between groups, although there was a significant difference between groups in presence of arterial injury (57% 0–10 days vs. 42% 11–90 days vs. 63% >90 days; \( p=0.011 \)) and mean flap size (350 cm vs. 257 cm vs. 235 cm; \( p<0.0001 \)). Univariate analysis revealed significant differences in rates of overall success (76% 0–10 days vs. 84% 11–90 days vs. 89% >90 days; \( p=0.026 \)), partial flap failure (13% vs. 12% vs. 3%; \( p=0.024 \)), and overall complications (49% vs. 37% vs. 39%; \( p=0.014 \)). On multivariate analysis, free flaps performed >90 days after initial injury had significantly higher success rates as compared to the 0–10 day group (OR 3.33, \( p=0.03 \)). The >90 day group also showed a trend toward decreased rates of partial flap failure (OR 0.22, \( p=0.074 \)). There was no association between time to coverage and rates of total flap failure (\( p=0.423 \)), overall complications (\( p=0.272 \)), operative takebacks (\( p=0.406 \)), or any other outcomes assessed.

CONCLUSION: There was no association between timing of reconstruction and rates of total or partial flap failure, overall complications, or operative takebacks. In fact, repairs performed >90 days after initial injury had significantly higher success rates as compared to the 0–10 day group (OR 3.33, \( p=0.03 \)). The >90 day group also showed a trend toward decreased rates of partial flap failure (OR 0.22, \( p=0.074 \)). There was no association between time to coverage and rates of total flap failure (\( p=0.423 \)), overall complications (\( p=0.272 \)), operative takebacks (\( p=0.406 \)), or any other outcomes assessed.

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Comparative Analysis of Single versus Stacked Free Flap Breast Reconstruction: A Single Center Experience

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BACKGROUND: As breast reconstructive microsurgeons increase their armamentarium of flaps with experience, need for stacked and multiple flaps may generate an improved aesthetic outcome. We present our institutional experience of using single vs. multiple free flap breast reconstruction.

METHODS: 769 flaps were performed on 427 patients from 2010–2016 by two senior surgeons at a university hospital. 197 of those flaps were either: Stacked PAP flaps, 4-flap (Bilateral PAP+Bilateral DIEP flap), or Double-pedicle DIEP/SIEA flaps. 595 flaps were either: unilateral or bilateral DIEP or PAP flap. Demographic, patient co-morbidities, and flap complications were compared between the 2 groups.

RESULTS: Out of 427 patients, 322 patients (595 breast reconstructions) underwent single DIEP or PAP flap while 105 patients (197 flaps in 113 breasts) underwent multiple free flaps. The multiple flap patient group had statistically lower BMI, longer procedure time, had smaller flaps, and higher DVT compared to single flap group. There were no statistical differences in the rates of flap loss (1.3% in multiple flaps versus 1.7% in single flap), wound complication, hematoma, and PE.

CONCLUSION: Based on our large experience, stacked/multiple flaps are safe and preferred in properly selected patients with low volume from a unilateral donor site, exhibiting similar complications and success rates compared to single-flap patients. The ability to use multiple donor sites may represent a unique phase of innovation in breast microvascular surgery, with high patient tolerance and aesthetically pleasing results geared towards reconstructing breasts in all subunits. We present our indications and approach for successful multiple flap reconstruction.

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Which Is More Ideal To Monitor And Detect Flap Vascular Compromise: Intradermal Or Subcutaneous Tissue Oxygen Tension?

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BACKGROUND: As breast reconstructive microsurgeons increase their armamentarium of flaps with experience, need for stacked and multiple flaps may generate an improved aesthetic outcome. We present our institutional experience of using single vs. multiple free flap breast reconstruction.

PURPOSE: The ideal monitoring tool to evaluate free flap success should be minimally invasive, continuous,
cost-effective and reliable. Our group has previously introduced implantable oxygen sensors as a mean to monitor flaps in the immediate post-operative period and detect acute vascular compromise. The purpose of the current study was to compare and contrast intradermal vs. subcutaneous implantation of the sensors in their ability to detect flap compromise.

**METHODS:** Experimental sensors were made by incorporating benzo-porphyrin dye into a matrix of biocompatible hydrogel. These sensors were approximately 3mm-long, 1.5mm-wide, and 0.5mm-thick. Two groups of male Sprague-Dawley rats had the skin flap site outlined and three sensors were intradermally (ID) implanted at tip, middle and base of the impending flap of one group, while subcutaneously (SQ) implanted in the second group. Corresponding control sensors were implanted laterally at least 1 cm away from the proposed flap in both groups. One day later, the outlined, caudally-based, full thickness flap was elevated on dorsum of rats. Gross flap viability was assessed with computer planimetric analysis. Inspired oxygen was modulated between 100% and 12%. Real-time tissue oxygen tension (TOT) readings were obtained from the sensors on days 0, 3 and 7.

**RESULTS:** Oxygen readings by sensors modulated as expected when inspired oxygen was changed, indicating that the sensors are responsive and sensitive within a physiologic range. Gross planimetric analysis of both groups showed that 16% of the flap was necrotic at the tip of the flap as measured on d3 and was more pronounced on d7. Readings from the ID and the SQ sensors have demonstrated statistically significant decreases in oxygenation in all regions of the flap at all time points compared to the control sensors. Overall, SQ implanted sensors showed faster response times than ID implanted sensors. However, ID implantation was less invasive, and makes it easier to localize the sensor for measurement and also avoid migration of the sensor in the SQ plane.

**CONCLUSION:** Our analysis revealed that even though both methods are efficacious and accurate in determining changes of oxygenation, SQ sensors responded faster that ID sensors, however ID implantation is easier, less invasive and keep the sensor localized in the specific spot where it is implanted.
SUNDAY, MAY 20, 2018
SESSION 11 QUICK SHOTS

QS01

Trigger Finger Corticosteroid Injections With And Without Local Anesthetic; A Randomized, Double Blind Controlled Trial - A Preliminary Data Analysis

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PURPOSE: Trigger finger (stenosing tenosynovitis) occurs in 2–5% of general population and in up to 10% diabetic patients. First-line treatment involves injection of a corticosteroid, and prior studies have shown cure rates better than 65% with a single injection. Although many surgeons mix local anesthetic with their corticosteroid, the effect of this anesthetic is not clear on the outcomes in treating trigger digits. We conducted a study to compare corticosteroid injections with and without local anesthetic.

METHODS: In this double-blinded, prospective randomized controlled trial patients were treated with either 1 mL triamcinolone combined with 1 mL of 1% lidocaine or 1 mL of corticosteroid with 1 mL of 0.9% saline. To date, 10 patients have been enrolled with 5 receiving corticosteroid-alone and 5 receiving corticosteroid with lidocaine. Pain was the primary outcome, and it was measured using the visual analog scale (VAS) immediately following the injection, and then at 6 hours, 24 hours, and 72 hours after the injection. The efficacy of treatment was also monitored and defined by the need for a repeat injection at 6 weeks.

RESULTS: The two study groups had similar demographics. The injection containing lidocaine with epinephrine had a higher average VAS compared triamcinolone-only at 1 minute (2.4 vs 1.8) and 6 hours (1.4 vs 1.2), and the same pain score at 72 hours (0.4 vs 0.4) intervals. However, there was no statistical significance in this preliminary analysis. There were no adverse outcomes from the injections.

CONCLUSION: There is no significant difference in pain outcomes between the injection approaches. However, the single agent injection has a lower cost and risk by involving only one medication. Based on these initial findings, we recommend the use of an injection without lidocaine to treat trigger finger.

J.R. Patrinely: None. B.C. Drolet: None.

QS02

A National Longitudinal Comparison of Strip Craniecotomy and Whole Vault Cranioplasty

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PURPOSE: Nonsyndromic craniosynostosis can be treated with strip craniecotomy or whole vault cranioplasty (WVC). Patients who undergo treatment prior to three months of age can be offered strip craniecotomy. After six months, the cranium begins to ossify and whole vault cranioplasties (WVC) yield the most predictable outcomes. Given dichotomous preferences, we conducted a large-scale database comparison of socioeconomic, cost, and complications between treatments.

METHODS: Nonsyndromic craniosynostosis patients were identified in the Kids’ Inpatient Database for years 2000, 2003, 2006, and 2009. To isolate strip craniecotomies, patients were limited to those less than 3 months of age with a primary procedure code of 02.03. In order to isolate patients with WVC, patients were limited to those greater than 6 months of age with a primary procedure code of 02.06. Demographics, socioeconomic, charges, hospital characteristics, outcomes, and complications were collected. Univariate and multivariate analyses were performed to compare variables between surgeries and across years.

RESULTS: A total of 251 strip craniecotomy and 1,811 WVC patients were captured. Whereas males represented the majority of both cohorts, females comprised significantly more of the WVC (p<0.001). More strip craniecotomies were White and more WVC were Hispanic and Black (p<0.001). Primary insurance payer was significantly different spanning all years (p<0.001), with more strip craniecotomies using private insurance (70.13%) and more WVC patients using Medicaid (35.02%). Over the years, WVC trended towards treating Hispanic and Medicaid patients, however, Strip craniecotomy cases did not experience any change. WVC charged hospitals $27,962 more than strip craniecotomies, with $11,001 independent of payer, income, bedsize, and LOS (p<0.001). Strip craniecotomies