The case for early ilio-femoral thrombus removal

Peter Neglén, MD, PhD
SP Vascular Center
Limassol
Cyprus
What is an ilio-femoral acute DVT?
Extent of acute LE DVT - nomenclature

Proximal DVT – thrombus involving the popliteal to ilio-caval veins

Distal DVT – thrombus involving calf veins below the popliteal vein
The iliofemoral vein is the final pathway for the lower extremity venous outflow
New nomenclature

**Iliofemoral DVT** – thrombus involving the entire or part of the common femoral and ilio-caval veins

**Fem-pop DVT** – thrombus involving the entire or part of the popliteal and femoral veins

**Distal DVT** – thrombus involving calf veins below the popliteal vein

Development of Iliofemoral DVT

“Primary” ilio-femoral DVT
Thrombus forming in the iliac vein extending distally into the femoral vein and below

“Secondary” iliofemoral DVT
Thrombus forming distally (in calf or popliteal veins) extending proximally reaching the ilio-caval level
What’s the problem?

Acute
Frequency of PE vs extent of DVT

<table>
<thead>
<tr>
<th></th>
<th>CALF</th>
<th>ILIO-FEM</th>
<th>IVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptomatic</td>
<td>&lt;1%</td>
<td>9-18%</td>
<td>23-24%</td>
</tr>
<tr>
<td>Scan positive</td>
<td>29-40%</td>
<td>34-53%</td>
<td>63%</td>
</tr>
</tbody>
</table>
Treatment objectives

- reduce pulmonary embolism
- prevent extension short term
- enhance symptom resolution
- reduce recurrence long term
- restore patency
- preserve valve function

Prevent PTS in the long-term
Postthrombotic Syndrome (PTS)?

A chronic condition that develops as a consequence of DVT

Secondary varicosities, severe leg pain, extensive swelling, discoloration, dermatitis, lipodermatosclerosis, venous ulcer
How frequently does PTS develop?

- 20-50% of DVT limbs develop PTS
- 5-10% of DVT limbs develop severe PTS
- Cumulative incidence of PTS in population 27% (venous ulcer 4%) @ 20 years after DVT
- PTS develops within 1-3 years, then little increase

Susan R Kahn, Current Opinion in Pulmonary Medicine 2006, 12:299-303
PTS Risk Factors

Consistent risk factors:

- Initially poor anticoagulation (x 2-3)
- Recurrence of ipsilateral DVT (x 3-10)
- BMI >28 (x 3.5)
- Poor resolution of symptoms (high Villalta score at 30 days)

Inconsistent risk factors:

- Age
- Presence of thrombophilia
- Sex
- Residual thrombosis (obstruction)
- Persistent D-dimer elevation
- Location of the initial thrombus

Susan R Kahn, Current Opinion in Pulmonary Medicine 2006, 12:299-303
# Extent of acute DVT vs. PTS

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Prox DVT</th>
<th>Dist DVT</th>
<th>Odds Ratio</th>
<th>F/U, y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prandoni et al</td>
<td>1996/2004</td>
<td>29%</td>
<td>29%</td>
<td>1.1</td>
<td>5y (cumulative)</td>
</tr>
<tr>
<td>Meissner et al</td>
<td>1997</td>
<td>54%</td>
<td>23%</td>
<td></td>
<td>1y</td>
</tr>
<tr>
<td>Mohr et al</td>
<td>2000</td>
<td>40%</td>
<td>30%</td>
<td>1.4</td>
<td>20y (cumulative)</td>
</tr>
<tr>
<td>&lt;40y age</td>
<td></td>
<td>40%</td>
<td>19%</td>
<td>3.0</td>
<td>20y (cumulative)</td>
</tr>
<tr>
<td>Stain et al</td>
<td>2005</td>
<td>50%</td>
<td>33%</td>
<td>2.1</td>
<td>5y (median)</td>
</tr>
</tbody>
</table>
FEMORO-ILIO-CAVAL DVT

Special features

• Large thrombus mass
• Poor recanalization especially in presence of iliac vein compression
• Often underlying compression-type lesion
• Poor collateral formation
The impact of iliac vein compression on acute DVT and postthrombotic obstruction

- Often underlying compression-type lesions found (left 84%, right 66%)

- Stenting of the stenosis after early clot removal improves patency from 27-44% to 86-93%

- Poor recanalization with external compression of the iliac vein (70-80% remains obstructed)
Deleterious effects by residual postthrombotic ilio-femoral (IF) vein obstruction

- Recurrence rate of IF DVT x 2.4 higher than limited to FV

- 100% contralateral DVT with conservative tx of unilateral ilio-caval thrombus (if removed 7%)

- Proximal obstruction may lead to distal valve incompetence

- More severe symptoms than femoro-popliteal disease after conservative treatment, poor collateralization
  - 90% venous hypertension, ulcer in 15% within 5 years, decreased quality of life
  - Venous claudication in 15-44%, with IF stenting symptoms were eliminated

Venous outflow obstruction plays an important role in clinical expression of CVD, particularly pain.

Ulcerated limbs have a high rate of obstruction (40-60%).

In limbs with obstruction, ulcers occur rarely with isolated obstruction (4%), more often in association with reflux (30%).

Treatment results in impressive clinical relief of pain, swelling, VCSS, VDS and QoL, even when associated reflux is left untreated.

Treatment results in healing of ulcers, despite untreated reflux, in 58-65% of the patients.

[Ascher et al, Ann Vasc Surg 2011]
Clinical improvement following stenting of chronic venous obstruction of the femoro-ilio-caval venous outflow and early removal of an ilio-femoral thrombus indicates the importance of patency of the pelvic venous outflow tract.
Meta analysis – CDT vs. systemic anticoagulation

Insufficient data on mortality, PE and QoL!
Quality-of-Life

Postthrombotic Syndrome

- 41 subjects after anticoagulation Rx for DVT
- Evaluated with clinical scale (Villalta) for PTS
  - PTS present – 19 (46%)
  
  Proximal DVT 52%, distal DVT 33%

  PTS absent - 22

- Validated QoL instrument
  - SF-36
  - VEINES - QoL
  - VEINES - SYM

Kahn SR et al Arch Int Med 2002; 162: 1144-48
Quality-of-Life

Postthrombotic Syndrome

![Graph showing comparison between subjects without PTS and subjects with PTS in MCS, PCS, VEINES-QOL, and VEINES-Sym.](image)

**MCS** (Generic)  
**PCS** (Generic)  
**VEINES-QOL** (Disease-specific)  
**VEINES-Sym** (Disease-specific)

Significance levels:  
- $P < 0.01$  
- $P = 0.02$

Kahn SR et al Arch Int Med 2002; 162: 1144-48
Quality-of-Life

Postthrombotic Syndrome

![Bar chart showing quality of life scores for VEINES-QOL and VEINES-Sym](chart.png)

Kahn SR et al Arch Int Med 2002; 162: 1144-48
Catheter-Directed Iliofemoral Thrombolysis
Improvement in Quality of Life

Non-randomized, CDT (n=68) and Anticoagulation (n=30)
HTQL questionnaire post-treatment at 16 and 22 months

- Significantly improved QoL with lysis
  Physical function  Stigma
  Health distress  PT-symptoms

- Success of lysis correlated to QoL improvement

- Failure of lysis had similar result as heparin treatment

Quality-of-Life

Quality of Life is adversely affected by chronic postthrombotic disease and related to the severity of disease as measured by CEAP and Villalta Scores

Conclusion

• Circumstantial evidence that involvement of the proximal femoro-ilio-caval segment (CFV to IVC) results in more severe clinical manifestations of the PTS

• Compelling evidence of the efficacy of early clot removal

• Prospective randomized study necessary for final justification
A strategy of early thrombus removal is suggested in selected patients meeting the following criteria:

1. a first episode of acute ilio-femoral deep venous thrombosis,
2. symptoms <14 days in duration
3. a low risk of bleeding, and
4. ambulatory with good functional capacity and an acceptable life expectancy.