Amputation in Patients with PAD with and without Diabetes: Insights from the EUCLID Trial

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Abstract: P45
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Amputation is a major complication of peripheral artery disease (PAD).

Multifactorial nature is increasingly recognized, particularly in those with concomitant diabetes mellitus (DM).

Elucidating the drivers of amputation in PAD with and without DM may be important in developing strategies for prevention.
 METHODS

• EUCLID randomized 13,885 patients with PAD. Investigators prospectively reported all amputations.

• In this post-hoc analysis, amputations (major – ankle and above, minor – distal to ankle) were **retrospectively adjudicated using safety data** when available to characterize the drivers including **infection**, **ischemia**, or multifactorial.

• Etiologies were evaluated by **DM status at baseline**.
415 patients (3% of total) underwent 533 amputations over a median of 30 months.

**Cohort Characteristics**

- **533 Amputations**
  - 260 Major
  - 263 Minor
  - 10 Unknown*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>At least one amputation</th>
<th>No amputation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>415</td>
<td>13,470</td>
</tr>
<tr>
<td>Age, mean (SD), years</td>
<td>66 (8.7)</td>
<td>67 (8.4)</td>
</tr>
<tr>
<td>Female</td>
<td>21%</td>
<td>28%</td>
</tr>
<tr>
<td>Current/former smoker</td>
<td>68%</td>
<td>79%</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>67%</td>
<td>38%</td>
</tr>
<tr>
<td>Insulin requirement</td>
<td>59%</td>
<td>35%</td>
</tr>
<tr>
<td>Oral agent alone</td>
<td>37%</td>
<td>57%</td>
</tr>
<tr>
<td>Diet control alone</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>HbA1c (%), mean (SD)</td>
<td>7.8 (2.1)</td>
<td>6.8 (8.4)</td>
</tr>
</tbody>
</table>

**PAD Characteristics**

- **ABI, mean (SD)**
  - 0.64 (0.27)
  - 0.72 (0.21)

- **Prior revascularization**
  - 62%
  - 56%

- **Prior major amputation**
  - 11%
  - 2%

- **Prior minor amputation**
  - 25%
  - 4%

**Rutherford Classification**

- **0. Asymptomatic**
  - 13%
  - 19%

- **1-2. Mild/Mod claudication**
  - 39%
  - 54%

- **3. Severe claudication**
  - 27%
  - 23%

- **4. Rest pain**
  - 9%
  - 3%

- **5. Minor tissue loss**
  - 9%
  - 1%

- **6. Major tissue loss**
  - 3%
  - <1%

*10 amputations were unknown regarding major or minor, 3 in diabetics and 7 in non-diabetics
TIMING OF AMPUTATIONS

Randomization

1st Amputation
After Initial Minor
10.7 mths
204 Major
199 Minor

2nd Amputation
After Initial Minor
3.3 mths

Subsequent Major
After Initial Minor
0.8 mths

Subsequent Minor
After Initial Minor
1.5 mths
RESULTS

• 172 out of 533 non-traumatic amputations with sufficient documentation to determine drivers

• **Ischemia** was the primary driver overall (51%) followed by **infection** (27%) and multifactorial (22%)

• Primary driver varied by **DM status**
The etiology varied for major and minor with the former driven by ischemia (65%) and the latter driven by infection (59%).

Infection was the predominant driver in patients with diabetes for both major (52%) and minor (64%) amputations.
LIMITATIONS & CONCLUSION

LIMITATIONS
• Subgroup analysis of RCT
• Critical limb ischemia (CLI) underrepresented in overall clinical trial population
• Incomplete data for adjudication of amputation drivers

CONCLUSION
• Amputations in PAD appear to have different primary drivers depending on concomitant Diabetes
• Infection may have a larger role in patients with Diabetes and ischemia in patients without Diabetes