A case report

Masimiliano Vesoni, MD, PhD,* Titiano Tallarita, MD,* Monica Pirozzi, MD,* and Pierfrancesco Vesoni, MD,* Catania, Italy

Inferior vena cava filters are an excellent therapeutic method for those patients in whom anticoagulant therapy is contraindicated or insufficient. However, filter placement is associated with a high rate of serious complications (>50%), with death occurring in 8-7% of patients. The most common complication is an asymptomatic inferior vena cava penetration and perforation. In some rare circumstances, however, therapeutic intervention may be required because of perforation of adjacent organs. We report a clinical case of a patient with subcutaneous caval, duodenal, and aortic perforation resulting from penetration of inferior vena cava filter hooks. A brief review of the literature discusses presenting symptoms and treatment of such rare complications. (J Vasc Med 2009;48:222-6.)



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J Neurosurg Spine 23(2):e14-e18, 2014
EASNS 2014

Decreased incidence of venous thromboembolism after spine surgery with early multimodal prophylaxis

Clinical article

J. Brandon Cox, M.D., Kenneth J. Wilton, M.D., Ph.D., David W. Neal, M.S.,
R. Patrick Jacob, M.D., and David J. Hill, M.D.
Department of Neurological Surgery, University of Florida, Gainesville, Florida

- ❖ VTE Prophylaxis Protocol for Spine Patients
- ❖ Pre-operatively (same day as surgery) and continues throughout hospitalization.
- ❖ 5000 Units heparin administered subcutaneously TID
- ❖ Except in patients older than 75 years or weigh less than 50 kg
- ❖ These patients receive a dose BID

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Chest. 2011 Aug 14(2):374-81. doi: 10.1377/chest.10-3284. Epub 2011 Feb 24

Dosing frequency of unfractionated heparin thromboprophylaxis: a meta-analysis.

Pavoni DJ, Kahn SB, Cozz D, Sideric M

@ Author information

Erratum in
Correction to Table in: Dosing Frequency of Unfractionated Heparin Thromboprophylaxis: A Meta-analysis. [Chest 2011]

Abstract
BACKGROUND: In medical patients, it is unclear whether thromboprophylaxis with low-dose unfractionated heparin (UFH) should be administered bid or tid.

METHODS: This study was a mixed-treatment comparison meta-analysis of randomized control trials that enrolled hospitalized nonsurgical patients at risk for VTE and compared UFH bid, UFH tid, or low-molecular-weight heparin (LMWH) to one another or to an inactive control subject. DVT, pulmonary embolism (PE), major bleeding, and death were measured. A Bayesian framework using a random-effects model was applied.

RESULTS: Sixteen trials with moderate methodologic quality enrolling 27,667 patients contributed to this analysis. The relative risk and 95% credible intervals comparing UFH tid to UFH bid for DVT, PE, death, and major bleeding were 1.55 (0.64-4.33), 1.67 (0.49-209.09), 1.17 (0.72-1.95), and 0.89 (0.07-10.5), respectively. When compared with either dose of UFH, the use of LMWH has an effect similar to UFH on all four outcomes.

CONCLUSIONS: Moderate-quality evidence suggests that subcutaneous UFH bid and UFH tid do not differ in effect on DVT, PE, major bleeding, and mortality. Either of the two dosing regimens of UFH or LMWH appears to be a reasonable strategy for thromboprophylaxis in medical patients. A future randomized trial comparing the two doses of UFH is very unlikely, considering the very large sample size that would be required to demonstrate a significant difference, which, if it exists, is undoubtedly small.

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Our Protocol for DVT prophylaxis

- ❖ 5000 Units Heparin subcutaneously BID with 81 mg. E.C. ASA P.O.
- ❖ Started no longer than 12 hours after surgery and continued throughout hospitalization.

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Incidence of DVT's

	Overall DVT Data Jan- Sept 2015	Dr. Billys DVT Jan-Sept 2015	Overall DVT Data Oct 2015-March 2016	Dr. Billys DVT Oct 2015-March 2016
Total cases	710	258	447	185
# DVT	8	6	1	0
Rate %	1.13%	2.33%	0.22%	0.00%

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THANK YOU




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christopher


- 25 y/o
- Gunshot to C6-7
7 years ago
- Quadriplegic



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Alternative Approaches


- Alternative Approaches to DVT prophylaxis in Spine Surgery



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Recommendation for Prophylaxis of DVT

- Mechanical
 - Early ambulation
 - Sequential compression device
- Chemical
 - medication
- DVT Filters
 - Permanent
 - Retrievable



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SIDE EFFECTS

These complications are experienced either associated with the IVC filter exposure or the following side effects:

- Spinal Pain
- Bleeding
- Headache
- Other Spinal Issues
- Death

In 2012, about one (1%) of people that implanted more than 100,000 of IVC filter reported side effects related to carrying these implants.

These reports included the following side effects:

- IVC Filter Migration
- Blood Clots in the Legs
- Leg Pain/Swelling
- IVC Filter Breakage

If you or someone you know suffered adverse side effects after receiving the IVC filter implant, we invite you to contact us today to discuss your potential financial recovery.

Contact us today to learn your potential financial recovery.

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Images of IVC complications

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BMJ 2007; 335:1471-1475
doi: 10.1136/bmj.39247.542477.aE
Clinical Review

PMCID: PMC1925160



Preventing deep vein thrombosis in hospital inpatients
William E Cayley, Jr, associate professor
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🏠 **Drugs vs. Filters**

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