Rethinking chemoprophylaxis for Total Ankle Arthroplasty

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NO CONFLICT TO DISCLOSE

Rethinking chemoprophylaxis for Total Ankle Arthroplasty

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Our disclosures are in the Final AOFAS Mobile App.

We have no potential conflicts with this presentation.
Background

- Total ankle arthroplasty/replacement (TAR) is a relatively uncommon joint replacement procedure.
- Only 631 TAR operations were performed in the UK in 2014. (1)
- Popularity is increasing as a suitable alternative to ankle fusion in patients with end stage ankle arthritis.

- Deep Vein Thrombosis (DVT), which may cause a Pulmonary Embolism (PE) is a rare but serious complication.

- A systematic review of 21 clinical studies concluded patients undergoing TAR had a mean risk of symptomatic DVT following TAR of 3.4% (range 0%-4.8%). (2)

- Subcutaneous injection of Low Molecular Weight Heparin (LMWH) is the most frequent mode of chemoprophylaxis in patients undergoing TAR.

- Treatment with LMWH is
  - costly
  - may delay healing
  - can result in thrombocytopenia and
  - may increase the risk of bleeding postoperatively
  - Bleeding may in turn increase postoperative swelling, pain and also increase the risk of infection (3)
Our practice

- In our department, patients receive VTE prophylaxis only if there are specific indications of increased risk of VTE such as:
  - cardiac risk factors or
  - post-operative air travel
- We also use the Vacuum Assisted Closure (VAC™) device post operatively to:
  - increase the speed of wound healing
  - creating a negative pressure environment aiding the prevention of dehiscence.
- Our patients are not immobilised post operatively but are rested for 5 days with the leg elevated, while ankle movement is encouraged as:
  - Post operative tight casting and immobilisation increases stasis in the venous circulation, which contributes to the formation of VTE.

Our Aim was to investigate the effectiveness of our own peri-operative management and VTE prophylaxis protocol in the prevention of symptomatic VTE, in patients undergoing TAR surgery in our trust.
Methods

• A retrospective case series study
• Large tertiary referral centre

• Data collected from departmental TAR registry
• Patients who underwent TAR between March 2006 and May 2012 were included

• Patients who underwent a TAR procedure were treated according to a pre-defined peri-operative pathway outlined in March 2006

• A post-operative incidence period of 6 months was used
  — To reduce the chance of a VTE being due to anything other than TAR surgery

• The primary outcome measure used was a confirmed VTE, identified using Doppler Ultrasound, or PE detected clinically and confirmed using Computer Topography Pulmonary Angiogram (CTPA)
Peri-operative management of TAR

All patients were treated following the same operative technique and any additional procedures were performed under the same anaesthetic.

Intra-operative – Running horizontal mattress stitch using Vicryl Rapide™ – to prevent wound dehiscence
– Suction drain, to reduce haematoma
– Dressing with wool/crepe and Post operative elevation to reduce swelling
– Movement encouraged, as pain will allow – encouraging calf venous pump

Day 1 post op – Suction drain removed
– VAC - expedites wound closure and healing (negative pressure environment may relieve pain/swelling)

Day 5 post op – Removal VAC
– Dressing, physiotherapy + mobilise PWB
– Discharge

Day 14 post op – Wound review + physiotherapy

6/52 post op – Review for clinical review + check Radiograph
– Patients requested to report any further complications
Results

- 200 patients undergoing TAR were included in the study
  - There were 125 male and 75 female patients
  - 85 Left and 115 Right TAR procedures performed
- Mean age was 61.7 years of age (range 31.0-89.4)
- There were no recorded deaths
- The mean BMI of patients undergoing BMI was 28.4 Kg/m2 (range 18.1-47.5Kg/m2)
- 31 patients (15.5%) were given chemoprophylaxis in the postoperative period on clinical grounds
  - To enable them to travel by air (e.g. aspirin used) or for pre-operative anticoagulant maintenance treatment (e.g. on warfarin for AF, clopidogrel for cardiac stent or CVA)
Results 2

• 187 (73.4%) patients were mobilised immediately post-operatively;
  – In the weight bearing subgroup of patients only 10 (5%) of them had problems and required subsequent immobilisation (figure 1)

• 2 (0.8%) mobilised with partial weight bearing

• 21 (4.6%) mobilised non-weight bearing

• The majority of postoperative problems were caused by
  – postoperative peri-

prosthetic fracture (n=8) and
  – wound break down (n=2)

• All patients were immobilised for 6 weeks and healed without complication.

<table>
<thead>
<tr>
<th>Weight Bearing status</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>non WB</td>
<td>11</td>
<td>5.5%</td>
</tr>
<tr>
<td>Partial WB</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>WB no problems</td>
<td>177</td>
<td>88.5%</td>
</tr>
<tr>
<td>WB with problems</td>
<td>10</td>
<td>5.0%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Figure 1. Post operative weight bearing instructions
Results - 3

• The patients undergoing TAR were not all simple primary TAR.
  – 35% of patients included in the study required additional surgical procedures at the time of TAR surgery
  – 3 (1.5%) patients underwent revision TAR
  – A list of additional procedures is shown in figure 2

• There was a recorded overall incidence of one symptomatic DVT (0.5%).
  – DVT was at 5 ½ months post-surgery
• No (0%) PE was recorded

• Other recorded postoperative complications included fractures (15/200, 7.5%), infection (16/200, 8%) and deep infections requiring arthroscopic washout (5/200, 2.5%)
<table>
<thead>
<tr>
<th>Other Ops</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcaneal osteotomy</td>
<td>29</td>
<td>14.5%</td>
</tr>
<tr>
<td>Calcaneal fix with screws</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>Fracture fixation</td>
<td>4</td>
<td>2.0%</td>
</tr>
<tr>
<td>Ligament reconstruction</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>Removal of metalwork</td>
<td>15</td>
<td>7.5%</td>
</tr>
<tr>
<td>TA lengthening</td>
<td>12</td>
<td>6.0%</td>
</tr>
<tr>
<td>Revision TAR</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Plate and screw fixation - malleolus</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>No other ops</td>
<td>130</td>
<td>65.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Figure 2. Additional procedures performed at time of TAR surgery
Conclusion

• The study suggests that our protocol produced low rates of VTE (one DVT)
  – This study is limited by its retrospective nature and the lack of a control group

• We suggest early mobilisation, limb elevation, haematoma evacuation and use of VAC treatment to prevent DVT should be considered an effective primary prophylaxis measure

• Furthermore, this study suggests VTE chemo-prophylaxis should be done on clinicians’ judgement based on individual needs. This will hopefully avoid unnecessary costs and possible complications of anticoagulation, such as:
  – bleeding
  – delayed wound healing and
  – thrombocytopenia

• This study highlights that there is a need for further research into the use of VTE prophylaxis in TAR
1. Registry NJ. National Joint Registry UK > Healthcare providers > Accessing the data > StatsOnline > NJR StatsOnline. 2015.
