Does an old dog need new tricks? Advancement of limb salvage in treating chronic limb threatening ischemia

Chronic limb threatening ischemia (CLTI) poses a significant challenge to both patients and vascular surgeons worldwide. With the growing prevalence of peripheral arterial disease, it is imperative to explore innovative approaches that improve patient outcomes and enhance limb salvage. In 2019, Conte et al[1] reported "Global vascular guidelines on the management on chronic limb-threatening ischemia," discussing the importance of patient risk, anatomic disease complexity, and severity of the limb threat. However, in just 4 short years, we have watched the rapid evolution of the management of CLTI in the form of new endovascular technologies, the development of interventions for no-option CLTI patients, and groundbreaking clinical trial data on the management of infrainguinal CLTI.[2-4] In this inaugural Vascular Special Issue (VSI), we delve into this crucial role of emerging technologies in treating CLTI, providing "How I Do It" articles from pioneers in the field, and highlighting the latest advancements in both open and endovascular interventions, all with emphasis on the importance of maintaining equipoise in the pursuit of revascularization strategies for patients with CLTI.

EFFECT OF EMERGING ENDOVASCULAR TECHNOLOGIES

Advancements in endovascular technology have revolutionized the field of vascular surgery, offering new avenues for effective CLTI treatment, even in the most advanced pathologies. Endovascular approaches, such as drug-eluting stents, atherectomy devices, and intravascular lithotripsy, to name a few, have emerged as promising alternatives to traditional surgical interventions. These innovative techniques, not only offer less invasive options, but also improve the durability and patency rates of endovascular revascularization procedures. Through the integration of these emerging technologies, vascular surgeons can optimize limb salvage and improve the quality of life of patients with CLTI. In this VSI, you will find "How I Do It" articles on pedal loop revascularization and percutaneous deep vein arterialization, the latest data on atherectomy and lithotripsy devices below the knee, and advanced techniques for recanalization of difficult occlusive pathology in the lower extremity.

MAINTAINING OPEN REVASCULARIZATION SKILLS

The recent release of clinical trial results has provided valuable insights into the management of CLTI. The BEST CLI trial (best endovascular vs best surgical therapy for patients with critical limb ischemia) demonstrated the superiority of open revascularization using single-segment great saphenous vein in appropriate patients, reinforcing the importance of open revascularization as a viable first-line treatment option for CLTI. This VSI gives us important insights on open techniques for deep vein arterialization, inframalleolar bypass approaches, innovative alternative conduits for the management of CLTI, and tips and tricks on exposing the distal peroneal artery for lower extremity bypass. All of these are critical advanced open techniques that should be included in the armamentarium of vascular surgeons comprehensively treating CLTI.

MAINTAINING EQUIPOISE: STRIKING A BALANCE BUT PUSHING THE LIMITS OF REVASCULARIZATION

Although the emergence of innovative technologies and clinical trial results has undoubtedly transformed the management of CLTI, it is crucial to maintain equipoise in the treatment decisions. Each patient is unique, and a personalized approach is necessary to tailor therapy according to the individual anatomic and clinical characteristics. The physician's expertise, patient preference, and institutional resources should all factor into the decision-making process. It is essential to strike a balance between embracing new technologies and upholding the principles of patient-centered care, ensuring that the pursuit of cutting-edge treatments does not overshadow the commitment to achieving optimal outcomes. As surgeons, we must continue to explore novel techniques, refine existing procedures, and engage in clinical research to further improve the outcomes for our patients. While maintaining equipoise, it is crucial to remain open to new ideas, foster collaboration between specialties, and invest in the development of innovative technologies. By doing so, we can continue to enhance the field of vascular surgery and, most importantly, provide hope and improved outcomes for those affected by CLTI.

This inaugural VSI focusing on CLTI and the role of emerging technologies presents a unique opportunity to highlight the advancements in the field and their effects on limb salvage. The latest clinical trial results from BEST CLI and BASIL-2 (bypass v angioplasty in severe ischaemia of the leg—2) emphasize the importance of evidence-based medicine in guiding treatment algorithms and shared decision making between providers and patients. By maintaining equipoise, we can strike a balance between embracing new technologies and providing patient-centered care using evidence-based medicine. With dedication to pushing the limits of revascularization strategies, vascular surgeons can continue to make remarkable strides in treating CLTI and improving the lives of our patients living with peripheral arterial disease. The *Journal of Vascular Surgery: Cases, Innovations and Techniques* editors would like to sincerely thank all the contributing authors who dedicated their time to this VSI in making this issue a tremendous success.

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