landmark-based surface anatomy approach. The present study sought to examine the feasibility and effectiveness of the use of ultrasound as a clinical adjunct in the delivery of Botulinum Toxin for the treatment of Raynaud’s phenomenon of the hand.

METHODS: For the anatomic feasibility study, cadaveric elbow-to-fingertip specimens were injected with dye using either a landmark-based surface anatomy approach or using ultrasound guidance to specifically target the common digital arteries. The specimens were dissected and areas of distribution of the dye at the levels of the neurovascular bundles and intrinsic muscles of the hand were objectively analyzed using Image J (National Institutes of Health).

For the clinical efficacy of ultrasound-guided delivery, three patients diagnosed with Raynaud’s Disease of the hand who had failed other non-surgical interventions were treated with Botulinum Toxin using ultrasound guidance. Demographic information, co-morbidities, and Patient-Reported Outcomes Measurement Information System (PROMIS) Upper Extremity (United States Department of Health and Human Services) were collected.

RESULTS: The cadaver hand injected with dye using the traditional landmark-based approach demonstrated significantly increased infiltration of the intrinsic muscles of the hand compared to the cadaver hand injected using ultrasound guidance. The area of vasculature that were infiltrated with the dye was not statistically different between the two techniques.

All three patients treated with Botulinum Toxin using ultrasound guidance reported improvement in symptoms and function after injection (PROMIS Upper Extremity T score pre-injection mean 29.2, post-injection mean 37) and zero patients reported intrinsic hand weakness.

CONCLUSION: Ultrasound guided injection of a simulation material dye was significantly more accurate in this anatomical study for targeting the vasculature and avoiding the intrinsic muscles of the hand. Ultrasound guidance was practicable in the clinic setting for the delivery of Botulinum Toxin for treatment of vasospastic disease of the hand with no hand weakness reported in this study. Further studies are required to characterize the apparent risk reduction using ultrasound guidance and to demonstrate cost effectiveness.

Analysis of Post-Operative Reoperation Timing and Risk Factors For Post-Operative Free Flap Compromise in Head and Neck Reconstruction: A National Retrospective Cohort

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PURPOSE: Unplanned reoperation, specifically for free flap compromise, following head and neck reconstruction exerts a significant toll on the healthcare system and its resources. The timing of the different indications for reoperation remains to be elucidated. Given that the National Surgical Quality Improvement Program (NSQIP) groups all causes of unplanned reoperations into a single variable, we aim to identify the rates and timing of various indications for reoperation and the independent predictors of head and neck free flap compromise.

METHODS: A retrospective review of all patients who underwent head and neck free flap reconstruction for a malignant head and neck lesion was done in the ACS-NSQIP database 2012–2014. CPT codes 15756, 15757, and 15758 were identified to determine free flap reconstruction. Preoperative demographics, intraoperative variables and postoperative surgical morbidities were identified. Manual identification of ICD-9 codes allowed for determination of cause of reoperation. Subgroup analysis of mean time to reoperation was performed. Multivariate logistic regression was used to identify the independent predictors of unplanned free flap reoperation in the head and neck free flap population. An increased operative time was defined as >75%-tile(612 minutes).

RESULTS: From 2012–2014, a total of 300 patients underwent head and neck free flaps. 62 patients (20.7
percent) underwent an unplanned reoperation. Most common reasons for unplanned reoperation were hematoma (19.4%), flap failure (19.4%) and a systematic vascular reason (17.7%). Mean time to reoperation was earliest in the hematoma cohort (4.33 ± 6.11 days) and flap failure cohort (4.92 ± 7.37 days). Latest time to reoperation was in the infection cohort (14.00 ± 4.85 days) and dehiscence cohort (13.50 ± 5.57 days). On multivariate logistic regression, independent risk factors for unplanned free flap reoperation (p < 0.05) included an ASA >3 [adjusted OR, 6.04 (95 percent CI, 1.40 to 26.07), adjusted p = 0.022] and an increased operative time in minutes [adjusted OR, 5.21 (95 percent CI, 1.54 to 17.64), adjusted p = 0.009].

CONCLUSION: National data indicates that complication rates are high in head and neck reconstruction for malignancy. Patients with independent risk factors for reoperation should be monitored more closely to reduce the severity of these complications. Identifying common complications, latency between complication and reoperation, personalized patient complication risk, and independent factors that lead to reoperation are critical in identifying complications early and managing them successfully. Development of a clinical risk calculator may help patient decision making by tailoring information on risk of complications.

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Risk of Venous Thromboembolism with Cross-Sex Hormone Therapy: a Systematic Review of the Literature and Pooled Analysis

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PURPOSE: Surgical treatment of gender dysphoria is a rapidly growing area of interest in Plastic Surgery. Cross-sex hormone treatment is an established component of management and is required by World Professional Association for Transgender Health guidelines prior to surgical interventions. The impact of hormone replacement therapy in gender congruent individuals on hemostatic outcomes is well-established. Unfortunately, comprehensive understanding of its effects on venous thromboembolism (VTE) risk in the transgender population is lacking.

METHODS: A systematic review of the Pubmed, Google Scholar, and EBSCO databases was performed in October 2018. Studies assessing thromboembolic events in transgender patients undergoing cross-sex hormone treatment were included. Review articles, case reports, and studies lacking descriptions of hormone therapies were excluded. Data regarding demographics, hormone therapy, and venous thromboembolism incidence were collected and pooled for analysis. Statistical analysis was performed using a Student’s t-test.

RESULTS: Of 2,948 initial titles, 51 articles were read in their entirety, and 23 were included for pooled analysis. All studies were retrospective in nature. In total, 9,180 transgender patients (6,068 male-to-female and 3,112 female-to-male) underwent cross-sex hormone therapy. Hormone therapies in male-to-female (MTF) patients most commonly consisted of oral or transdermal estrogen formulations with-or-without progestogens. The majority of female-to-male (FTM) patients received intramuscular or oral testosterone. Weighted VTE rates of 2.5% in male-to-female patients (50.6 per 10,000 person-years) and 0.87% (20.7 per 10,000 person-years) in female-to-male patients were observed. When compared to previously published rates in cisgender patients undergoing hormone replacement therapy, MTF patients did not have a significantly risk for VTE (p = 0.953) while FTM patients had significantly lower risk for VTE (p >0.001). Additionally, the data demonstrated a trend towards higher VTE risk in male-to-female patients undergoing oral estrogen treatment compared to transdermal estrogen.

CONCLUSIONS: Hormone therapy in transgender patients is essential to promote a physiologic state aligned with gender identity. However its potential effects on thrombotic complications must be assessed prior to surgical interventions. Transgender patients may undergo invasive surgeries requiring periods of immobilization in order to complete their transitions. Our analysis suggests that MTF patients undergoing cross-sex hormone therapy are at similar risk for VTE to cis-gender individuals undergoing hormone replacement therapy, and FTM patients may have lower risk. Surgical planning regarding perioperative and postoperative VTE prophylaxis or cessation of hormone therapy should take into account each patient’s Caprini risk assessment and the nature of each intervention.