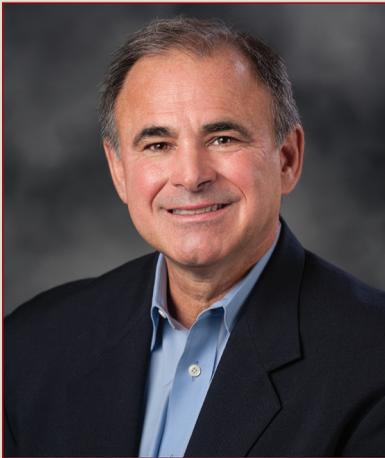


The Importance of Precision Imaging When Treating Infrapopliteal Arterial Disease



Craig Walker, MD

Clinical Editor
Interventional Cardiologist
Founder, President, and
Medical Director
Cardiovascular Institute of the South
Clinical Professor of Medicine
Tulane University School of Medicine
Louisiana State University School
of Medicine.

Hello, and welcome to the December issue of *Vascular Disease Management*. There are multiple articles in this edition of profound clinical significance. I'd love to comment on all of these, but I will comment only on Dr Shammass and colleagues' article entitled, "Are We Appropriately Treating Infrapopliteal Arterial Disease? The Need for Precision Imaging With Intravascular Ultrasound."

In this report, intravascular ultrasound (IVUS) imaging of the tibioperoneal artery disclosed that the vessel was markedly larger than the measurements made utilizing only quantitative angiography. Additionally, there were significant dissections post angioplasty that were not completely obvious by angiographic imaging. The patient had successful stenting of the vessel utilizing a 5 mm drug-eluting stent (DES), with subsequent IVUS disclosing a fully expanded stent with excellent vessel apposition and no residual flow-limiting dissection. This represents an important consideration, as infrapopliteal interventions are being performed more commonly and long-term reported vessel patency has been suboptimal. It is perhaps even more critical as stents are being utilized, and under-sized or under-expanded stents are known to have higher failure rates with more thrombosis and restenosis. In addition to providing proper sizing measurements and identifying dissections, IVUS has the potential to identify obstructive lesions not noted by angiography (particularly important in peripheral vascular interventions, where most interventions are guided by single planar angiography), to provide plaque assessment, and to identify thrombus.

Discordance of vessel sizing noted when comparing IVUS to quantitative angiography has been reported in multiple vascular beds, specifically in the peripheral arteries, as referenced in this report. IVUS has been evaluated extensively for coronary artery stenting, with definitively improved patency outcomes where IVUS guidance was utilized. In these reports, IVUS helped to properly identify the length of obstruction, vessel size, plaque morphology, and presence of flow-limiting dissections.

Dr Iida and colleagues demonstrated a statistically significant improvement in superficial femoral artery (SFA) stent patency at 1 year in a patient cohort in which therapy was guided by IVUS as compared to those guided by quantitative angiography. Unfortunately, routine IVUS guidance has not been evaluated in SFA and infrapopliteal interventional studies. The overwhelming majority of lower-extremity interventions are performed without the use of IVUS or external duplex to guide therapy. Critics of the routine use of IVUS guidance cite additional associated costs, increased procedural time, variance in image evaluation, and lack of definitive compelling level-one data.

I believe that IVUS guidance of lower-extremity interventions has the potential to improve outcomes, but cost effectiveness and the unequivocal demonstration of improved clinical outcomes data will be required if this is to become routine practice. It is imperative that interventionists become proficient in IVUS interpretation and that industry create peripheral IVUS tools such as co-registration utilized in coronary intervention to determine treatment length and diminish contrast requirements. Automated interpretation could potentially be helpful in decreasing procedural time and interobserver interpretation variability. We must continue to strive for better interventional results. Perhaps more routine use of IVUS will result in better acute and long-term outcomes.