



## 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:** *A5 - A Split-Chest, Prospective, Randomized Control Trial of Breast Neurotization in Implant-Based Breast Reconstruction*

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**Abstract Text:**

**PURPOSE:**

Reduced nipple and breast sensation negatively impact patient-reported outcomes following mastectomy. Recent reports suggest neurotization of the nipple-areolar complex (NAC) can help restore nipple sensation in patients undergoing implant-based breast reconstruction (IBBR) following nipple-sparing mastectomy (NSM). Data from these interventions exists in small case series with no comparison group, making it difficult to draw definite conclusions. The goal of this study is to assess the effect of neurotization in IBBR following NSM on return of nipple sensation using objective measures and study the patient's perception of sensation and quality of life using standardized scales.

**METHODS:**

This is a single-blind, randomized split-chest study conducted at a single institution to determine the effects of breast neurotization in IBBR following NSM. Patients undergoing bilateral IBBR following NSM were included. Preoperative and post-

operative nipple sensation was determined in both breasts using Semmes-Weinstein monofilament test (SWMT). Patients completed pre-and post-operative BREAST-Q questionnaires regarding satisfaction with nipple and nipple sensation. Patients were randomized to receive neurotization on one breast and not the other. Intraoperatively, the nipple assigned to be neurotized was connected to a donor intercostal nerve using standard nerve grafting techniques.

RESULTS:

Six patients were included and received neurotization on one breast. Patients were on average 40 years old, white (83%), nonsmoker (100%), non-diabetic (100%), and had an average body mass index (BMI) of 22 kg/m<sup>2</sup>. Preoperatively, median SWMT at the nipple was 3.61 in both neurotized and non-neurotized breasts. Median satisfaction with breasts was 67.5 (out of 100), and medial sexual well being was 64 (out of 100). At 1, 3, and 12 months, SWMT in both neurotized and non-neurotized breasts was 0. At 6 months, the non-neurotized breasts had median SWMT of 3.33 compared to 0 in the neurotized breasts, which was not statistically significant (Table 1). Satisfaction at 1 and 3 months was lower than preoperative satisfaction, however it was not significantly different at months 6 and 12 (Table 2). Sexual well-being did not differ from pre-operative sexual well-being at any time point (Table 3).

CONCLUSIONS:

In a split-chest, randomized control trial of breast neurotization, we have identified no significant difference in objective metrics of nipple sensation or patient-reported satisfaction with breasts or sexual well-being. Ultimately, the challenges of performing a Level I study have limited the sample size of this cohort, though with continual recruitment we hope to provide further clarity to the efficacy and impact of neurotization following NSM.

Table 1. Comparison of Semmes-Weinstein monofilament test (SWMT) scores in neurotized and non-neurotized breasts.

	Neurotized	Non-Neurotized	P-Value
Preoperative	3.61 (0.757)	3.61 (0.172)	0.73
Day 30	0 (0)	0 (0)	0.41
Day 90	0 (0)	0 (0)	0.41
Day 180	0 (0)	3.33 (3.33)	0.62
Day 365	0 (2.28)	0 (2.16)	1



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Table 2. Patient reported satisfaction with breasts both preoperative and postoperatively.

	Satisfaction with Breasts		
	Postoperative	Preoperative	P-value
Day 30	51 (9)		0.03
Day 90	47 (3.5)		0.04
Day 180	61 (0)		0.86
Day 365	55 (3.5)	67.5 (19.8)	0.12

Table 3. Patient reported sexual well being both preoperative and postoperatively.

	Sexual Well Being		
	Postoperative	Preoperative	P-value
Day 30	59 (10)		0.51
Day 90	49.5 (6.5)		0.06
Day 180	59 (0)		0.43
Day 365	48 (10.5)	64 (6.25)	0.12