

The Reverse Superficial Sural Artery Flap for Complex Lower Extremity and Foot Reconstruction: Revisited and Refined

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Background: Complex defects of the distal lower extremity and foot still represent a reconstructive challenge for the microsurgeon. The reverse superficial sural artery flap (RSSAF) is a locoregional alternative, but our initial experience with this flap was less than favorable including a 50% failure rate secondary to critical venous congestion. We have since modified our operative technique, which has resulted in a more reliable flap.

Methods: All patients reconstructed using a RSSAF between May 2002 and June 2009 were retrospectively reviewed. Patients were divided into two cohorts: (1) Early (prior to change in practice) and (2) Late (after change in practice). In July 2006, we uniformly changed our RSSAF practice in response to high rates of venous thrombosis. Specific changes to the operative technique included incorporation of a fasciocutaneous pedicle overlying the vessels (flap was previously raised as an island flap), increasing the width of the pedicle to 3-4 cm, and transposing the flap rather than tunneling it. Outcomes of interest were postoperative complications, reoperation rate, and overall flap survival.

Results: Twenty-nine patients were identified ($n=12$ for early cohort and $n=17$ for late cohort). Overall flap survival in the late cohort was 88% compared to 50% in the early cohort ($p=0.04$). Postoperative complications (83% vs. 65%, $p=0.41$) and reoperation rate (58% vs. 59%, $p=1.00$) were similar for both cohorts. Venous congestion requiring leech therapy was 42% ($n=5$) in the early cohort and 0% in the late cohort ($p=0.01$). Of those flaps treated with leeches, two were ultimately salvaged whereas the other three patients required amputation.

Conclusions: Venous congestion remains a well-known complication of the RSSAF. We decreased the rate of venous congestion requiring leech therapy from 42% to 0% ($p=0.01$) in a small group of patients. Aggressively preventing venous congestion may improve RSSAF survival and result in fewer amputations.

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