



## 2025 NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS ANNUAL RESIDENTS' NIGHT RESEARCH COMPETITION

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NEW YORK ACADEMY OF MEDICINE

**ABSTRACT SUBMISSION TITLE:** *A2 - Dual-Nerve Coaptation in Innervated DIEP Flaps: Are Two Nerves Better Than One?*

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**Abstract Text:**

**PURPOSE:**

With sensation preservation becoming of increasing importance after post-mastectomy breast reconstruction, plastic surgeons are increasingly performing nerve reconstruction at the time of reconstruction. The deep inferior epigastric perforator (DIEP) flap can be reliably innervated by coaptation of a thoracoabdominal nerve to a recipient nerve in the chest. Studies have examined the effect of nerve selection for single-nerve coaptation on sensory outcomes. This present study aims to compare dual-nerve to single-nerve coaptation in DIEP flap sensory recovery.

**METHODS:**

Women undergoing mastectomy and immediate reconstruction with innervated DIEP flap were identified. Prior to 2024, neurotization was performed with a single nerve coaptation between a thoracoabdominal nerve in the flap and the anterior branch of T3. Starting 2024, a second coaptation was additionally performed to the lateral branch of T3. Neurosensory testing with a pressure-specified sensory device was conducted preoperatively and at predetermined postoperative timepoints. Sensory recovery,

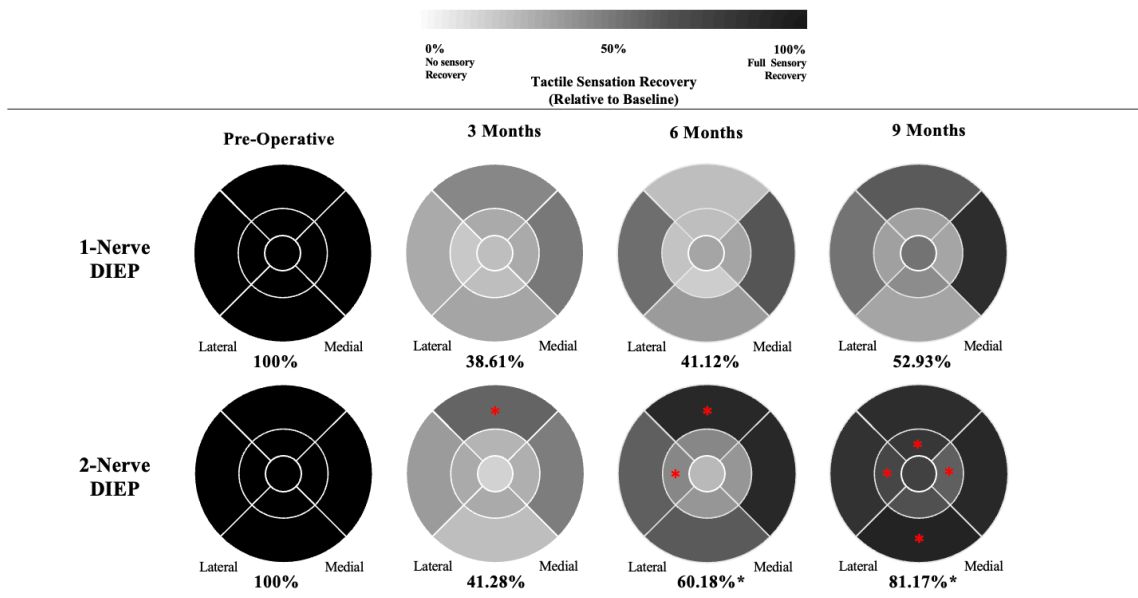
measured as sensitivity relative to baseline sensation, was compared between the single-nerve and dual-nerve groups.

**RESULTS:**

27 patients (47 breasts) with single-nerve coaptation and 11 patients (20 breasts) with dual-nerve coaptation were included. Demographics and comorbidities were comparable between groups. The dual-nerve group had better sensory recovery than the single-nerve group at all postoperative time points, with statistical significance at 6 months (60.2% vs. 41.1%,  $p=0.023$ ) and 9 months (81.2% vs. 52.9%,  $p=0.013$ ). Looking into specific breast regions, at 6 months, the dual-nerve group showed significantly better sensitivity recovery in the outer superior and inner lateral regions. At 9 months, recovery was significantly better in the dual-nerve group in the inner superior, inner lateral, inner medial, and outer inferior regions, with the outer lateral and inner inferior regions trending towards significance.

**CONCLUSIONS:**

This pilot study supports dual-nerve coaptation in innervated DIEP flap reconstruction, demonstrating faster and superior sensory recovery compared to single-nerve coaptation. Our findings help guide preoperative counseling and encourage reconstructive surgeons to perform an additional neurotization, when a second recipient nerve is available.



**Figure 1:** Heat maps show tactile sensation recovery by region relative to preoperative levels, with darker areas indicating greater recovery. Percentages represent the mean overall recovery. Asterisks indicate regions with significant differences between 2-nerve and 1-nerve patients.



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