Anticoagulation therapy following endovascular treatment of iliofemoral deep vein thrombosis

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Disclosure

Speaker name: Tim Sebastian

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

☐ I do not have any potential conflict of interest
Anticoagulation therapy remains first-line therapy for most patients with proximal deep vein thrombosis ...

Advantages ...

- None invasive
- Widely available
- Effectively inhibits thrombus propagation
- Low risk of complications
- Reduces risk for recurrence
- Improves VTE morbidity and mortality
Limitations

- Low recanalization rates in presence of compression
- Provides no treatment of underlying anatomic trigger
- Ineffective in preventing the postthrombotic syndrome

80% anatomic abnormalities central to thrombosed vein

MTS associated with persistent occlusion of left iliac vein and failure of recanalization during anticoagulation therapy
Recurrence rate during active treatment **twice as high** in patients with iliofemoral DVT compared to patients with proximal DVT without iliac vein involvement.

High risk patients most likely benefit from more aggressive therapy: including early thrombus removal and stent placement.

Deep vein thrombosis of the **common femoral vein** or **iliac veins** predicts a **more severe manifestation** of the postthrombotic syndrome.

Real World Practise

Case Scenario

• 30 y male
• First left-leg acute iliofemoral DVT
• Patient undergoes catheter-directed thrombolysis
• IVUS: May Thurner lesion -> Covered with a venous stent
• Good technical result with health leg inflow veins

Antithrombotic therapy?
Current Practise

• The minority of patients received antithrombotic therapy consistent to published VTE guidelines

• Proves that antithrombotic management of patients with venous stent implants is highly inconsistent, and no consensus exists.

Case scenario sent out to 106 experts

30%: VKA 12 months
15%: DOAC 6 months followed by antiplatelet agent
13%: VKA 6 months followed by antiplatelet agent
11%: DOAC 3-6 months
...
12%: VKA or DOAC for life

% refers to the proportion of physicians currently practising the particular antithrombotic regimen

VKA = vitamin k antagonist
DOAC = direct oral anticoagulant
... the **optimal duration of anticoagulation** after the placement of venous stents in the setting of early thrombus removal has not been adequately studied.

In patients with acute DVT of the leg who undergo thrombosis removal, we recommend the **same intensity and duration of anticoagulant therapy** as in similar patients who do not undergo thrombosis removal.
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*No mention in ACCP 2016 update*
Questions that are unanswered for patients with IFDVT and venous stent implants

- Can anticoagulation therapy be stopped after some time?
  - Hypothesis 1: Stent may resolve underlying mechanical trigger for recurrence.
  - Hypothesis 2: Stent as foreign body may act as further risk factor for recurrence.

- Are DOACs as effective as VKA?

- Is there a need for antiplatelet therapy?
  - If yes, when and in which patients?
Can anticoagulation therapy be stopped after some time?

Swiss Venous Stent Registry

Subgroup of 113 patients treated for acute iliofemoral DVT
(two groups: limited versus extended duration)

- 72% left leg iliofemoral DVT
- 88% symptom duration less than 14 days
- 100% stent rate (19% stents below inguinal ligament)
- Mean follow-up duration: 26 months

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Limited-duration (n = 58)</th>
<th>Extended-duration (n = 55)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>38.1</td>
<td>53.7</td>
</tr>
<tr>
<td>Women</td>
<td>43 (74%)</td>
<td>27 (49%)</td>
</tr>
<tr>
<td>Known previous VTE</td>
<td>5 (9%)</td>
<td>19 (35%)</td>
</tr>
<tr>
<td>May Thurner Anatomy</td>
<td>38 (66%)</td>
<td>21 (38%)</td>
</tr>
</tbody>
</table>
Can anticoagulation therapy be stopped after some time?

**Patency Rates at 3 Years**

Extended vs. Limited Anticoagulation Group

**Primary Patency Rate**
- Extended duration: 77% (95% CI 60-87%)
- Limited duration: 71% (95% CI 51-84%)

Follow-up, months:
- Total cohort: 73% (95% CI 61-82%)

**Secondary Patency Rate**
- Extended duration: 100% (95% CI 73-95%)
- Limited duration: 88% (95% CI 73-95%)

Follow-up, months:
- Total cohort: 95% (95% CI 88-98%)

p = 0.16

p = 0.82
Can anticoagulation therapy be stopped after some time?

Recurrent VTE Rates

<table>
<thead>
<tr>
<th>Thrombus removal + Stent (iliofemoral DVT)</th>
<th>Anticoagulation only (prox. + distal DVT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiss Venous Stent Registry</td>
<td>Metaanalysis (10,050 patients)</td>
</tr>
<tr>
<td>3.5 events per 100 patient years after cessation</td>
<td>7.6 events per 100 patient years after cessation</td>
</tr>
</tbody>
</table>

In selected patients (younger, otherwise healthy) with May-Thurner Syndrome, it appears save to discontinue AT 3-12 months after endovascular treatment for IFDVT (RCT necessary!)
Are DOACs as effective as VKA?

Patency Rates at 3 Years
Rivaroxaban vs. VKA Group

Primary Patency Rate
- Rivaroxaban: 84% (95% CI 72-96%)
- VKA: 62% (95% CI 51-73%)

Secondary Patency Rate
- Rivaroxaban: 95% (95% CI 88-100%)
- VKA: 94% (95% CI 86-99%)

Follow-up, months
- Total cohort: 73% (95% CI 61-82%)
- Total cohort: 95% (95% CI 88-98%)

In patients with acute IFDVT treated with catheter-based thrombus removal and venous stent placement, the effectiveness of rivaroxaban and VKA appeared to be similar.
Is there a need for antiplatelet therapy?

Use of AP in VTE disease

WARFASA: 403 patients
- Pat. with first unprovoked DVT and completed anticoagulation therapy
- Randomized to aspirin or placebo

Recurrence rate per year

<table>
<thead>
<tr>
<th>Aspirin</th>
<th>Placebo</th>
</tr>
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<tbody>
<tr>
<td>6.6%</td>
<td>11.2%</td>
</tr>
<tr>
<td>HR 0.58 (95% CI: 0.36-0.93)</td>
<td>HR 0.74 (95% CI: 0.52-1.05)</td>
</tr>
<tr>
<td>p = 0.02</td>
<td>p = 0.09</td>
</tr>
</tbody>
</table>

ASPIRE: 822 patients

Swiss Venous Stent Registry: Only 5% received antiplatelet agents in addition to oral anticoagulation:
No subgroup analysis performed
Swiss Venous Stent Registry
Patients with Venous Stent Implants

Primary Patency Rate

Secondary Patency Rate

Benefit of antiplatelet agent (aspirin) in addition to anticoagulation (rivaroxaban) will be under investigation in the ARIVA trial for patients with PTS.
Summary

• Antithrombotic management is inconsistent, and not specified in patients with venous stents.
• The effectiveness of rivaroxaban and VKA to maintain stent patency appears to be similar.
• It appears to be safe to discontinue anticoagulation therapy in selected patients.
• Late stent failure occurs (need for antithrombotic prophylaxis must be evaluated)
• The benefit of antiplatelet therapy in addition to anticoagulation in PTS patients is currently under investigation (ARIVA trial).
Thank you for your attention!

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