

49.

ICG FLUORESCENCE WITH LYMPHOSCINTIGRAPHY FOR SENTINEL NODE BIOPSY IN HEAD AND NECK CUTANEOUS MELANOMA: A REPRODUCIBLE, RELIABLE MEANS TO IMPROVE FALSE NEGATIVE RATES

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PURPOSE: Head and neck melanoma is associated with a high false negative sentinel lymph node biopsy (SLNB) rate. Our group previously demonstrated the combination of radiotracer and ICG SPY *Elite* navigation system was feasible and more sensitive compared to standard vital dye and radioactive tracer for SLNB. The goal of this report was to analyze our experiences utilizing ICG fluorescence with lymphoscintigraphy for SLNB in head and neck cutaneous melanoma.

METHODS: Data was collected for consecutive head and neck cutaneous melanoma patients who underwent radioisotope lymphoscintigraphy and indocyanine green SPY-*Elite* SNLB by the senior author from 2012–2015. False negative rate of SLNB was defined as the proportion of patients with false negative SLNB (regional nodal recurrence with negative initial SLNB) to patients with true positive and false negative SLNB, as well as the false negative incidence, defined as the proportion of patients with false negative SLNB to all patients.

RESULTS: There were 68 eligible patients, eleven positive SNLB, 55 true negative SLNB and two false negative SLNB. FNR and FNI were 15.3% and 3%, respectively. Mean follow up for true negative patients was 746 days.

CONCLUSION: The importance of accurate SLNB in head and neck melanoma cannot be underscored. False negative rates in the literature for head and neck melanoma patients are reported as high as 44%. Our results demonstrate that concomitant radioactive and fluorescence for SLN identification in head and neck melanoma is reliable, reproducible and has produced a low false negative SLNB rate.

50.

MIGRAINE SURGERY OUTCOMES: AN ALL OR NOTHING PHENOMENON?

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PURPOSE: Traditionally, success/failure after migraine surgery is defined as improvement of migraine headache index (MHI) $\geq 50\%$, and $\leq 50\%$, respectively. However, our prospective data demonstrates more narrow binary outcomes. Patients either did not respond to surgery or improved completely. This study presents a detailed analysis of this surprising finding.

METHODS: 42 subjects prospectively completed migraine questionnaires including MHI preoperatively, and 12 months postoperatively.

RESULTS: All variables improved significantly from baseline. Outcomes were similar to prior studies with a success rate of 81%. Interestingly, 86% of patients improved MHI $\geq 80\%$ or $\leq 5\%$. Only 14% fell between 5 and 80%. 69% of patients improved their MHI $\geq 80\%$ with mean improvement of 97.1%. 16% of patients improved their MHI $\leq 5\%$, with an average improvement of 0%.

CONCLUSION: Migraine surgery remains controversial. Others have argued that the etiology of migraine is more complex than nerve compression. This study again prospectively demonstrates the efficacy of surgical trigger site deactivation in migraine patients. It further shows that patients either fail or improve after surgery, with few intermediate outcomes. Such a binary distribution of outcome may point to a less complex etiology of pain such as peripheral nerve compression in these select patients.

51.

DEVELOPMENT OF A VIRTUAL SURGICAL PLANNING (VSP) ALGORITHM FOR DELAYED OSSEOUS MAXILLOMANDIBULAR RECONSTRUCTION

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PURPOSE: Delayed maxillomandibular reconstructions are challenging because the position of remaining anatomy is distorted or no surgical specimen is available for measurement. To optimize outcomes following reconstruction of these complex defects an algorithm using novel VSP techniques was developed.

METHODS: Delayed maxillomandibular reconstructions using VSP between 2009–2016 were identified at two medical centers. Demographics, modeling techniques, and surgical characteristics were analyzed.

RESULTS: Sixteen reconstructions met inclusion criteria with a mean follow-up of 21 months. Mandibular defects were most common (81.2%), followed by maxilla (12.5%), and one combined defect(6.3%). Indications for reconstruction were osteoradionecrosis with displaced fracture(50.0%), tumor (37.5%) or trauma(12.5%). Three VSP techniques were developed and used to facilitate delayed reconstruction: 1) patient-specific modeling using radiographs obtained prior to the defect(43.8%); 2) mirror imaging of the remaining contralateral normal anatomy(37.5%); 3) normative samples scaled to patient size(18.8%). Normative and mirrored reconstructions were always designed to restore normal anatomy; however, patient-specific data identified constraints necessitating non-anatomic reconstructions in 71% of cases. Complications: partial loss

requiring a second fibula flap(1), complete flap failure(1), hardware exposure(3), infection(2), wound dehiscence(2), and sinus tract(2).

CONCLUSIONS: The current series of complex craniofacial defects was reliably reconstructed using a novel algorithm employing three different VSP techniques. The ability to preoperatively design reconstructions and precisely execute them in absence of normal anatomic landmarks demonstrates an added value of VSP beyond traditional techniques.

52.

EVALUATING OUTCOMES OF LOWER EXTREMITY FREE TISSUE TRANSFER: ARE MUSCLE FLAPS BETTER THAN SKIN FLAPS?

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PURPOSE: Clinical indications are expanding for the use of fasciocutaneous free flaps in complex lower extremity traumatic reconstruction. We assessed outcomes of muscle versus fasciocutaneous free flap coverage for acute and chronic traumatic defects.

METHODS: All patients who underwent lower extremity traumatic free flap reconstruction at Duke University (1997–2013) and the University of Pennsylvania (2002–2013) were retrospectively identified. Reconstructive and functional outcomes of muscle versus fasciocutaneous free flaps were analyzed in two subgroups: 1) acute trauma ≤ 30 days before reconstruction; and 2) osteomyelitis, non-union, and chronic traumatic wounds.

RESULTS: A total of 438 patients underwent lower extremity traumatic free flap reconstruction with 264 muscle flaps and 174 fasciocutaneous flaps. Muscle and fasciocutaneous flap groups did not differ in flap complication rates, amputation, or time to ambulation. Muscle flaps were more commonly performed for acute traumatic injuries, compared to chronic wounds ($p < 0.01$).