Why Open Bypass is Best in Some CLTI Patients, Which Ones, and How Many

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Disclosures

- Consultant: Symic, Abbott Vascular
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- Executive Committee- BEST trial (NIH)
- I work at an academic institution with a dedicated Limb Preservation Center
- I perform both endovascular and open surgery; my current LE referral practice is ≈2/3 Endo

Selecting the Optimal Revascularization Strategy in CLTI

- ASSESS PATIENT RISK
  - Both perioperative and long-term survival
- ASSESS LIMB SEVERITY
  - e.g. SVS Threatened Limb (WIfI) Stage
- ASSESS ANATOMIC PATTERN OF DISEASE
  - Endo: Likelihood of technical success, hemodynamic gain and limb-based patency
  - Bypass: Quality of available vein and target artery
- Endo and Open have complementary roles in contemporary practice

Current practice of first-line treatment strategies in patients with critical limb ischemia

BASIL: Impact of treatment received on Amputation-Free Survival

“BAP was associated with a significantly higher failure rate than BSX. Most BAP patients ultimately required surgery. BSX outcomes after failed BAP are significantly worse than for BSX performed as a first revascularization attempt. BSX with vein offers the best long term AFS and OS and, overall BAP appears superior to prosthetic BSX.”


Growing impact of restenosis on the surgical treatment of peripheral arterial disease. Jones D et al; JAHA 2013

Patency IS Important...

- Most (but not all) patients with advanced limb ischemia will recrudesce when the revasc fail
- Most CLTI patients have multi-segment disease
- Expected limb-based patency (LBP) with lesions in series is the probability product for each lesion
  - Intermediate to long SFA disease ≈ 60-70% 1 yr patency
  - Intermediate to long tibial disease ≈ 30-50% 1 yr patency
  - Estimated LBP at one year 0.7 x 0.5= 35%
- Patients with more advanced limb presentations (WIfI stage) tolerate revasc failure poorly
  - Recurrent pain, wounds, additional tissue loss
  - Markedly impaired QoL
- Patient survival with advanced PAD has improved

What the “all endo-all the time” camp does- and doesn’t-say

- Many datasets suggest downstream outcomes (e.g. AFS) are roughly equivalent
  - Not the same patients, limb severity, or anatomic complexity
  - Would you compare PCI and CABG without knowing comparable anatomy/LV function?
- Endo can be repeated with minimal morbidity
  - Deterioration in limb status and burden on patient
  - Continued decline in outcomes of secondary interventions
  - Loss of targets and runoff increases
- CLTI patients are all too frail for surgery
  - BASIL and VQI data suggest current survival >70% at 2 years for those being treated with revascularization
- There is no economic incentive for durable success!

WiFi Stage 4 Limbs: Revascularization failures are poorly tolerated

Surgical Risk
Life Expectancy
Severity of Ischemia
Anatomy
Vein availability

- Average (<5% mort)
- ≥ 2 years
- Major tissue loss, poor hemodynamics
- Multi-level, TASC C/D
- GSV or good alternate

- High
- Limited
- Minor ulcer, marginal hemodynamics
- Single level, TASC A-C
- Inadequate

BYPASS FAVORED
ENDO FAVORED

CLI: A Selective Revascularization Strategy

Patients with poor functional status, multiple comorbidities/limited life expectancy and tissue loss should be considered for Primary Amputation or palliation

Bottom Line

- Endovascular technologies continue to improve incrementally, but still very limited in complex disease
- MOST CLTI patients undergoing revascularization are acceptable surgical candidates
- CAD technologies and evidence base well ahead of PAD– and continue to demonstrate a critical role for CABG, especially in diabetics with complex disease
- ≈20-30% of true CLTI patients are likely better served by open bypass. For many of these patients, relegating bypass to a secondary option will have negative consequences on the outcomes
- If you do not have access to a skilled open bypass surgeon----
  – FIND ONE!!!!