Outcome of Forefoot Amputations with Primary Closure in Patients with diabetes

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Our disclosure is in the Final AOFAS program Book.

We have no potential conflicts with this presentation.
Aim

Document the results of primary wound closure of amputations undertaken in patients with diabetes and osteomyelitis from a non-healing foot ulcer.

Retrospective single surgeon series.
Method

- 74 patients (48 males). Median age 68 years (range 29-93).


- Consecutive patients managed with a limited amputation of the foot were included.

- All patients had either palpable pulses or absolute toe pressures greater than 45mmHg.

Types of amputations performed

- 13 1st Metatarsal
- 11 Trans-metatarsal
- 7 5th Metatarsal
- 13 Hallux
- 25 Lesser Toe
- 5 2nd, 3rd or 4th Metatarsal
Technique

The level of amputation is chosen to allow clearance of all infected bone.

Full thickness flaps are elevated.
The amputation specimen is excised *en bloc*, removing all infected tissue. The wound is then washed copiously. Microbiology specimens are taken. Post-operative antibiotic therapy dictated by these cultures.

Loose closure in layers.
Dressed with non-adhesive dressings and a plaster back-slab applied.
Results

<table>
<thead>
<tr>
<th></th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay (Days)</td>
<td>14</td>
<td>2-300</td>
</tr>
<tr>
<td>Duration of antibiotics (Days)</td>
<td>28</td>
<td>2-210</td>
</tr>
<tr>
<td>Time until wound healed (Days)</td>
<td>37</td>
<td>13-210</td>
</tr>
<tr>
<td>Total follow-up (Months)</td>
<td>28</td>
<td>1-77</td>
</tr>
</tbody>
</table>

Impact of co-morbidity on re-ulceration

<table>
<thead>
<tr>
<th>Co-morbidity</th>
<th>Frequency</th>
<th>Re-ulcerations</th>
<th>Odds Ratio</th>
<th>p value</th>
<th>95% Confidence intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venous disease</td>
<td>10</td>
<td>6</td>
<td>4.15</td>
<td>0.04</td>
<td>1.04 to 16.51</td>
</tr>
<tr>
<td>Angioplasty</td>
<td>9</td>
<td>5</td>
<td>3.26</td>
<td>0.10</td>
<td>0.78 to 13.54</td>
</tr>
<tr>
<td>GFR &lt;30</td>
<td>18</td>
<td>7</td>
<td>1.59</td>
<td>0.41</td>
<td>0.52 to 4.83</td>
</tr>
<tr>
<td>Hypertension</td>
<td>26</td>
<td>13</td>
<td>3.80</td>
<td>0.02</td>
<td>1.35 to 10.72</td>
</tr>
<tr>
<td>Hypercholesterolaemia</td>
<td>17</td>
<td>5</td>
<td>0.95</td>
<td>0.93</td>
<td>0.29 to 3.09</td>
</tr>
<tr>
<td>Ischaemic heart Disease</td>
<td>19</td>
<td>7</td>
<td>1.42</td>
<td>0.53</td>
<td>0.48 to 4.27</td>
</tr>
<tr>
<td>Renal Transplant</td>
<td>6</td>
<td>1</td>
<td>0.42</td>
<td>0.44</td>
<td>0.05 to 3.80</td>
</tr>
</tbody>
</table>
Results

- **Re-ulceration**
  - Re-ulceration occurred in 23 patients (31%) at a median 6 months (183 days, range 42-1095 days).
  - Re-ulceration was remote from the initial site in 16 patients.

- **Re-amputation**
  - Of the 23 patients who re-ulcerated only 12 patients (16%) required re-amputation.

- **Death**
  - 6 patients (8%) died during the follow-up period. None of these patients had re-ulcerated and all their primary wounds had healed before they died.

- **Wound healing**
  - All wounds healed primarily at a median time of 37 days (range 13-210).
SUMMARY

- Primary Closure of Diabetic Forefoot Amputations is reasonable.

- Our data has shown 23 patients (31%) re-ulcerated at a median 6 months (183 days, range 42-1095 days) after the initial amputation.

- The technique saves $5190 per patient compared to negative pressure wound therapy (NPWT), as a result of the reduction in the costs associated with hire of equipment and dressings required for NPWT (2).

SUMMARY: Primary wound closure in patients with proven osteomyelitis, secondary to diabetic foot ulceration in an adequately vascularised foot is a good method of treatment of diabetic foot ulcers with osteomyelitis.
References
