Microcirculation in CLI

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Disclosure

- Speaker name:
- ............................................................
- 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
• 59 yo female
• DM2
• CKD on HD

• S/P CFA-PT GSV BPG

• Non-healing amputation site to 4-5th
A patent bypass will fail to heal ca. 16% of ischemic heel wounds when there is an incomplete arch – Bercelli et al. JVS 1999
What if we could have known early on that there was insufficient microvascular flow to secure wound healing?
Peripheral Vascular Disease

Effect of Single Tibial Artery Revascularization on Microcirculation in the Setting of Critical Limb Ischemia

Osami Kawarada, MD; Satoshi Yasuda, MD, PhD; Kunihiro Nishimura, MD, PhD; Shingo Sakamoto, MD; Miyuki Noguchi, RN; Yasuomi Takahi, MD, PhD; Koichiro Harada, MD, PhD; Masaharu Ishihara, MD, PhD; Hisao Ogawa, MD, PhD

<<< ANTERIOR TIBIAL INTERVENTION

POSTERIOR TIBIAL INTERVENTION>><>
Do we have objective performance goals?

“…Achieve direct in-line flow to the foot…”

TASC 2
WOUND-O-SOME
WOUND-O-SOME
How does LUMEE work?

Excitation light from surface reader reaches hydrogel in tissue.

Fluorescence chemistry on hydrogel responds based on oxygen concentration.

The fluorescent signal from hydrogel is captured by the reader. Data sent to cloud.
What information do we extract from Lumee Intra-Surgically?

Reperfusion Modulation

- Defined as difference in LOI between baseline and maximum after intervention.
- Larger values are associated with greater increases in tissue oxygen during the procedure.
- Data can be averaged across all Lumees, or selected from a Lumee of interest.
Intra-op Lumee shows predictive value for wound healing
(Stratification by Wound Status)

- Analysis performed on subjects completing Lumee sampling through 3-month follow up (n=14)

- For each subject, average intra-op LOI change across all sampled sensors was calculated

- Subjects were stratified by wound healing status as improve, no change, or worsen

- Size of markers indicates risk of amputation assessed by WIFI scores at enrollment

Results show that *larger increases in LOI were associated with wound healing* outcomes
Intra-op + Post-op Lumee improves predictive value

- Analysis performed on subjects completing both intra-op and post-op Lumee sampling through 3-month follow up (n=13)

- For each subject, average intra-op LOI is plotted on x-axis, average 1-m post-op LOI change is on y-axis

- Marker size indicates risk of amputation assessed by WIFI scores at enrollment

- Marker color represents wound healing (green), no change (yellow), or worsening (red)

Combination of intra-op and post-op data reveals potential clustering and predicts wound healing in 12/13 subjects

Asterisk (*) identifies patient underwent re-intervention in weeks after revascularization
Acknowledgements

OMNIA PIs
Medical University
Graz, Austria
• Marianne Brodmann M.D.

St Franziskus-Hospital
Munster, Germany
• Theo Bisdas, M.D.
• Arne Schwindt M.D.

Hanusch Hospital
Vienna, Austria
• Martin Werner M.D.

Clinical Research Team
Profusa
San Francisco, USA
• Kerstin Rebrin, M.D., Ph.D.
• Kit Yee Au-Yeung, Ph.D.
• Wayne Menzie, Ph.D.
• Stephen Kanick, Ph.D.

Medical Advisory Committee
• Peter Schneider, M.D.
• Miguel Montero-Baker M.D.
• Medhi Shishehbor, D.O, Ph.D.
• Michael Conte, M.D.
The Division of Vascular Surgery and Endovascular Therapy and iCAMP Accepting National and International Visitors

The Division of Vascular Surgery and Endovascular Therapy in the Michael E. DeBakey Department of Surgery at Baylor College of Medicine is inviting national and international visitors to work with world-renowned physicians and scientists in Vascular Surgery, Podiatry Medicine, Limb Salvage, Neurorehabilitation, and Bioengineering to contribute in innovative interdisciplinary research in the area personalized and precision medicine targeting aging population, people with diabetes and plantar ulcers, and those suffering from peripheral arterial disease.

Visitors must meet the following requirements:

• Independent funding
• Minimum of 6 month commitment
• English Proficiency
• Compliance with USCIS Visa Regulations for non-USA residents

A DS-2019 Request form has to be completed for a J-1 Visa prior to visiting. Applicants should send an updated CV and a cover letter summarizing your motivations and your qualifications to:

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(a) Library privileges identical with those of the faculty;
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(c) Use of laboratory, Clinical, and other space and facilities to the extent they are available.
(d) Working in an interdisciplinary environment and be actively engaged in highly innovative clinical and translational researches to improve stability, healing and mobility across disciplines and in particular among patients suffering from diabetes as well as aging population undergoing major surgical interventions.
(e) Candidates will be highly encouraged and are supported to publish the results of their research in high impact peer-reviewed journals and/or presenting in national and international conferences.
(d) Candidates will receive training in using advanced technologies/tools designed for the purpose of outcomes research, wound healing, fall prevention, frailty screening, vascular assessment, and motor-cognitive screening.
• mmontero@bcm.edu
• Thank you!
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