

## LETTER TO THE EDITOR

# Lower extremity revascularization: endovascular or surgical approach first – or should the question be bypassed?

Costin N Ionescu<sup>1</sup>

I read with interest the study of Filip et al<sup>1</sup> reporting long term outcomes of endovascular intervention in patients with critical limb threatening ischemia (CLTI) from a single medical center. CLTI is associated with mortality as high as 50% at 5 years and a 10-40% 1-year amputation rate<sup>2,3</sup>. Aggressive medical therapy and limb salvage interventions are of major importance to decrease these dismal outcomes. Limb salvage techniques include endovascular or surgical approach. Despite the agreement on the need in reestablishing in line blood flow to the foot, there is an ongoing debate on which revascularization modality should be used first<sup>4</sup>. There are no completed randomized trials to help with this debate. However, endovascular procedures have grown exponentially in the recent years<sup>3,4</sup>.

CLTI patients are a heterogenous population with specific and complex needs. Commonly, they have renal failure, uncontrolled diabetes and hypertension, prior stroke and coronary artery disease. From an anatomic standpoint, the disease varies in the territories affected (aorta, iliac, SFA, tibial, plantar), the length of the occlusions, or the presence (or absence) of the plantar arch. From a procedural standpoint, in cases of tissue loss or gangrene, the outcome of revascularization might depend upon whether the opened vessel supplies the affected area, based on angiosome distribution<sup>5</sup>.

In this context, the study published in by Filip et al provides further evidence of the durability of endovas-

cular procedures in CLTI patients. This is a single center experience of endovascular therapy of CLTI with long follow up to 5.5 years. The cohort of patients was typical of CLTI with a high percent of comorbidities, such as CKD and DM. The lesions treated were typical with 2 area treated. There was high rate of antegrade approach. Treatment consisted mainly of angioplasty (69.5%). The outcomes were excellent given this cohort with only 6% death rate, 17% amputations, and 15% re-interventions.

However, only patients treated successfully were included in the study. It would be interesting to see the failed treatment rate, whether there has been improvement over time and if outcomes of those patients were very different. The percentage of below knee disease was 17%, with only 10% occlusions, somewhat lower than in other series<sup>6</sup>, which could impact the overall outcome. Also, it would be interesting to expand the descriptive data to include angiosome revascularization and plantar arch status. Nevertheless, the team should be congratulated for their exceptional care. Their expertise in the field could be appreciate by the high number of antegrade procedures, and excellent outcome despite the high percentage of patients treated with only balloon angioplasty. Their data supports endovascular treatment approach of CLTI patients, conditioned upon a successful intervention.

**Conflict of interest:** none declared.

<sup>1</sup> Yale New Haven Hospital, Yale School of Medicine, New Haven, Connecticut, USA

► **Contact address:**

Costin N Ionescu, MD, PhD  
 Assistant Professor of Clinical Medicine – Cardiology  
 Interventional Cardiology and Limb Preservation Program  
 Vascular Medicine Outcomes Program (VAMOS)  
 Yale New Haven Hospital, Yale School of Medicine, New Haven,  
 Connecticut, USA.  
 E-mail: costin.ionescu@yale.edu

## References

1. Filip DF, Kozma G, Pop CF. A 5.5 years observational follow-up study of patients with critical limb ischaemia treated efficiently by endovascular approach. *Romanian Journal of Cardiology*. 2020;30(2):236-40.
2. Biancari F. Meta-analysis of the prevalence, incidence and natural history of critical limb ischemia. *J Cardiovasc Surg (Torino)*. 2013;54(6):663-9.
3. Fereydooni A, Gorecka J, Dardik A. Using the epidemiology of critical limb ischemia to estimate the number of patients amenable to endovascular therapy. *Vasc Med*. 2020;25(1):78-87.
4. Patel RAG, Sakhuja R, White CJ. The Medical and Endovascular Treatment of PAD: A Review of the Guidelines and Pivotal Clinical Trials. *Curr Probl Cardiol*. 2020;45(7):100402.
5. Huang TY, Huang TS, Wang YC, Huang PF, Yu HC, Yeh CH. Direct Revascularization With the Angiosome Concept for Lower Limb Ischemia: A Systematic Review and Meta-Analysis. *Medicine (Baltimore)*. 2015;94(34):e1427.
6. Mustapha JA, Igyarto Z, O'Connor D, Armstrong EJ, Iorio AR, Driver VR, et al. One-Year Outcomes of Peripheral Endovascular Device Intervention in Critical Limb Ischemia Patients: Sub-Analysis of the LIBERTY 360 Study. *Vasc Health Risk Manag*. 2020;16:57-66.