Not all Leg DVT's are the Same: Which Patients Benefit from Interventional Therapy?

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Case 1:
86 year old female with history of Breast Ca (10 years ago) who was active until she started to complain of left leg swelling 3 days ago.

Patient seen by her physician. Pulses intact, no shortness of breath, left leg swelling

Noninvasive Duplex ultrasound with left Femoral Vein DVT
How about a pt with ilio-femoral DVT and more moderate symptoms of edema, heaviness and pain?

Evidence in support of clot removal in such patients building

When do we need to treat the patient with more than just Anti-Coagulation?

Why do we treat with just Anticoagulation?

What are the long term sequela of Anticoagulation?
Why Open the Vein Early?

Does early clot removal for proximal DVT speed symptom relief, preserve valves, prevent Post Thrombotic Syndrome?

History

- 63 yo female who had an IVC filter placed at an outside institution 3 years ago secondary to DVT and PE, and could not get anticoagulation due to pending spine surgery.
- Presents with 3 week history of acute onset pelvic/BLE swelling not improving with anticoagulation therapy.
Initial lower extremity duplex demonstrated presumed caval thrombosis with extensive (B) DVT R>L.
BLE venograms performed with patient prone via distal popliteal vein approaches confirmed findings of duplex. Bilateral EKOS catheters were placed for ultrasound assisted overnight lysis.

Per leg:
40,000U/hr Urokinase per catheter
40mL/hr NS via coolant port
300U/hr Heparin via sheath sidearm
Pharmacological lysis may be limited in the setting of significant clot burden and chronicity of the clot.

The options here-mechanical options to: help and aid in clot reduction the key is really is there inflow and outflow!
Due to residual thrombus, 14mm Smart stents were placed in the IVC through the filter and 12mm Smart stents place to the level of the distal EIV. Post balloon dilatation was performed.
Follow-up

- Patient was placed on full anticoagulation and coumadin therapy initiated the following morning.
- Patient's leg swelling improved over the next few days.
- A follow-up duplex 72 hours later demonstrated no DVT with widely patent IVC.

Patient Selection

- Ilio-femoral & proximal (above the knee) DVT
- Acute symptoms (<14 days)
  - In many cases, there is no correlation between duration of symptoms & age of clot
  - Efficacy of lytic tx drops after ~2-3 weeks
- Reasonable life expectancy
- No absolute contraindications to lysis
- Chronic ilio-caval disease
Determinants of Early and Long-term Efficacy of Catheter-directed Thrombolysis in Proximal Deep Vein Thrombosis

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Abstract

Purpose: Catheter-directed thrombolysis (CDT) for proximal deep vein thrombosis (DVT) effectively reduces clot removal and mortality, but the long-term efficacy of CDT is poorly defined. The primary end point in this trial was the development of post-thrombotic syndrome (PTS). This study was performed to identify potential markers for early and long-term efficacy of CDT, clinical events, and their interactions.

Materials and Methods: Patients aged 14–70 years (54% male) with proximal DVT who were randomized to CDT or anticoagulation therapy were included. A total of 179 patients (71% male) were included in the analysis, with 90 patients assigned to CDT and 89 assigned to anticoagulation.

Results: Mean clot occlusion at 24 months was 100% for CDT patients (n = 70), with complete clot removal in 47 cases. In the anticoagulation group, complete clot removal was observed in 23 cases (n = 41). The median time to complete clot removal was 7 months in the CDT group and 13 months in the anticoagulation group. At 24 months, there was an absolute risk reduction of 14.4% in the development of PTS in patients treated with CDT compared to the anticoagulation group (number needed to treat was 7). At 6 months, iliofemoral patency was 65.9% in the CDT group versus 47.4% in the anticoagulation group.

Complications: 20 bleeds in the CDT group (3 major)

Conclusion: CDT should be considered as treatment for patients with a high proximal DVT and low risk of bleeding.

Abbreviations

CDT = catheter-directed thrombolysis, DVT = deep vein thrombosis, PTS = post-thrombotic syndrome

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Long-term outcome after additional catheter-directed thrombolysis versus standard treatment for acute iliofemoral deep vein thrombosis (the CaVenT study): a randomised controlled trial

Tone Enden, Yvye Haig, Nils-Einar Klew, Carl-Erik Sigsgaard, Leiv Sandvik, Wladimir Glantzma, Gert Hogdahl, Pål Åke Halvorsen, Lars Olof Holmen, Anne Mette Nygaard, Geonna Sandset, Per Morten Sandset, on behalf of the CaVenT Study Group

Summary

Background Conventional anticoagulant treatment for acute deep vein thrombosis (DVT) effectively prevents thrombus extension and recurrence, but does not dissolve the clot, and many patients develop post-thrombotic syndrome (PTS). We aimed to examine whether additional treatment with catheter-directed thrombolysis (CDT) using aplease reduced development of PTS.

- 189 patients randomized to CDT vs anticoagulation
- At 24 months, there was an absolute risk reduction of 14.4% in the development of post-thrombotic syndrome (number needed to treat was 7)
- At 6 months, iliofemoral patency was 65.9% in the CDT group versus 47.4% in the anticoagulation group
- Complications: 20 bleeds in the CDT group (3 major)
- Conclusion: CDT should be considered as treatment for patients with a high proximal DVT and low risk of bleeding.
A Systematic Review of Percutaneous Mechanical Thrombectomy in the Treatment of Deep Venous Thrombosis

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Submitted 1 November 2010; accepted 16 January 2011
Available online 1 February 2011

Conclusion

Deep vein thrombosis is a common condition with a significant socioeconomic burden, particularly in the setting of PTS and ulceration. The current standard of treatment remains anticoagulation in the absence of trial data. PMT is an emerging technology that offers promising results as an adjunct to CDT. Early reports suggest that PMT is safe and may be cost-effective with an acceptable safety profile and encouraging mid-term results.

Table 10—[Section 2.9] Summary of Findings: CDT vs No CDT for Extensive Acute DVT of the Leg

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>No. of Participants (Studies), Follow-up</th>
<th>Quality of the Evidence (GRADE)</th>
<th>Relative Effect (95% CI)</th>
<th>Risk With No CDT</th>
<th>Risk Difference With CDT (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>153 (2 studies), 3 mo</td>
<td>Low due to imprecision</td>
<td>RR 0.14 (0.01-2.71)</td>
<td>38 per 1,000*</td>
<td>34 fewer per 1,000 (from 39 fewer to 62 more)</td>
</tr>
<tr>
<td>Nonfatal recurrent VTE</td>
<td>153 (1 study), 3 mo</td>
<td>Low due to imprecision</td>
<td>RR 0.35 (0.09-1.19)</td>
<td>48 per 1,000*</td>
<td>31 fewer per 1,000 (from 49 fewer to 504 more)</td>
</tr>
<tr>
<td>Nonfatal major bleeding</td>
<td>153 (2 studies), 7 d</td>
<td>Low due to imprecision</td>
<td>RR 2.00 (1.19-3.46)</td>
<td>20 per 1,000**</td>
<td>20 more per 1,000 (from 20 more to 355 more)</td>
</tr>
<tr>
<td>PTS</td>
<td>153 (2 studies), 2 y</td>
<td>Moderate due to indirectness</td>
<td>RR 0.46 (0.14-1.49)</td>
<td>588 per 1,000*</td>
<td>318 fewer per 1,000 (from 123 fewer to 394 fewer)</td>
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<tr>
<td>QOL</td>
<td>98 (1 study), 16 mo</td>
<td>Low†</td>
<td></td>
<td></td>
<td>See footnote†</td>
</tr>
</tbody>
</table>
Chest Guidelines 2012

Recommendation

2.9. In patients with acute proximal DVT of the leg, we suggest anticoagulant therapy alone over CDT (Grade 2C).

Remarks: Patients who are most likely to benefit from CDT (see text) and attach a high value to prevention of PTS and a lower value to the initial complexity, cost, and risk of bleeding with CDT are likely to choose CDT over anticoagulation alone.

Patients who are most likely to benefit from CDT have iliofemoral DVT, symptoms less than 14 days, good functional status, and low risk of bleeding.

ATTRACT Trial

Acute Venous Thrombosis: Thrombus Removal with Adjunctive Catheter-directed Thrombolysis

Aim: Determine if the initial adjunctive use of Pharmacomechanical Catheter-Directed Thrombolysis (PCDT) in symptomatic patients with acute proximal DVT reduces the occurrence of Post-Thrombotic Syndrome (PTS) over 24 months follow-up.
Study Population

- Symptomatic proximal DVT involving the iliac, common femoral, and/or femoral vein
  - stratify randomization by thrombus extent
  - actual: 60% with “iliofemoral” DVT

- EXCLUDE patients with:
  - Higher bleeding risk, CNS lesions
  - Acute limb threat or massive PE
  - Symptom duration > 2 weeks
  - Same-leg PTS or DVT < 2 yrs
  - Active cancer

Technique A – Trellis
- 1mg TPA/3cm Thrombus min 4mg
- 25mg first session, 35mg total (max)
- Therapeutic UFH or LMWH

Technique B – AngioJet
- 1mg TPA/3cm Thrombus min 4mg
- 25mg first session, 35mg total (max)
- Therapeutic UFH or LMWH

Technique C – CDT - ‘Drip & Ship’
- 0.01mg/kg/hr (max 1mg/hr for 24h)
- 35mg total (max)
- LMWH or sub-tx UFH (6-12u/kg/hr, max 1000u/h)
In conclusion, ATTRACT will be the first U.S. multicenter RCT to determine the long term clinical impact of endovascular thrombolysis in proximal DVT. This study will greatly aid patients, physicians, payors, and policy-makers who face decisions on the use of catheter-based DVT therapy.
Summary

- DVT treated with anticoagulation.
- Anticoagulants prevents further thrombosis and the risk of pulmonary embolism.
- Patients with iliofemoral and caval thrombosis may require thrombolysis in order to improve symptoms; avoid valvular damage and avoid Post Thrombotic syndrome
- Thrombolysis with mechanical or pharmacomechanical techniques is warranted in patients with progressive symptoms on anticoagulation

Thank You!