Failure to consider limb status may explain differences of opinion on treatment strategy for CLTI should depend on limb disease burden/extent 

(Wound, Ischemia, foot Infection - WIfI)

VEITH Annual Meeting 15 November 2017

I have no conflicts of interest related to this presentation

Based on Taylor GI. Br J Plast Surg. 1987

Does direct angiosome revascularization influence amputation rate?

Yes!

No!

Maybe!

 Data supporting predictive ability of WIfI (amputation risk and wound healing time)
Risk of amputation versus SVS WIfI Stage: Compilation of published data

<table>
<thead>
<tr>
<th>Study (year)</th>
<th># limbs at risk</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Califf (2014): 151</td>
<td>37 (2%)</td>
<td>60 (4%)</td>
<td>48 (3%)</td>
<td>9 (0%)</td>
<td></td>
</tr>
<tr>
<td>Zhao (2015): 151</td>
<td>39 (3%)</td>
<td>50 (5%)</td>
<td>53 (6%)</td>
<td>58 (23%)</td>
<td></td>
</tr>
<tr>
<td>Darling (2016): 151</td>
<td>5 (0%)</td>
<td>21 (10%)</td>
<td>4 (2%)</td>
<td>9 (0%)</td>
<td></td>
</tr>
<tr>
<td>Cauley (2015): 151</td>
<td>21 (3%)</td>
<td>45 (6%)</td>
<td>42 (5%)</td>
<td>49 (5%)</td>
<td></td>
</tr>
<tr>
<td>Bangslos (2016): 151</td>
<td>39 (3%)</td>
<td>45 (6%)</td>
<td>40 (5%)</td>
<td>36 (6%)</td>
<td></td>
</tr>
<tr>
<td>Ward (2016): 151</td>
<td>5 (0%)</td>
<td>21 (10%)</td>
<td>4 (2%)</td>
<td>9 (0%)</td>
<td></td>
</tr>
<tr>
<td>Darling (2016): 151</td>
<td>22 (2%)</td>
<td>29 (2%)</td>
<td>26 (3%)</td>
<td>20 (2%)</td>
<td></td>
</tr>
<tr>
<td>N = 2,279 (weighted mean)</td>
<td>148 (3.4%)</td>
<td>628 (8.3%)</td>
<td>652 (10.3%)</td>
<td>851 (25%)</td>
<td></td>
</tr>
</tbody>
</table>

Median (% 1 yr amputation) (in parentheses) are weighted

Number of limbs at risk in each WIfI Stage with % amputation at 1 year in parentheses. Means in totals (in parentheses) are weighted.

Analysis of wound healing time and wound free period as outcomes after surgical and endovascular revascularization for critical lower limb ischemia

WIfI staging may help optimize revascularization strategy: Need for repeat revascularization therapy was higher and wound healing rates were worse for ENDO versus OPEN for WIfI stage 4 and perhaps even some stage 3 patients.

Risk of amputation versus SVS WIfI Stage: Compilation of published data

Limb stage matters (a lot)

- Clinical Stage WIfI and the Wound component predict long term outcomes
- Data support the predictive ability (wound healing & amputation risk) of SVS WIfI Lower Extremity Threatened Limb Classification System
- Limb disease burden has a significant impact on outcome despite aggressive revascularization, and needs to be considered up front when designing and comparing therapeutic approaches (including angiosome targeted revascularization)
- There may be a potential interaction between WIfI & angiosome
When are angiosomes important and what is their potential interaction with WIfI Stage?

- When the foot circulation is COMPARTMENTALIZED
  - Heel ulcers in patients with diabetes and end stage renal disease
  - Often have isolated tibial and pedal/arch disease
- We have termed this condition “Orphan Heel Syndrome”
- These patients are often WIfI Stage 4 (or 3)

58 year old diabetic man; Stage 5 CKD. Ambulatory with contralateral BKA. Palpable DP pulse, remotely healed Right TMA. R Heel gangrene, no PT pulse

61 y/o diabetic s/p TMA. Palpable DP Pulse. Non-healing heel ulcer x 15 months; Failed TCC

Remote left BKA; Ambulatory in prosthesis
INDIRECT REVASCULARIZATION

PRE-PTA
POST PTA

Wound completely healed in 6 weeks

Angiosomes & vascular surgery: why do some bypasses fail to heal?

a patent bypass will fail to heal
~16% of ischemic heel wounds with an incomplete arch

Figure 1: Angiosomes of the ankle and foot.