Is The Angiosome Concept Worthwhile And How Should It Be Used?

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VEITH Meeting
November, 2015

Angiosome Concept
• Does it work? → YES
• How should it be used?
  – Guide clinical decision-making in specific scenarios
  – Plays a role in fewer than half of CLI patients

Results of Angiosomal Perfusion

<table>
<thead>
<tr>
<th>Method of Revasc</th>
<th>Study</th>
<th>Appropriate Angiosome</th>
<th>Boundary Angiosome</th>
</tr>
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<tbody>
<tr>
<td>Bypass</td>
<td>Neville Ann Vasc Surg 2009</td>
<td>91% healed</td>
<td>62% healed</td>
</tr>
<tr>
<td></td>
<td>Kret J Vasc Surg 2014</td>
<td>85% healed</td>
<td>62% healed/1y</td>
</tr>
<tr>
<td>PTA</td>
<td>Alexandrescu JEVT 2008</td>
<td>83% healed</td>
<td>59% healed</td>
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<tr>
<td></td>
<td>Alexandrescu JEVT 2011</td>
<td>90% limb salvage/2yrs</td>
<td>78% limb salvage/2yrs</td>
</tr>
<tr>
<td></td>
<td>Iida CCI 2010</td>
<td>86% limb</td>
<td>69% limb salvage/2yrs</td>
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<tr>
<td>PTA/Bypass</td>
<td>Kabra J Vasc Surg 2013</td>
<td>96% healed/6m</td>
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Not all CLI is created equally

Figure 3. Propensity score adjusted hazard of major amputation according to angiosome-regional and re-targeted revascularization
(p = 0.030, HR 0.447, 95% CI 0.283–0.693)

Splinter et al. Eur J Vasc Endovasc Surg 2015;49:412

Disclosures
Peter A. Schneider
Non-paid consultant: Abbott, Medtronic, Cardinal
Modest royalty: Cook
Chief Medical Officer: Intact Vascular
Old Teachings

• “Must establish in-line flow to the foot”
  – Typically with bypass, we are looking for the best quality target vessel to work with.

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Limb Amputation or Clinical Failure Despite a Patent Bypass

In the idealized world, these are anastomotic arteries.

When the pedal arch is patent, the need for direct angiosomal revasc is diminished or negated.

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Angiosome Concept

Compartmentalized flow in the foot.
We need targeted revascularization.

Problems with Angiosome Concept

• Variability in angiosome size/location among patients.
• Variability in collateral connections between angiosomes.
• Fully intact pedal arch, more likely in non-diabetics.
• Rutherford 4-no tissue loss, revasc any vessel.
• Rutherford 6-crosses angiosomes, revasc all arteries.
• Lesion above the ankle.
• Superficial ulceration (<10mm in diameter), esp. if toe pressure ≥50mmHg after PTA.

Angiosomal Anatomy

Medial plantar artery

How Can it Guide Therapy?

• Rutherford 5: Which tibial to revascularize?
• Rutherford 6: How many tibials to revascularize?
• When to do a bypass?
11/18/2015

Angiosome Concept
How Can It Guide Therapy?

• Bypass as first line therapy:
  Patent target in correct angiosome that
  cannot be revascularized by endovascular
  means should get a bypass if there is
  major foot damage.

Angiosome Concept
When to do below-the-ankle angioplasty?

It is one area where endo has an advantage over bypass.
Angiosome concept helps decide who needs BTA angioplasty.

Angiosome Concept
Strategy for Critical Limb Ischemia

Rest pain-R4
Open tibial to boundary artery
Early definitive foot surgery
Close follow-up versus bypass

Minor tissue loss-R5
Fix all levels of disease, including tibialis

Major tissue loss-R6
Open tibial to correct angiosome with endo

Is the Angiosome Concept Worthwhile?

Conclusion

• An opportunity for targeted therapy.
• Healing is more likely and faster after
direct revasc of the correct angiosome.
• Angiosome concept helps explain some
  of the variability in results of revasc for
  CLI, especially in diabetics with
  compartmentalized pedal circulation.
• Angiosome concept helps guide therapy
  in some patients.