



The Distal Limb Perfusion Index (DLPI): *A Novel Hemodynamic Parameter to Rapidly Identify Acute Limb Ischemia and Monitor the Efficacy of Limb Salvage Strategies during Mechanical Circulatory Support*

Peter S Natov, MD

Robert Kung Research Fellow in Interventional Heart Failure

Tufts Medical Center, Boston, MA

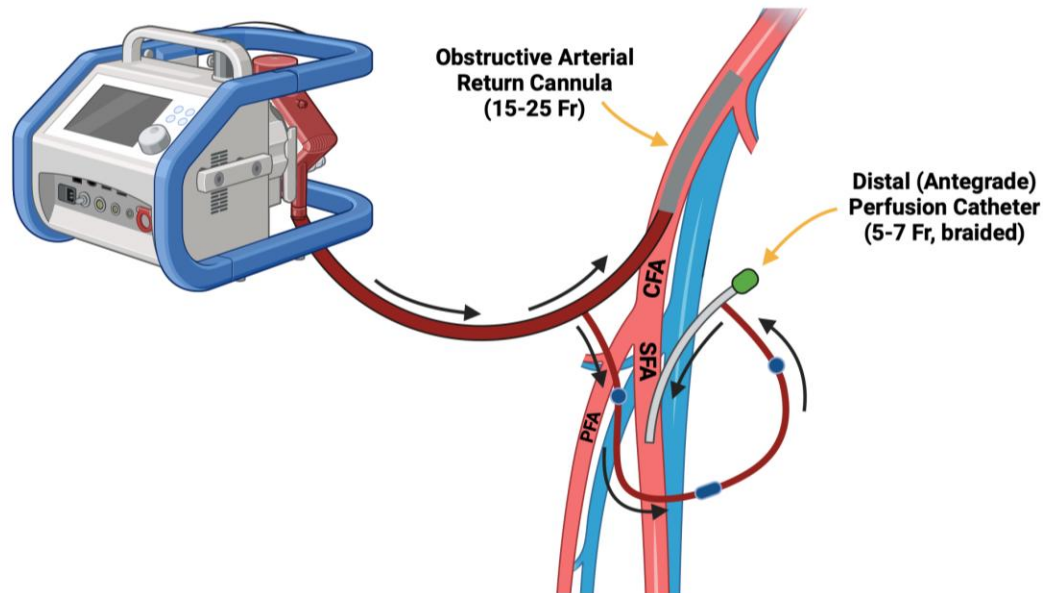
Collaborators: Rachel E Goodman, Muhammad Saad, Vandan Upadhyaya, Lara Reyelt, Lija Swain, M Imran Aslam, Carey D Kimmelstiel, Navin K Kapur

Disclosures: None

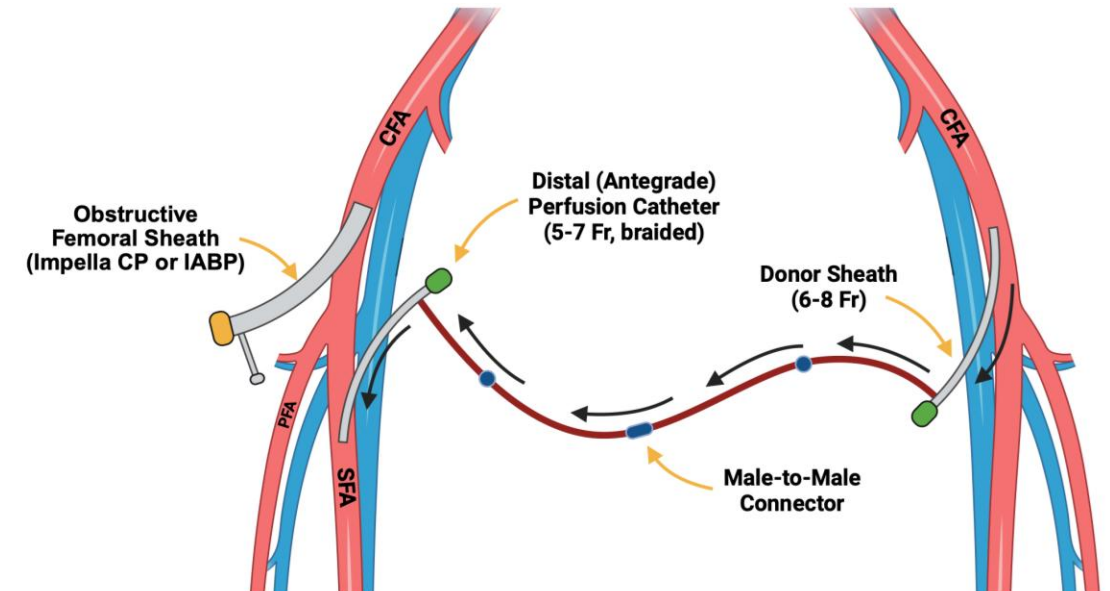
Limb Ischemia: A Major Complication of MCS

- Limb salvage strategies may mitigate MCS-related acute limb ischemia by using a distal perfusion catheter (DPC)
 - Physiologic Effects of these strategies are not well defined

Active Bypass: pressurized blood flow



Passive Bypass: dependent on native MAP and CO



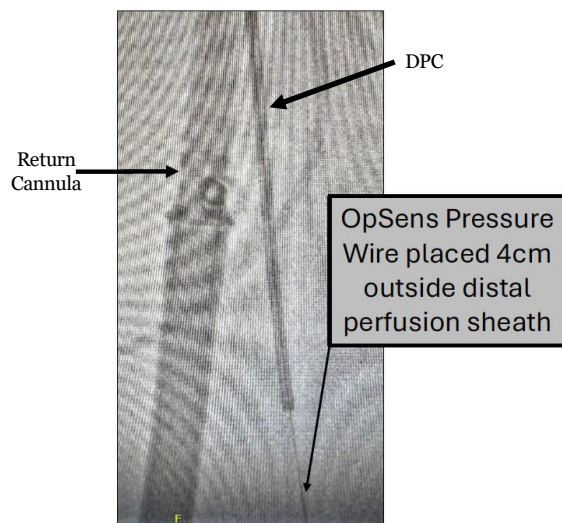
Prospective, Single-arm, Pilot Study of VA-ECMO

Population: patients with refractory CS referred for peripheral VA-ECMO

Exposure: enrolled patients with subjected to 3 conditions sequentially

1. No limb perfusion strategy (occlusive arterial return cannula)
2. Passive Bypass: blood flow from contralateral common femoral artery
3. Active Bypass: blood flow from ECMO circuit

Endpoint: invasive BP measurement from SFA of cannulated limb

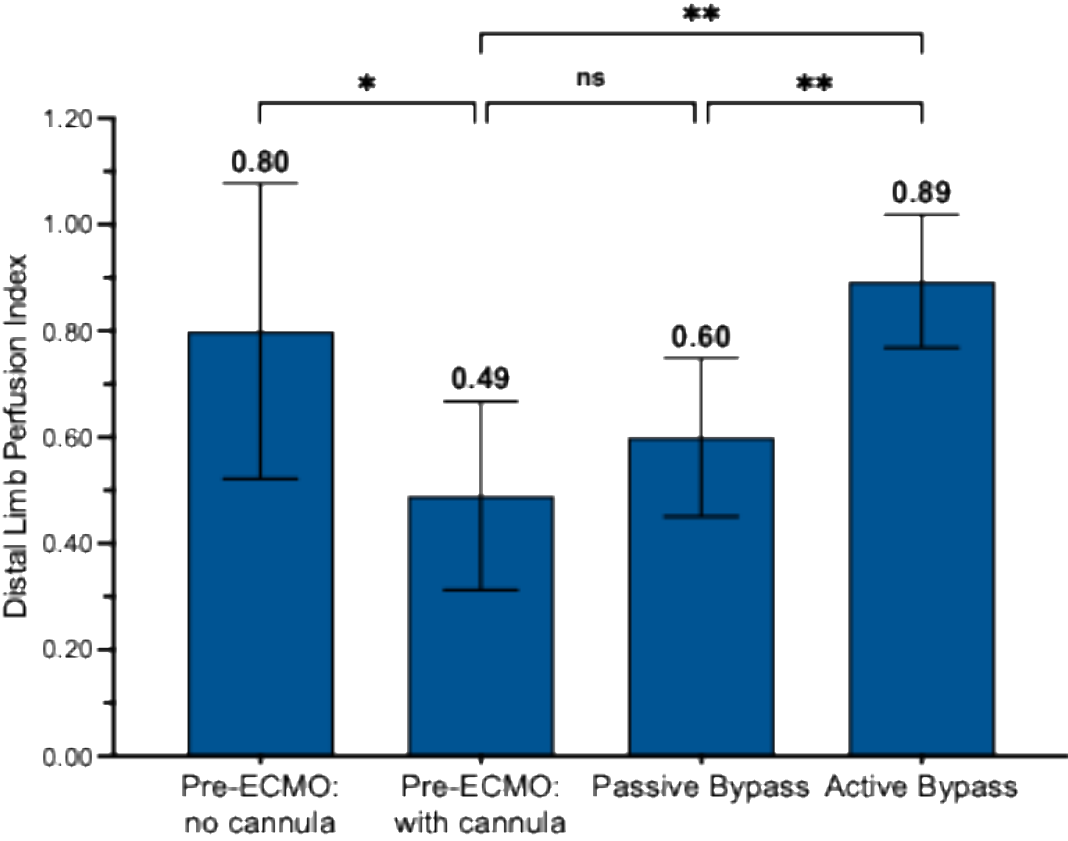


$$DLPI = \frac{\text{SFA MAP}}{\text{Rad MAP}}$$

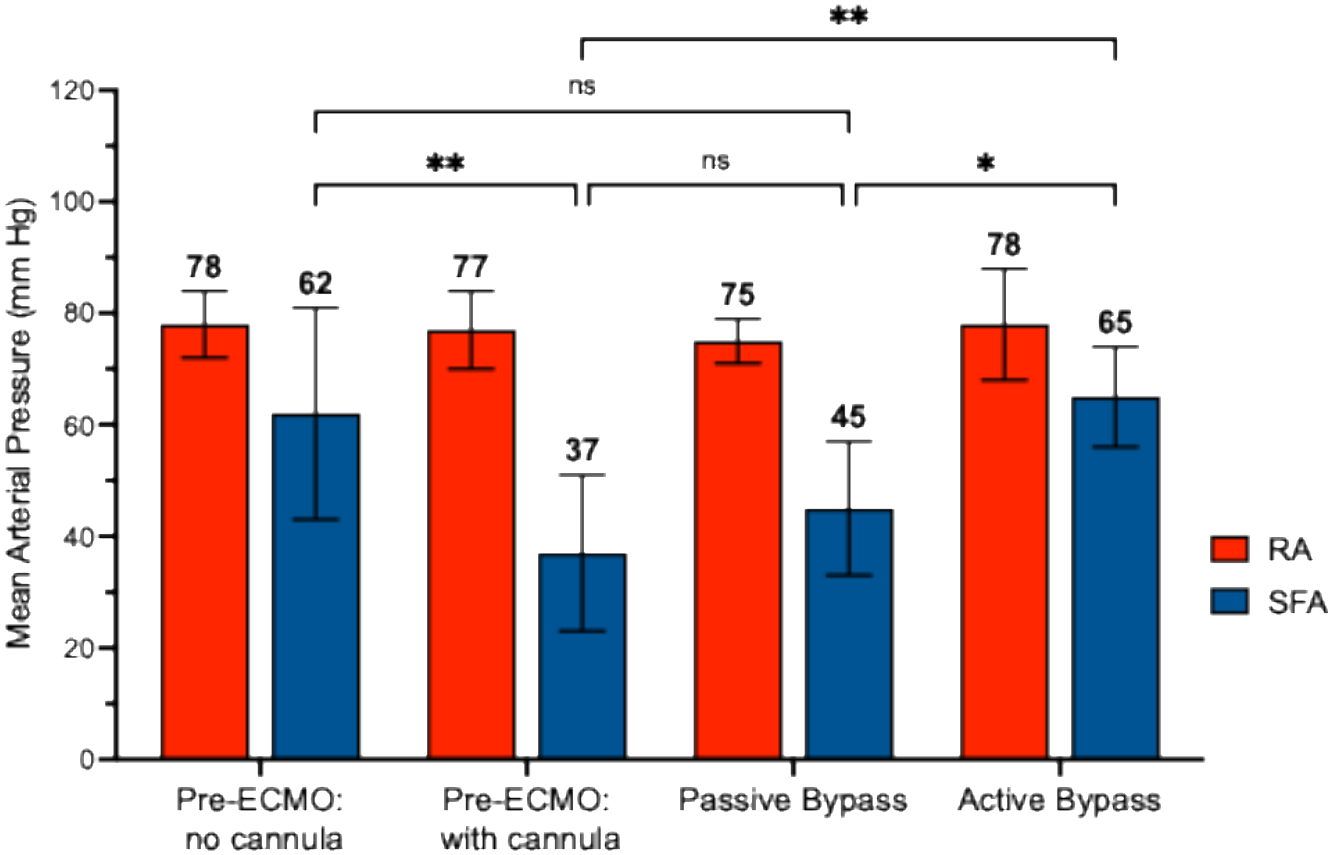


Results: From N=6 (to date)

Conditional Changes in Distal Limb Perfusion Index



Conditional Changes in Mean Arterial Pressure





Conclusions

- DLPI is a novel index that identifies limb hypoperfusion.
- Pressurized perfusion with active bypass may be superior to passive through a DPC.