A Prospective Cohort Study of Symptomatic Venous Thrombotic Events (VTE) in Foot and Ankle Trauma. The need for Stratification in Thromboprophylaxis?

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Disclosures

All authors declare:

• No financial or material conflict of interest to themselves or immediate family from this project.

• Authors and immediate family do not gain financially or reputationally from pharmaceutical, biomaterial or orthopaedic device or equipment company, or supplier.

• Authors and immediate family do not serve on editorial, governing body or committee to an orthopaedic professional society.
Background

- Temporary limb immobilisation increases venous thromboembolism (VTE) risk
  - known since 1944
- Lower-limb immobilisation implicated as an aetiological factor in approximately 1.5 -3% of all VTE events
- VTE incidence in patients with temporary plaster immobilisation is estimated between 5 - 39%
  - depending on the indication, type of immobilisation and whether clinical or USS diagnosis is made
- Annual VTE incidence of 0.12-0.18% in an undifferentiated population
Background

• The incidence of PE in trauma patients with DVT, but without prophylaxis, is 4.3%,
• In patients with DVT receiving thromboprophylaxis this PE incidence can be lowered to 0.3% to 2.0%
  **BUT With a high mortality rate (20% to 23.3%)**
• No clear consensus that chemical thromboprophylaxis significantly reduces VTE events
  • ? Reduction in severity or risk of propagation
Why stratify?

• Risk Stratification allows the prospective and objective prediction of a negative outcome, i.e., VTE.

• This allows the allocation of appropriate resources to high-risk groups and saves money and adverse reactions to overtreatment in low-risk groups.

• Stratification needs to be evidence-based
  – Trauma (Upto 35% after TA surgery, but asymptomatic)
  – Elective (0-0.3%)

NOT a tick box exercise
VTE POP clots

Assessment of the risk of VTE

1. Is it a NWB Plaster    yes    [1]    No    [0]
2. BMI > 30            yes    [1]    No    [0]
3. COCP/HRT              yes    [1]    No    [0]
5. Active cancer       yes    [2]    No    [0]

Total Score

If the total score is 2 or more than 2 - treat with chemical thromboprophylaxis – Dalteparin s/c according to UHL protocol
Aim

• To compare 90-day VTE rates in
  – functionally managed TA ruptures (8/52, FWB, Vacoped™),
  – conservatively managed ankle fractures (6/52, NWB, BKCast) and
  – surgically fixed ankle fractures (ORIF, 6/52, NWB, BKCast).

• Should these injuries and treatment regimes have chemical thromboprophylaxis?
Method

• Data was extracted from:
  – Prospectively collected databases for all ankle fractures in UHL, from fracture clinic attendances between October 2013 and April 2014.
  – A search of PAS codes for TA ruptures within UHL, confirmed by TA clinic attendance letters between March 2010 and December 2014

• All patients were risk assessed at presentation, and chemical thromboprophylaxis prescribed for high-risk patients.
  – Using the Leicester Score to identify the highest risk patients for ankle fractures and NICE guidelines for TA ruptures.

• 90-day VTE rate was drawn from a trust-wide radiology database.
## Results

<table>
<thead>
<tr>
<th>Trauma Type</th>
<th>n=</th>
<th>Total VTE</th>
<th>PE</th>
<th>DVT</th>
<th>Rate</th>
<th>Mean Time of +ve Radiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Rupture</td>
<td>283</td>
<td>14</td>
<td>3</td>
<td>11</td>
<td>4.90%</td>
<td>16.1 days</td>
</tr>
<tr>
<td>Conservative Ankle #</td>
<td>227</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>2.20%</td>
<td>33.4 days</td>
</tr>
<tr>
<td>ORIF Ankle #</td>
<td>199</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>3.00%</td>
<td>37.2 days</td>
</tr>
</tbody>
</table>

- Symptomatic VTE presents earlier in TA rupture than ankle fracture (p=0.002)
Conclusions

• The overall incidence of symptomatic VTE in foot and ankle trauma is low.
• Acute TA ruptures, despite early weight bearing regimes, have a VTE incidence equivalent to previous VTE AND 2 other risk factors.
• Symptomatic VTE in acute TA rupture happens much sooner compared to the ankle fracture patients.
  – The cause is unknown, but may be due to de-functioning of the calf muscle pump.
References:


Clarke AM, Winson IG. Injury. 1992;23(8):533-4