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Surgical Management of the Diabetic Foot in End-Stage Kidney Disease: An Integrated Anatomical, Nephrological and Vascular-Surgical Perspective

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Abstract
Diabetic foot disease in end-stage kidney disease (ESKD) represents the convergence of diabetic peripheral neuropathy, accelerated atherosclerosis, medial arterial calcification, uremic immune dysfunction and impaired wound healing. The combination yields amputation rates three- to five-fold higher than in non-uremic diabetics and one-year post-amputation mortality approaching 40–50%. In this paper we synthesised the current anatomical, diabetological, nephrological and surgical evidence into a practical framework for the surgeon caring for the dialysis-dependent or kidney-transplant recipient with a diabetic foot. We conducted a narrative review of guidelines and consensus statements from the American Diabetes Association (ADA) Standards of Care 2025, KDIGO 2022/2024, the 2023 intersocietal International Working Group on the Diabetic Foot (IWGDF), European Society for Vascular Surgery (ESVS) and Society for Vascular Surgery (SVS) PAD guideline, the 2024 ACC/AHA Lower-Extremity PAD Guideline, the 2019 Global Vascular Guidelines on chronic limb-threatening ischemia (CLTI), and the KDOQI 2019/2020 vascular access update, supplemented by high-quality reviews published through 2026. Anatomical understanding of the tibioperoneal trifurcation, pedal-plantar loop and the angiosomal territories is now central to revascularization planning; below-the-knee disease in ESKD is diffuse, calcified and pedal-dominant, mandating individualized choice between bypass, endovascular and transcatheter arterialization of the deep veins; perioperative care must integrate dialysis timing, hyperkalaemia control, anaemia and mineral-bone disease management, and ipsilateral vascular-access preservation; the threshold to definitive, well-planned amputation should be lower than in non-uremic diabetics, but only after a structured limb-salvage attempt within a multidisciplinary "toe-and-flow" team.
Keywords: diabetic foot, end-stage kidney disease, chronic limb-threatening ischemia, revascularization, medial arterial calcification, angiosome, transcatheter arterialization of deep veins, KDIGO, IWGDF, amputation