Latest advancements in diabetic patients: May drug elution technologies improve clinical outcome?

Critical limb ischemia:
Time is crucial

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Disclosure

Speaker name:
Frank Vermassen

I have the following potential conflicts of interest to report:

☒ Consulting: Medtronic, Abbott Vascular, Philips, Bayer
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

☐ I do not have any potential conflict of interest
Time is crucial

Stroke

Heart attack

Sepsis
Limb ischemia - Diabetic Foot

Dry gangrene

Wet gangrene

Foot attack
CLI + infection

• Infection leads to rapid progression of necrosis due to
  – Aggressive germs present in diabetic foot infection
  – Immunocompromized status of diabetics
  – Arteriolar trombosis
  – Tissue swelling leading to compartment syndrome

• In case of infection, prompt treatment is indicated
  – Antibiotics
  – Drainage of abscesses
  – Debridement of necrotic tissue

• Revascularisation as soon as feasible
Need for revascularization in CLI

Lepantalo
EJVES 1996

Faglia
Diabetes Care 2009

Dick JVS 2007
Is sustained patency necessary?

- Optimal vascularisation
- Vascularisation
- Metabolic need
- Trauma
- Revascularisation
- New trauma
- Time needed for healing
- Patent
- Restenosis

Diagram showing the relationship between trauma, revascularisation, and the time needed for healing.
Is sustained patency important?

Meta-analysis of infrapopliteal angioplasty for chronic critical limb ischemia

Marcello Romiti, MD; Anaí Espinelli S. Duran; Santos and São Paulo, São

<table>
<thead>
<tr>
<th>Result</th>
<th>3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary patency</td>
<td></td>
</tr>
<tr>
<td>PTA</td>
<td>48.6 ± 8.0</td>
</tr>
<tr>
<td>Bypass</td>
<td>72.3 ± 2.7</td>
</tr>
<tr>
<td><em>P</em></td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Secondary patency</td>
<td></td>
</tr>
<tr>
<td>PTA</td>
<td>62.9 ± 11.0</td>
</tr>
<tr>
<td>Bypass</td>
<td>76.7 ± 2.9</td>
</tr>
<tr>
<td>Limb salvage</td>
<td></td>
</tr>
<tr>
<td>PTA</td>
<td>82.4 ± 3.4</td>
</tr>
<tr>
<td>Bypass</td>
<td>82.3 ± 3.0</td>
</tr>
<tr>
<td>Patient survival</td>
<td></td>
</tr>
<tr>
<td>PTA</td>
<td>98.3 ± 0.7</td>
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<tr>
<td>Bypass</td>
<td>92.3 ± 5.5</td>
</tr>
<tr>
<td><strong>NA</strong></td>
<td>87.0 ± 2.1</td>
</tr>
<tr>
<td><strong>NA</strong></td>
<td>74.3 ± 3.7</td>
</tr>
<tr>
<td><strong>NA</strong></td>
<td>68.4 ± 5.5</td>
</tr>
</tbody>
</table>

*NA*, Estimates not available; *PTA*, percutaneous transluminal angioplasty.

*Values are pooled estimate and standard error.*
Destiny Study

Number of re-interventions

MultiLink Vision vs Xience V

12-month follow-up

P=0.001

Bosiers – Linc 2011
Sustained Patency in CLI

- Makes wound healing faster and better
- Improves ambulatory status

O. Iida et al. angiographic restenosis and its clinical impact after infrapopliteal angioplasty.
Eur J of Vasc and Endovasc Surgery 2012
How long is patency needed?

- Wound healing time ~ 6 months
- Complete 6m healing rate < 50%

1. Xcell Trial – Rocha Sing 2011

Healing rates after infra-inguinal bypass surgery according to ulcer locations
Wound management

- Wound management is crucial to create the optimal wound bed for healing

<table>
<thead>
<tr>
<th>Clinical finding</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Tissue – necrotic, devitalized tissue</td>
</tr>
<tr>
<td>I</td>
<td>Infection and/or inflammation</td>
</tr>
<tr>
<td>M</td>
<td>Moisture imbalance</td>
</tr>
<tr>
<td>E</td>
<td>Edge of wound – undermining or non advancement of wound edges</td>
</tr>
</tbody>
</table>
Tissue management

- Does the wound contain non-viable tissue such as necrotic tissue, slough, non-viable tendon or bone?
Infection - Inflammation

• Does the wound have signs of bacterial contamination, infection or inflammation?
Moisture

- Does the wound have excess exsudate or is the wound to dry?
Edge

- Is the edge of the wound undermined or is the epidermis failing to migrate across the granulating tissue?
Conclusion

• Timely (urgent) intervention is needed in ischemic feet that become infected
• Sustained patency improves quality of life in CLI-patients
• Adequate wound management is crucial to obtain timely ulcer healing and limb salvage
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