



DEEP VENOUS THROMBOSIS: ILIOFEMORAL

Introduction

The anatomic categorization of lower extremity DVT typically has been limited to distinguishing **proximal DVT** (popliteal and/or femoral vein) which carries an increased risk of symptomatic PE, from **distal DVT** (isolated calf vein i.e. below the knee thrombosis).

However, physicians have long suspected that proximal DVT patients with the *most extensive thrombus* burden may be at *higher risk* for poor clinical outcomes than those with less extensive, but still technically proximal, DVT.

Iliofemoral DVT (IFDVT) refers to complete or partial thrombosis of any part of the **iliac vein** or the **common femoral vein**, with or without involvement of other lower extremity veins or the IVC.

Iliofemoral DVT has a higher incidence of recurrent DVT and of post thrombotic syndrome, when compared to less extensive proximal DVTs.

The most severe form of IFDVT is the syndrome known as **phlegmasia cerulea dolens**, where there is limb threatening circulatory compromise.

IFDVT that does not appear limb threatening is treated as for any above knee DVT

For more serious IFDVT disease, such as:

- **Phlegmasia cerulea dolens**
- Patients with thrombus progression or PE, despite initial anticoagulation
- Patients with worsening symptoms despite initial anticoagulation,

more aggressive therapy should be considered, and a range of options are available, including:

- Catheter-Directed Thrombolysis (CDT)
- Percutaneous mechanical thrombectomy (PMT)
- Pharmacomechanical CDT (PCDT)
- Surgical venous thrombectomy

- Percutaneous Transluminal Venous Angioplasty and Stent Placement
- IVC Filters

See also separate guidelines on:

- **Pulmonary Embolism**
- **Pulmonary Embolism in Pregnancy**
- **DVT Lower Limb**
- **DVT Lower Limb in Pregnancy**

Pathophysiology

When the femoral vein is thrombosed, the primary collateral route by which blood leaves the extremity is by drainage into the deep (profunda) femoral vein (which empties into the common femoral vein).

As a result, venous thrombosis above the entry point of the deep femoral vein (i.e., thrombosis in or above the common femoral vein) causes much more severe outflow obstruction, which often results in more dramatic initial DVT symptoms and late clinical sequelae.

Iliofemoral DVT has a higher incidence of:

- PE
- Recurrent DVT
- Post thrombotic syndrome

when compared to less extensive proximal DVTs.

Additionally, very severe cases (phlegmasia cerulea dolens) can be limb threatening.

Clinical features

Thrombosis in or above the **common femoral vein** causes far more severe outflow obstruction, which often results in more dramatic initial DVT symptoms and late clinical sequelae.

Massive IFDVT (phlegmasia cerulea dolens) may result in limb threatening vascular ischaemia. Here the entire lower limb is swollen and peripheral perfusion becomes impaired and the leg cyanotic. Pain is severe. Venous gangrene ensues. The risk of PE is

very high. Fluid sequestration in the limb and systemic inflammatory response syndrome occurs leading to circulatory shock.

Phlegmasia alba dolens is a less severe form where the limb appears white as opposed to cyanotic - phlegmasia alba dolens, phlegmasia cerulea dolens, and venous gangrene are all part of the same clinical spectrum of increasing in severity.



Phlegmasia Cerulea Dolens, of the left leg in a 45 year old woman. Note the swelling and bluish discoloration of the entire limb. CT venogram confirmed the diagnosis of Iliofemoral vein thrombosis that extended into the IVC. CTPA showed the presence of a pulmonary embolus.

Investigations

Blood tests:

1. FBE
2. U&Es/glucose
3. Procoagulant screen:
 - If there is no obvious cause or a strong family history of DVT a procoagulant screen should be done.

Ultrasound:

In New Zealand and Australia, **compression ultrasound (CUS)** is the standard diagnostic test for investigation of pregnant and postpartum women with suspected DVT.

Ultrasound of **the whole leg** is carried out, looking for proximal and distal DVT.

Ultrasound is less reliable in detecting venous thromboembolism above the inguinal ligament.

CT Venography or MRI may be used to exclude DVT of the iliac or other pelvic veins.

CT Venogram:

This may be considered in the following cases:

- Unavailability of US.
- Patients with negative US with unexplained swelling of the entire lower limb, (isolated iliac vein thrombosis may be missed on US)
- It may also have a role in distinguishing acute recurrent DVT from chronic thrombus as ultrasound cannot reliably distinguish between old and new thrombus.
- In cases of equivocal or inconclusive ultrasound results.

MRI/MRV:

Magnetic resonance venography (MRV) is more sensitive and more specific than ultrasound in the detection of deep venous thrombosis and may be useful when ultrasound examination is equivocal or when strong clinical suspicion remains despite a normal ultrasound examination.

It has the added advantage over ultrasound in being able to detect thrombosis with the iliac, pelvic veins or the IVC and can detect alternate or associated pathology in the limb, pelvis or abdomen.

Management

Anticoagulation:

Standard anticoagulation regimes are generally recommended for IFDVT when there is not a limb threatening situation.

For more serious IFDVT disease, such as:

- **Phlegmasia cerulea dolens**

- Patients with thrombus progression or PE, despite initial anticoagulation
- Patients with worsening symptoms despite initial anticoagulation,

*consideration should be given to more aggressive **endovascular treatments**.*

Trials are currently in progress into the safety and efficacy of these interventional therapies.

Systemic Thrombolysis

Systemic thrombolysis for the treatment of IFDVT in adult patients is **not** currently recommended.

If thrombolysis is desired but *endovascular expertise* is not locally available, patient transfer to an institution that offers access to endovascular thrombolysis is recommended in preference to attempts at use of systemic thrombolysis.

Endovascular interventions:

Catheter-Directed Thrombolysis (CDT):

Catheter-Directed Thrombolysis (CDT) refers to the infusion of a thrombolytic agent directly into the venous thrombus via a multiple-side-hole catheter with the use of imaging guidance.

Percutaneous mechanical thrombectomy (PMT):

Percutaneous mechanical thrombectomy (PMT) refers to the use of a catheter-based device that contributes to thrombus removal via mechanical thrombus fragmentation, maceration, and/or aspiration.

Pharmacomechanical CDT (PCDT):

Pharmacomechanical CDT (PCDT), or thrombus dissolution via the **combined** use of CDT and PMT

Surgical Venous Thrombectomy:

This is direct **surgical venous thrombectomy** as a method of removing thrombus in IFDVT.

AHA Recommendations for Endovascular Thrombolysis & Surgical Venous Thrombectomy

1. CDT or PCDT should be given to patients with IFDVT associated with limb-threatening circulatory compromise (i.e., phlegmasia cerulea dolens).
2. Patients with IFDVT at centres that lack endovascular thrombolysis should be considered for transfer to a centre with this expertise if indications for endovascular thrombolysis are present.

3. CDT or PCDT is reasonable for patients with IFDVT associated with rapid thrombus extension despite anticoagulation (Class IIa; Level of Evidence C) and/or symptomatic deterioration from the IFDVT despite anticoagulation.
4. CDT or PCDT is reasonable as first-line treatment of patients with acute IFDVT to prevent PTS (Post-Thrombotic Syndrome) in selected patients at low risk of bleeding complications.
5. Surgical venous thrombectomy by experienced surgeons may be considered in patients with IFDVT.
6. Systemic fibrinolysis should not be given routinely to patients with IFDVT
7. CDT or PCDT should not be given to most patients with chronic DVT symptoms (>21 days) or patients who are at high risk for bleeding complications

Percutaneous Transluminal Venous Angioplasty and Stent Placement

Percutaneous transluminal venous angioplasty and stent placement have been used routinely concomitant with endovascular or surgical thrombus removal to treat obstructive lesions and prevent re-thrombosis in patients with acute IFDVT.

The use of stent placement is reasonable to treat venous lesions that obstruct flow in the iliac vein after preceding CDT, PCDT, or surgical venous thrombectomy for acute IFDVT in adults and older adolescents.

For obstructive iliac vein lesions that extend into the common femoral vein, caudal extension of stents into the common femoral vein is reasonable if unavoidable.

The use of percutaneous transluminal venous angioplasty (without stent placement) to treat lesions that obstruct flow in the femoral vein after initial CDT or PCDT in adults and older adolescents is reasonable.

AHA Recommendations for Percutaneous Transluminal Venous Angioplasty and Stenting

1. Stent placement in the iliac vein to treat obstructive lesions after CDT, PCDT, or surgical venous thrombectomy is reasonable.
2. For isolated obstructive lesions in the common femoral vein, a trial of percutaneous transluminal angioplasty without stenting is reasonable.
3. The placement of iliac vein stents to reduce PTS symptoms and heal venous ulcers in patients with advanced PTS and iliac vein obstruction is reasonable.
4. After venous stent placement, the use of therapeutic anticoagulation with similar dosing, monitoring, and duration as for IFDVT patients without stents is reasonable.

5. After venous stent placement, the use of antiplatelet therapy with concomitant anticoagulation in patients perceived to be at high risk of rethrombosis may be considered

AHA Recommendations for Use of IVC Filters in Patients with IFDVT

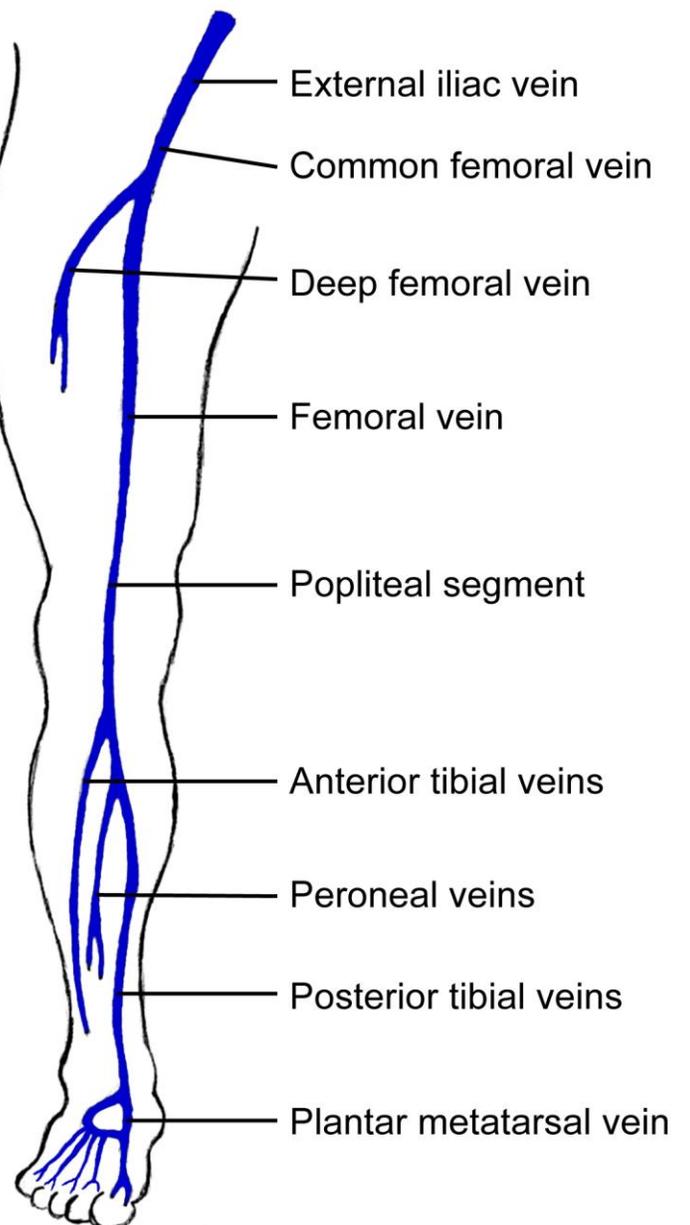
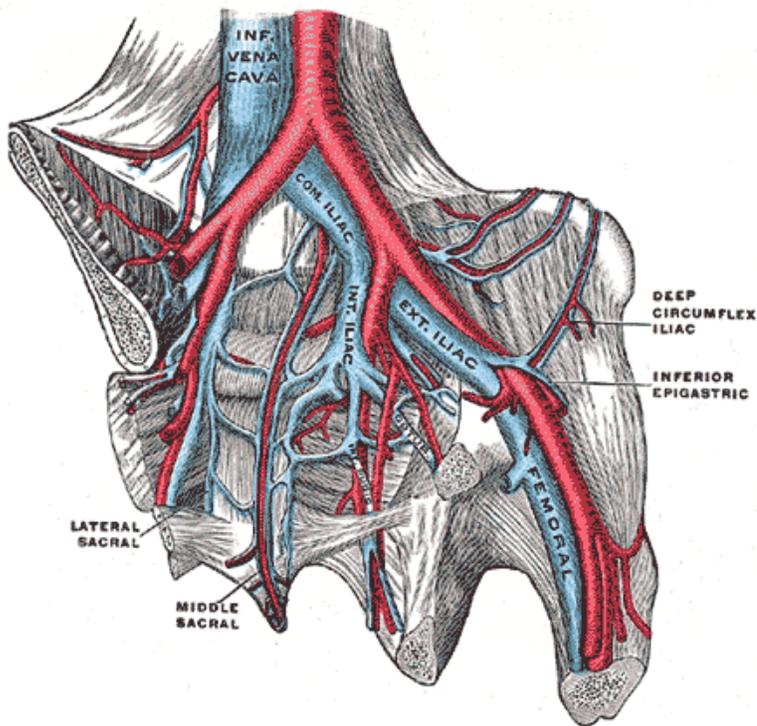
1. Adult patients with any acute proximal DVT (or acute PE) with contraindications to anticoagulation or active bleeding complication should receive an IVC filter.
2. Anticoagulation should be resumed in patients with an IVC filter once contraindications to anticoagulation or active bleeding complications have resolved
3. Patients who receive retrievable IVC filters should be evaluated periodically for filter retrieval within the specific filter's retrieval window
4. For patients with recurrent PE despite therapeutic anticoagulation, it is reasonable to place an IVC filter
5. For IFDVT patients who are likely to require permanent IVC filtration (e.g., long-term contraindication to anticoagulation), it is reasonable to select a permanent non-retrievable IVC filter device.
6. For IFDVT patients with a time-limited indication for an IVC filter (e.g., a short-term contraindication to anticoagulant therapy), placement of a retrievable IVC filter is reasonable.
7. For patients with recurrent DVT (without PE) despite therapeutic anticoagulation, it is reasonable to place an IVC filter.
8. An IVC filter should not be used routinely in the treatment of IFDVT.

Disposition

Vascular referral should be made for extensive ILDVTs

Appendix 1

The Deep Veins of the pelvis and lower limb:



References

1. Jaff, M.R, McMurtry M.S et al. Management of Massive and Submassive Pulmonary Embolism, Iliofemoral Deep Vein Thrombosis, and Chronic Thromboembolic Pulmonary Hypertension: A Scientific Statement From the American Heart Association. *Circulation* 2011; 123; 1788-1830.

Dr J Hayes
Review June 2013