

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

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Introduction

- Free flaps for coverage of soft tissue wounds of the lower extremity are often utilized in the setting of large, complex wounds or failed local flaps.
- The anterolateral thigh flap (ALT) is a workhorse flap due to a large potential donor site with an associated high-caliber pedicle.
- In cases of insufficient pedicle length or poor recipient vessel availability, interposition grafts (IGs) may be recruited to amplify the range of flaps and provide adequate defect coverage.
- We describe the first report of deep inferior epigastric artery and vein (DIEAV) IGs used in series for free flap coverage of a complex lower extremity wound and demonstrate the potential utility of these vessels in achieving sufficient coverage when faced with insufficient pedicle length or poor donor vessel access.
- We additionally demonstrate the efficacy of using these vessels in series when encountered with a particularly lengthy wound where a single IG is not sufficient to span the defect.

Patient Presentation

- 74-year-old male referred to plastic surgery for skin necrosis overlying a joint replacement 5 weeks following total knee arthroplasty.
- Initial reconstruction included debridement and pedicled medial gastrocnemius flap coverage with vacuum-assisted closure.
- Six days following initial reconstruction, the distal portion of the flap overlying the joint repair and knee was found to be non-viable.

Figures

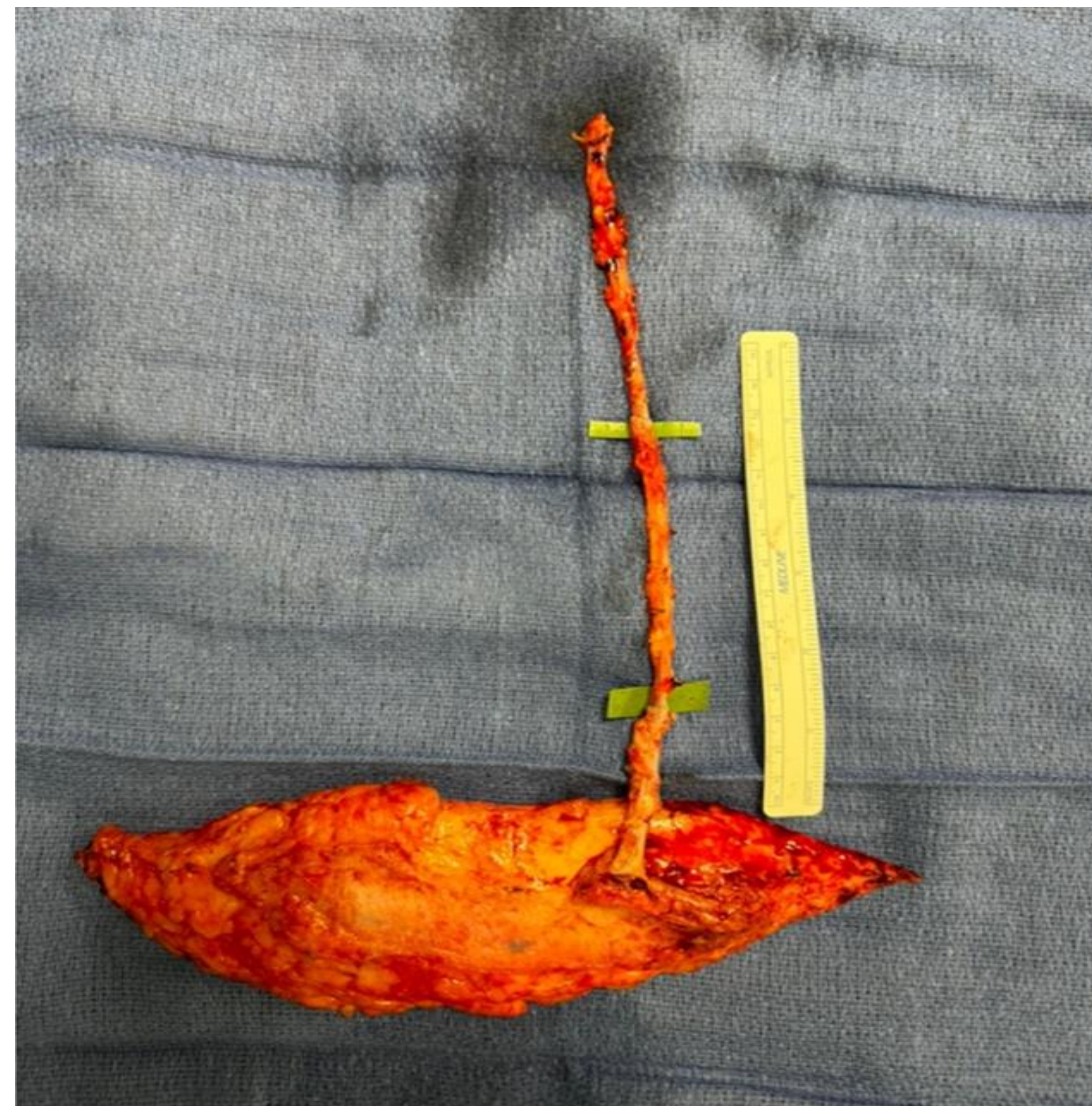


Figure 1. (Top) DIEAV IGs anastomosed in series to the native pedicle of the raised ALT flap. Each anastomosis is found overlying the green plastic in the figure. A 15 cm ruler is provided for scale to the right.



Figure 2. (Left) ALT flap inset over the wound following the anastomosis of the bilateral DIEAV IGs to the descending branch of the lateral circumflex femoral artery.

Case Report

- Free ALT flap was selected for the revision due to concerns of venous congestion, damage to the pedicle, and local inflammation that would preclude a reverse ALT flap. We additionally planned for abdominal-based IGs to increase pedicle length to overcome nearby recipient vessel paucity.
- An ipsilateral 25x8cm fasciocutaneous free ALT flap was elevated.
- A microvascular pedicle of 30cm was required to successfully position the flap over the entirety of the knee wound.
- For sufficient reach, bilateral DIEAV IGs were harvested and anastomosed in series to the raised flap (Figure 1).
- This compound IG was then anastomosed to the descending branch of the lateral circumflex femoral artery (Figure 2).
- Donor site skin grafting was performed 3 weeks later with excellent take and an overall uncomplicated recovery period thus far.

Discussion

- DIEAV are reliably high-caliber vessels that may provide sufficient length to free flaps for lower extremity wound coverage, and possibly other parts of the body, that require the use of IGs.
- IGs may be successfully utilized in series as we have demonstrated.
- The most common method for all vascular reconstruction, including arteries, involves vein grafts. DIEAV IGs allow arteries to be reconstructed with arteries.
- DIEAV IGs have great potential in safely increasing the reach of free flaps in wound reconstruction.