The multidisciplinary approach in BTK intervention in DM patients: the right road to success

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
... the right road to success
... the right road to success

... is not a one-man show
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Beside the restored perfusion of the large vessels...

MICRO-Revascularisation after BTK intervention

→ tissue viability depends on a sufficient perfusion of skin capillaries

adapted from Deca G. et al. 2016 doi: 10.5772/64088
adapted from Tissue Repair by OpenStax College – Anatomy & Physiology, Connexions 2013
MICRO-Revascularisation after BTK intervention

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Mönckeberg’s Mediasclerosis

→ loss of elasticity
→ stasis
→ thrombus formation

→ critical reduction of tissue perfusion pressure and nutritive blood supply

Weck M. Ther Adv Endocrinol Metab (2011) 2(6) 247-555
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MICRO-Revascularisation after BTK intervention

- Hemorheology
  - elevated levels of plasma fibrinogen

<table>
<thead>
<tr>
<th></th>
<th>Controls</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (%)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Age (years)</td>
<td>56.4</td>
<td>56.4</td>
</tr>
<tr>
<td>Fibrinogen (mg/dl)</td>
<td>324 ± 139</td>
<td>656 ± 130</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>4 ± 1.6</td>
<td>8.5 ± 1.69</td>
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</tbody>
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RBC of a healthy individual within a normal fibrin network

RBC of a DM patient: the RBC is entrapped in atypical fibrin fibers (fibrin clots abnormally)

Pretorius E et al. Integr. Biol., 2014, 6, 486
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MICRO-Revascularisation after BTK intervention

→ COMPASS – PAD study (n= 7440; 44% DM)

low-dose Rivaroxaban 2.5mg BID + aspirin = 46% risk reduction of MALE

Figure 3: Cumulative incidence of individual components of major adverse limb events including major amputation

Anand SS et al for the COMPASS Investigators, Lancet 2017; doi.org/10.1016/S0140-6736(17)32409-1
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MICRO-Revascularisation after BTK intervention

• despite of well perfused large vessels
• despite of warm and red feet
• despite of normal or elevated ABI/toe pressure

→ evaluate microperfusion (local tissue viability)
  tcPO$_2$-measurement
  laser speckle contrast analysis
  oscillography
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MICRO-Revascularisation after BTK intervention

large vessels  small vessels

endovascular/surgical procedures  conservative treatment

• NOAC (COMPASS!)
• prostaglandins
• low-dose urokinase
• intermittent pneumatic compression
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wound care, debridement

→ cleansing the ulcer
→ debridement of the ulcer
   remove all the non-viable tissue

• scalpel/abrasor
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wound care, debridement

→ cleansing the ulcer
→ debridement of the ulcer
 remove all the non-viable tissue

• larval therapy

Lucilia sericata larvae
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wound care, debridement

→ cleansing the ulcer
→ debridement of the ulcer
  remove all the non-viable tissue

• scalpel/abrasor
• larval therapy

→ appropriate wound dressing
• controlled moist environment
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wound care, debridement

→ cleansing the ulcer
→ debridement of the ulcer
remove all the non-viable tissue

• scalpel/abrasor
• larval therapy

→ appropriate wound dressing
• controlled moist environment
• awaiting auto-amputation

welldemarcated, dry gangrenous digit
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wound care, debridement

→ cleansing the ulcer
→ debridement of the ulcer
  remove all the non-viable tissue

• scalpel/abrasor
• larval therapy

→ appropriate wound dressing
• controlled moist environment
• awaiting auto-amputation
• remove callus surrounding the ulcer

Why?

Callus
= most important preulcerative lesion in diabetic feet
= sign of to much plantar pressure during walking
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offload technique, orthopedics shoe engineering

• Shoe modifications
• Cushioning insoles
• Orthotics
• Casting techniques

NOTE: The restored blood-flow may NOT compensate for repetitive tissue trauma due to high pressure or poorly fitted shoes!
usually polymicrobial
• Gram-positive cocci
• Gram-negative rods
• Anaerobics

obtain cultures of the wound
initiate immediately antibiotic treatment

depth infections
• include drainage and surgical debridement
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- metabolic control
- patient education

- evaluation of coronary and cerebral arteries
  - aggressive modification of cardiovascular risk factors

The diabetic foot patient will be your patient not only for the time of BTK intervention. He belongs to you for the rest of his life.
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See you again in 2019!

Thank you very much!

- short interval follow-up
- offload technique
- microbiological control
- revascularisation MACRO + MICRO
- wound care, debridement
- metabolic control
- patient education
- visit the next LINC 2019
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See you again in 2019!

Thank you very much!

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Short intervall follow-up

Offload technique

Microbiological control

Revascularisation MACRO + MICRO

Visit the next LINC 2019

Wound care, debridement

Metabolic control

Patient education