Targeted Muscle Reinnervation in the Foot: An Anatomical Study

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**Purpose:** Treatment for the Morton neuroma is diverse, yet there is no clearly superior method of treatment. Targeted muscle reinnervation (TMR) has been effective in neuroma prevention and treatment, however few papers espouse the use of TMR in the foot. Here we aim to comprehensively categorize the location and size of potential TMR targets in the foot and evaluate the feasibility of TMR.

**Methods:** Comprehensive dissection and measurement of the location and diameter of motor entry points (MEP) was performed on ten fresh cadaveric lower extremities.

**Results/Conclusion:** We found consistency in identification of MEP target locations for both the medial and lateral plantar nerve distributions. We also measured the diameter of the distal sensory nerves and found a favorable sensory-to-MEP diameter ratio of less than 2:1. Through this anatomic study we provide a comprehensive map for the surgical approach for TMR in the foot.

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Immediate Lymphatic Reconstruction for the Prevention of Cancer-related Lymphedema: Preliminary Experiences of a Single Center

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Up to 40% of breast cancer patients and 30% of melanoma patients undergoing lymphadenectomy will develop lymphedema. Immediate lymphatic reconstruction, which involves rerouting cut lymphatics into nearby veins by creating a lymphovenous anastomosis, has been found to reduce rates of post-operative lymphedema in cancer patients undergoing axillary and inguinal lymph node dissections. We describe the preliminary experience of our institution using a RED-Cap database. Twenty-one patients underwent immediate lymphatic reconstruction at the time of lymphadenectomy. Four patients had pre-existing lymphedema and were not included in the final analysis. Table 1 summarizes our patient sample. A total of 21 lymphovenous anastomoses were performed in the axilla (70.6%), inguinal region (29.4%), and antecubital fossa (5.9%) using end-to-end (94.1%) and end-to-side (29.4%) techniques. Intussusception was used in 88.2% of anastomoses. The average follow-up duration is 6 months. None of the patients have developed lymphedema based on physical examination or ICG lymphography during follow-up. Our preliminary evidence suggests that immediate lymphatic reconstruction with lymphovenous anastomosis is a safe and effective strategy for reducing post-operative lymphedema in this population.

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Botulinum Toxin a for the Treatment of Sympathomimetic Pressor Induced Digital Hand Ischemia in the Critically Ill Intensive Care Unit Patient

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Vasopressor-induced ischemia of the hand, while relatively rare, is a severe complication in critically ill ICU patients requiring high concentrations of sympathomimetic pressors and often results in digit necrosis and amputation. Currently, there are no widely accepted approaches for treating this cause of peripheral digital ischemia. Case reports have demonstrated that reducing the concentration of vasopressors that patients are given may reverse the progression of ischemic events prior to necrosis. While this approach is at odds with the principle of “life over limb,” it demonstrates that digit necrosis can be reversed, resulting in improved outcomes. Here we present a therapeutic strategy for treating digital limb ischemia in the septic ICU patient without the need to lower systemic vasopressor dose by using locally injected botulinum toxin A into ischemic hands.

**When to Perform Maxillofacial Computed Tomography: Evaluation of over 9,000 Facial Trauma Patients**

*Presenter: Shawhin RK Shahriari, MD*

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Assessment of concomitant facial fractures in multi system trauma is essential. Missed maxillofacial trauma due to lack of an appropriate maxillofacial computed tomography (CT) scan is a significant challenge to managing these patients appropriately. We review and update the indications for obtaining maxillofacial trauma CT scans with the goal to ensure these injuries are not missed.

Previous studies have attempted to validate the criteria set forth by the group in Wisconsin, which consisted of the presence of at least one of the following: bony step off or instability, periorbital swelling or contusion, Glasgow Coma Scale score less than 14, malocclusion, or tooth absence. Their sensitivity was 98% and negative predictive value was 88%, which was internally validated in a subsequent study. Harrington et al. attempted to externally validate the criteria, but the results at their institution found an 81% sensitivity and a negative predictive value of 60% and thus concluded that the Wisconsin Criteria may be institution specific and not able to be generalized to other trauma centers. We believe a more generalizable set of criteria would be useful for when obtaining a CT maxillofacial in trauma patients.

We review over 9,000 cases of patients with facial trauma from 2015-2021. We develop a new set of criteria to justify obtaining a maxillofacial CT, the “New Mexico Criteria”. We also review surgical versus non-surgical cases, and identify what factors are most predictive of requiring surgical intervention.

**Long Term Outcomes in Patients Receiving Microfragmented Adipose Tissue Injection for Treatment of Knee Osteoarthritis**

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Knee osteoarthritis (OA) is a debilitating joint disorder affecting tens of millions of people worldwide. Nonoperative treatments have variable efficacy and do not stop or reverse the progression of OA. The purpose of this study is to evaluate long-term outcomes of knee OA treatment with microfragmented adipose tissue. A retrospective review was conducted to analyze the long-term outcomes of patients who received Lipogems microfragmented adipose tissue injections for treatment of knee OA at The University of New Mexico from 2018 to 2019. Patients were included in this study if a follow-up period of at least 2 years was obtained. All patients paid out-of-pocket. A total of 12 patients/17 knees were included. Of the 12 patients, there were eight males and four females with an average BMI of 28.87 +/- 4.71 (Average +/- standard deviation). The average radiographic arthritis grade was severe, 3.71 +/- 0.67. Eleven patients underwent previous injection with steroids, hyaluronic acid, or platelet-rich plasma. Eleven patients had a significant reduction in pain at six-eight weeks post-treatment (p = 0.0005). Over the two-year follow-up period, five patients requested additional knee injections and one patient underwent bilateral total knee arthroplasty with average time to additional therapy of 15 +/- 5.12 months. This study suggests that most patients receive initial relief from the microfragmented adipose injections for treatment of knee OA and half of patients treated may not require further treatment. Patients requiring additional therapy may find relief for an average of 15 months from the initial injection.