

Conclusions: These quality indicators will help clinicians to assess the appropriateness of healthcare provided in PAD. The development of evidence-based indicators in PAD is limited by the lack of methodological quality of the research in this disease, the inconclusiveness of the evidence on diagnostic and surgical techniques, and the dynamic nature of the vascular diseases field.

Systematic Review and Meta-analysis of Direct Versus Indirect Angiosomal Revascularisation of Infrapopliteal Arteries

Bosanquet D.C., Glasbey J.C.D., Williams I.M., Twine C.P. *Eur J Vasc Endovasc Surg* 2014;48:88-97.

Objective: The aim of this systematic review was to evaluate outcomes of direct revascularisation (DR) versus indirect revascularisation (IR) of infrapopliteal arteries to the affected angiosome for critical limb ischaemia. Both open and endovascular techniques were included.

Methods: A systematic review of key electronic journal databases was undertaken from inception to 22 March 2014. Studies comparing DR versus IR in patients with localised tissue loss were included. Meta-analysis was performed for wound healing, limb salvage, mortality, and re-intervention rates, with numerous sensitivity analyses. Quality of evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system.

Results: Fifteen cohort studies reporting on 1,868 individual limbs were included (endovascular revascularisation, 1,284 limbs; surgical revascularisation, 508 limbs; both methods, 76 limbs). GRADE quality of evidence was low or very low for all outcomes. DR resulted in improved wound healing rates compared with IR (odds ratio [OR] 0.40, 95% confidence interval [CI] 0.29–0.54) and improved limb salvage rates (OR 0.24, 95% CI 0.13–0.45), although this latter effect was lost on high-quality study sensitivity analysis. Wound healing and limb salvage was improved for both open and endovascular intervention. There was no effect on mortality (OR 0.77, 95% CI 0.50–1.19) or reintervention rates (OR: 0.44, 95% CI 0.10–1.88).

Conclusion: DR of the tibial vessels appears to result in improved wound healing and limb salvage rates compared with IR, with no effect on mortality or reintervention rates. However, the quality of evidence on which these conclusions are based on is low.

Role of Sinus in Prosthetic Venous Valve

Tien W.-H., Chen H.Y., Berwick Z.C., Krieger J., Chambers S., Dabiri D., Kassab G.S. *Eur J Vasc Endovasc Surg* 2014;48:98-104.

Background: The majority of bioprosthetic venous valves do not have a sinus pocket and, in practice, they are often placed in non-sinus segments of the veins. The aim of this study is to investigate the effect of the sinus pocket on the flow dynamics in a prosthetic valve.

Methods: A bench top in vitro experiment was set up at physiological flow conditions to simulate the flow inside a venous system. Bicuspid bioprosthetic valves with different leaflet lengths (5 and 10 mm) were tested in tubes with and without a sinus pocket and the flows around the valve were visualized by particle image velocimetry (PIV). Velocity data measurements were made and the vorticity was calculated in the with- and without-sinus set-ups.

Results: PIV measurements showed that vortex structure was maintained by the sinus. For the 10-mm leaflet length design with sinus, the jet width at the exit of the valve was 59% of that without sinus. For the 5-mm design with sinus, the jet width was 73% of the valve without sinus. Flow from the sinus region was entrained into the main jet observed near the exit of the sinus and altered the flow at the near wall region.

Conclusions: The sinus pocket alters the flow around the valve and functions as flow regulator to smooth the flow pattern around the valve. The vortical structure inside the sinus is maintained at the valve leaflet tip during the valve cycle. For the prosthetic valve designated to be placed without a sinus, a shorter leaflet length is preferable and performs more closely to the valve with sinus.