PURPOSE: Symptomatic neuromas can be debilitating and hinder quality of life. Targeted muscle reinnervation (TMR) is increasingly being employed to prevent or treat neuromas and phantom limb pain in amputee patients. We previously reported successful pain outcomes in a small cohort of non-amputee patients with symptomatic neuromas who underwent TMR. We now have 2.5 years of experience with this procedure. The goal of this study is to evaluate the patient-reported outcomes and complications of using TMR to treat symptomatic neuromas in non-amputee patients.

METHOD: A retrospective review was conducted of patients with symptomatic neuromas treated with TMR from January 2019 to October 2021 at a single institution. Patients’ medical records were reviewed to identify neuroma characteristics, TMR details, and postoperative follow-up. Neuromas were excised to healthy nerve fascicles and a redundant donor motor fascicle was selected for nerve transfer. Phone surveys were conducted to evaluate pain frequency and severity, physical function, and quality of life before and after TMR. Pain severity, physical function, and quality of life were assessed on a scale of 0 to 10. Pain frequency was based on number of times per day and number of days per week patients experienced pain. Statistical analysis was performed to compare pre- and postoperative scores, with statistical significance defined at values of p < 0.05.

RESULTS: Thirty patients were identified. Average age and body mass index were 52.4 years and 33.7 kg/m², respectively. Fifteen patients (50%) had undergone a prior neuroma excision. Neuromas were located in the lower extremity (n=17, 56.7%), upper extremity (n=8, 26.7%), and trunk (n=5, 16.7%). At mean follow-up of 11.1 months (range 1.9 to 24.1 months), pain frequency decreased from 6.8 days per week to 4.7 (p<0.001) and from 9.2 times per day to 6.1 (p<0.001). Average pain severity decreased from 8.4/10 to 5.5/10 (p<0.001). Overall physical function increased from 3.6/10 to 5.8/10 (p=0.004) and overall quality of life increased from 4.2/10 to 6.2/10 (p=0.002).

CONCLUSION: TMR is a promising surgical treatment for symptomatic neuromas. Our study cohort benefited from decreased pain, improved physical functioning, and better quality of life. Larger studies are warranted to further elucidate the advantages of TMR in non-amputee patients with symptomatic neuromas.

TRACK: AESTHETIC
Productivity and Efficiency of a Departmental Resident Aesthetic Plastic Surgery Clinic

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PURPOSE: The number of aesthetic surgery procedures performed in the United States has consistently grown over the past several decades, with the most recent annual expenditures totaling over $9 billion. Despite this increasing demand, plastic surgery residency programs have found it challenging to provide comprehensive training in aesthetic surgery to fulfill ACGME requirements (150 aesthetic procedures). Prior studies evaluating institutional experiences in resident aesthetic clinics have been limited by sample size. Here we present our experience with productivity and efficiency of a resident aesthetic clinic at the NYU Hansjörg Wyss Department of Plastic Surgery and highlight its potential impact on the competency of graduating plastic surgery residents.

METHOD: We performed a retrospective chart review of all adult surgical patients who presented to the NYU Aesthetic Surgery Clinic in 2021. Patient demographics, comorbidities, consultation/procedural data, and postoperative complications were used to generate descriptive statistics using SPSS Statistics. Conversion rate (the number of consultations which subsequently underwent a procedure), as well as complication and revision rates were calculated. Cases were indicated, performed and followed postoperatively by residents with dedicated attending surgical supervision and anesthesia care.

RESULTS: A total of 407 consultations (380 patients) met inclusion criteria and were included in the study. Of these, 171 consultations underwent a procedure (42% conversion rate) and 464 distinct surgical procedures were performed. Patients were predominantly female (94.5%) and in relatively good health (3.9% diabetes, 6.6% active smokers). The cohort had an average age and BMI of 49.3 +/- 13.6 years and 27.1 +/- 5.2 kg/m², respectively. Face and neck procedures (55.8%) accounted for the majority, followed by breast (22.2%) and body contouring (20.0%). The most common
procedures performed were blepharoplasty (26.9%), mastopexy (11.2%), face and neck lifts (9.5%), liposuction (8.2%), and abdominoplasty (8.0%). None of the patients required reoperation due to a major complication, while 3.5% required a minor office intervention under local anesthesia and 9.9% were treated conservatively with local wound care and/or antibiotics. Minor wound dehiscence (<2 cm) was the most common complication overall (7.0%). Minor revisional procedures performed under local anesthesia were subsequently required for 4.1% of cases, while 1.8% required a major revision under general anesthesia. The mean operative time across all cases was 3.8 +/- 1.3 hours.

CONCLUSION: These data represent the largest current reported study of plastic surgery resident aesthetic procedures and outcomes, demonstrating high volume of productivity and efficiency of consult conversion at the NYU Aesthetic Surgery Clinic. Notably, the total procedural volume as well as the high percentage of face/neck procedures is well above training minimums, contrary to national trends. Under the direct supervision of dedicated surgical and anesthesia faculty, these results further support the enormous benefit of resident aesthetic clinics to ensure superior training for senior residents while maintaining low complication and revision rates comparable to national published data.

METHOD: Videos of 10 volunteers with Fitzpatrick skin types III-VI were taken in a controlled environment during normal perfusion and tourniquet-induced ischemia. Videos were EVM processed (EVM), and red/green/blue color channel characteristics were extracted to produce waveforms. These videos were assessed by surgeons with a range of expertise in hand injuries. The videos were randomized and presented in one of three different ways: unprocessed, EVM, and EVM with accompanying waveform (EVM+waveform). Survey respondents indicated whether the video showed an ischemic or perfused finger(s), or if unable to tell. We used group comparisons to evaluate response accuracy across video types, skin tones, and respondent groups, and inter-rater agreement analysis using the kappa statistic.

RESULTS: Of 51 surveys sent, 25 (49%) responded. The frequencies of correct responses were statistically significantly higher in the EVM+waveform category compared to unprocessed or EVM videos. Participants assessing unprocessed and EVM videos had a decrease in accuracy with increasing skin melanin content. EVM+waveform outperformed the others, and that was consistent across the different levels of experience/training. Also, there was higher agreement amongst responses for the EVM+waveform group compared to unprocessed or EVM for all questions. Accuracy and agreement in the EVM+waveform group was consistent across all skin types evaluated.

CONCLUSION: Video-based EVM processing combined with waveform extraction improved assessment of perfusion in the distal upper extremity. These technologies have potential future applications including triage, post-surgery vascular assessment, and telemedicine.

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