

INVITED COMMENTARY

Pedal Artery Revascularisation: ‘Bogey’, ‘Birdie’, or ‘Eagle’ in the Treatment of Chronic Limb Threatening Ischaemia?

Jos C. van den Berg^{a,b,*}

^a Centro Vascolare Ticino, Ospedale Regionale di Lugano, Lugano, Switzerland

^b Universitätsinstitut für Diagnostische, Interventionelle und Pädiatrische Radiologie Inselspital, Universitätsspital Bern, Bern, Switzerland

In this issue of the *European Journal of Vascular and Endovascular Surgery*, Jung et al. describe their experience with pedal artery revascularisation (PAR) and more importantly the mid term outcomes with respect to wound healing and major amputation rates.¹ More than a decade ago PAR was described as feasible,² but the influence on outcome is less well established and therefore the benefit of PAR remains controversial. This paper tries to put in place another piece of the complex puzzle that is the treatment of chronic limb threatening ischaemia (CLTI).

The discussion on PAR is similar to the ongoing discussion on the angiosome concept, where it is known that direct revascularisation yields better results than indirect revascularisation. The limitation of the angiosome concept is that direct revascularisation is feasible in only 47%–60% of cases.³ Jung et al. show a benefit of PAR (in all attempted PARs only a trend was seen, while successful PAR resulted in a statistically significant advantage for both wound healing and amputation rate). Multiple techniques were used, including pedal access, pedal plantar loop, and transcollateral wiring technique. As with direct revascularisation, the limiting factor of PAR remains its technical success in only slightly over 60% of cases. To put it differently: although it is worthwhile to attempt PAR, a 40% failure rate needs to be anticipated.

Confounding the findings of the authors is the fact that the PAR group consisted of more patients who underwent a direct revascularisation: this raises the question whether it was the PAR or the direct revascularisation according to the angiosome concept that made the difference. Another confounding factor in this study is the presence of more complex pathology in the PAR group prior to propensity matching (with more multiple infrapopliteal target vessels involved and treated). It is known that, since the perfusion of wounds is often watershed and multiple angiosomes may be involved, treatment of multiple vessels leads to better outcomes.^{3–5}

The authors describe a similar complication rate in both groups, but fail to address the repercussions of a more complex intervention involving PAR on renal function (related to the increased amount of contrast medium used; one study demonstrated the absence of an effect on renal function in patients treated for multivessel disease⁴) and the duration of the procedure (and the increase in radiation exposure caused by the latter). This topic should be the subject of future investigation.

To conclude, the paper by Jung et al. indicates that PAR, just like multivessel revascularisation, leads to both faster wound healing and lower amputation rates, and should therefore always be attempted to give the patient the best chances. In order to achieve this goal, comparable to scoring an ‘eagle’ in golf, dedication combined with development of the technical skills of the interventionalist dealing with CLTI patients is required.

CONFLICT OF INTEREST

None.

FUNDING

None.

REFERENCES

- Jung HW, Ko YG, Hong SJ, Ahn CM, Kim JS, Kim BK, et al. Impact of endovascular pedal artery revascularization on wound healing in patients with critical limb ischemia. *Eur J Vasc Endovasc Surg* 2019;58:854–63.
- Fusaro M, Dalla Paola L, Biondi-Zoccai G. Pedal-plantar loop technique for a challenging below-the-knee chronic total occlusion: a novel approach to percutaneous revascularization in critical lower limb ischemia. *J Invasive Cardiol* 2007;19:E34–7.
- van den Berg JC. Angiosome perfusion of the foot: an old theory or a new issue? *Semin Vasc Surg* 2018;31:56–65.
- Biagioni RB, Biagioni LC, Nasser F, Burihan MC, Ingrund JC, Nesser A, et al. Infrapopliteal angioplasty of one or more than one artery for critical limb ischaemia: a randomised clinical trial. *Eur J Vasc Endovasc Surg* 2018;55:518–27.
- Higashimori A, Takahara M, Utsunomiya M, Fukunaga M, Kawasaki D, Mori S, et al. Utility of indigo carmine angiography in patients with critical limb ischemia: prospective multi-center intervention study (DIESEL-study). *Catheter Cardiovasc Interv* 2019;93:108–12.

DOI of original article: <https://doi.org/10.1016/j.ejvs.2019.07.034>

* Corresponding author. Centro Vascolare Ticino, Ospedale Regionale di Lugano, sede Civico, Via Tesserete 46, 6903, Lugano, Switzerland.

E-mail address: jos.vandenbergh@eoc.ch (Jos C. van den Berg).

1078-5884/© 2019 European Society for Vascular Surgery. Published by Elsevier B.V. All rights reserved.

<https://doi.org/10.1016/j.ejvs.2019.07.030>