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CLINICAL APPLICATION

Intraoperative Fluorescence Vascular Angiography: During Tibial Bypass

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Abstract

Preventing amputations in persons with lower extremity complications of diabetes is a complex endeavor, particularly in those with concomitant ischemia and tissue loss. Fluorescence angiography (Novadaq SPY system) may provide a tool for objective evaluations of tissue viability in the diabetic foot, which is an important indicator of the ability of the diabetic ulcer to heal adequately. The SPY system uses a low-power laser coupled with a charge-coupled device camera and indocyanine green (ICG) to sequence perfusion at the surface of the skin. We present an illustrated example of the potential utility of ICG fluorescence angiography (ICGFA) before and after vascular intervention in a high-risk limb. ICGFA appeared to reveal demarcation between viable and nonviable tissue and real-time perfusion, specifically capillary fill. ICGFA clarified the extent of necessary debridement and provided an immediate indication of improvement in regional perfusion status following revascularization. Future studies involving ICGFA may include pre- and postdebridement and closure perfusion, comparison of tissue perfusion pre- and post-endovascular therapy, and lower extremity flap viability. Future works will also address the consistency of results with ICGFA by analyzing a larger cohort of patients being treated by our unit.

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Abbreviations: (DPN) diabetic peripheral neuropathy, (ICG) indocyanine green, (ICGFA) ICG fluorescence angiography, (PVD) peripheral vascular disease

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