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“Deep Inferior Epigastric Artery and Vein Interposition Grafts for Free Anterolateral Thigh Flap Coverage of a Complex Lower Extremity Defect”

Free flaps for lower extremity wound coverage are often utilized in large, complex wounds or failed local flaps. The anterolateral thigh (ALT) is a workhorse flap due to its large surface area and high caliber pedicle. Interposition grafts (IGs) can amplify the range of flaps when faced with insufficient pedicle length or poor recipient vessel availability. Here, we describe the first reported instance of deep inferior epigastric artery and vein (DIEAV) IGs for free ALT coverage of a knee wound and demonstrate the potential utility of these vessels when IGs are indicated.

A 74-year-old male, following right knee replacement complicated by overlying skin necrosis, underwent debridement and initial coverage with a pedicled medial gastrocnemius flap. Upon returning for skin grafting, the flap was found non-viable and was subsequently debrided requiring further coverage. Free ALT flap was selected for the revision due to concerns of venous congestion, with additional plans for IGs to increase pedicle length to overcome nearby recipient vessel paucity. An ipsilateral 25x8cm fasciocutaneous free ALT flap was elevated. 30cm of pedicle was required to successfully position the flap over the entirety of the wound. For sufficient reach, bilateral DIEAV IGs were harvested and anastomosed in series to the flap, which was then anastomosed to the descending branch of the lateral circumflex femoral artery. The donor site was covered with Integra to avoid compression of the pedicle encountered with primary closure. Three weeks after an uneventful postoperative course, donor site skin grafting was performed. 6-week follow-up revealed complete healing of the flap and skin graft without complications of the reconstruction nor donor site.

Local flaps are commonly used in covering small lower extremity wounds. Free flaps overcome the size limitations of local flaps and can be designed to more closely approximate a defect. However, limited recipient site vessel availability or short pedicle may restrict free flap utility. IGs are effective in extending the range of free flap coverage. Despite variations in branching anatomy and challenging dissection, DIEAV are reliably high-caliber vessels that may provide sufficient length to free flaps in complex lower extremity wound coverage.

This report uniquely demonstrates the application of DIEAV IGs to achieve sufficient length in ALT free flap coverage of a lower extremity defect lacking nearby recipient vessels.