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PURPOSE: Autologous breast reconstruction is challenging in thin patients who present for bilateral breast reconstruction. The Stacked Hemi-abdominal Extended Perforator (SHAEP) flap has been shown to increase the volume of useable abdominal tissue by adding a secondary, more lateral pedicle to the DIEP. We present a novel approach to obtaining even more volume by adding another pedicle to the SHAEP. This is the first description of the Tripedical Extended Abdominal Perforator (TEAP) flap that allows for use of the entire circumference of the lower trunk by adding two additional pedicles to the DIEP.

METHODS: To perform the TEAP flap, circumferential body lift principles are followed in order to recruit more lower truncal tissue. The flap consists in an extended DIEP flap with three pedicles. Preoperative MRA is performed in order to localize vessels. The main pedicle is the deep inferior epigastric artery perforator. Two additional perforators are used, the most common being the deep circumflex iliac artery (DCIA) and the superficial inferior epigastric artery (SIEA). The lumbar artery perforator (LAP), the superficial circumflex iliac artery (SCIA) and the intercostal perforators (IP) can also be used. The DIEP pedicle is harvested with additional branches, and length on the superior continuation. The two additional pedicles are anastomosed on a back table to these branches using couplers for arteries and veins. The DIE artery and vein are then anastomosed to the internal mammary artery and vein. We analyzed our case series evaluating patient demographics, surgical techniques, operative time and complications.

RESULTS: Six TEAP flaps were performed by two surgeons, on three patients undergoing bilateral breast reconstruction. A total of 6 anastomosis with 3 pedicles were performed for each breast reconstruction. Three flaps included one DIEP pedicle, one SCIA and one SIEA. One flap included one DIEP, one SIEA and one DCIA pedicle. Another flap included one DIEP pedicle, one SIEA and one Intercostal perforator and the last one included one DIEP pedicle, one DCIA and one LAP. The additional pedicles allowed for an average of 45% more volume than the DIEP alone. All flaps were successful with a mean follow up of 154 days (60–225 days).

CONCLUSION: The TEAP flap is a novel procedure that avails the microsurgeon of the use of the entire abdominal circumference of the thin patient for use in breast reconstruction, providing total autologous breast reconstruction with increased volume, enhanced flap perfusion, and muscle preservation.

Northwell Health Patient Perioperative Pathway (P3): Enhanced Recovery Protocol for Microsurgical Breast Reconstruction

Presenter: Brandon Alba, BA

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BACKGROUND: Enhanced recovery after surgery (ERAS) protocols have been shown to improve perioperative care in many different surgical settings. As ERAS protocols become increasingly common in microsurgical breast reconstruction, this practice should be critically evaluated to determine efficacy and safety. The goal of this study was to measure the outcomes of a specific Northwell Health ERAS protocol for breast reconstruction patients, and specifically identify which factors of the protocol most contribute to these outcomes.

METHODS: An ERAS protocol was designed for microsurgical breast reconstruction patients. The primary focus of the protocol was to improve patients’ postoperative recovery experience and decrease length of stay without compromising surgical outcomes and patient safety. All consecutive patients treated by a single surgeon (NT) during the first 12 months of ERAS implementation were compared to a control group of patients from the 12 months prior. Demographic data as well as intraoperative and postoperative data were recorded. Complications requiring a return to the operating room or readmission to the hospital within 30 days were recorded. Statistical analysis was performed to determine any significant differences between the two groups. Multivariable linear regression analysis was used to identify any factors predictive of total opioid use, maximum pain scores, and length of stay.

RESULTS: A total of 120 patients were identified, including 74 ERAS and 46 pre-ERAS patients. Patients in the two groups were similar with respect to demographics, reconstruction type, history of neoadjuvant chemotherapy, and history of radiotherapy. ERAS patients had significantly
shorter lengths of stay (4.0 vs. 3.1 days; p>.001) and used fewer doses of opioids (91.77 vs. 54.52 morphine equivalents; p=.012). Rates of complications were similar between groups (23.9% vs. 13.5%; p=.145). Linear regression revealed lower pain scores on postoperative day (POD) 1 and 2 and patient being out of bed on POD1 were predictive of decreased total opioid use. Factors predictive of decreased length of stay included patient out of bed on POD1, decreased total opioid use, and participation in the ERAS protocol. Increased total opioid use was predictive of increased pain scores on day of discharge.

CONCLUSION: For microsurgical breast reconstruction patients, ERAS protocols may significantly improve and expedite the postoperative recovery experience without an increased risk of complications. The statistical models show various aspects of ERAS being predictors of decreased opioid use, decreased pain scores, and decreased length of stay.

CRANIOMAXILLOFACIAL/HEAD & NECK SESSION 3

A Prospectively-Validated Risk Stratification Tool for Adverse Perioperative Events in Patients Undergoing Cleft Palate Repair

Presenter: Marten N. Basta, MD

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INTRODUCTION: Adverse perioperative events (APE) complicate 5–30% of cleft palate repairs, causing significant morbidity, distress, and prolonged hospitalizations. While syndromic diagnosis and young age have been implicated as APE risk factors in general anesthesia, individual risk remains difficult to predict. This study prospectively validates a previously-developed risk assessment tool which estimates individual risk for APEs after cleft palatoplasty.

METHODS: A prospective cohort of patients under 2 years having primary Furlow palatoplasty were reviewed for medical history and perioperative data. APEs were defined as laryngobronchospasm, accidental extubation, reintubation, obstruction, hypoxia, and unplanned ICU admission. Multivariate regression modeling, risk factor stratification, and model performance were assessed.

RESULTS: 190 patients averaging 11.7 months were included. Veau Cleft distribution included: Submucosal-13.9%, I-14.9%, II-31.4%, III-32.0%, IV-7.7%. Pierre Robin (PRS) (N=29) was the most prevalent syndrome/anomaly. 60% of patients received paralytic reversal and total narcotic dose averaged 0.17mg/kg. APEs occurred in 31 patients (16.3%): hypoxia (11.6%), airway obstruction (6.3%), unplanned ICU (6.3%), laryngobronchospasm (2.1%) reintubation (1.1%).

Adjusted regression analysis for APEs identified risk factors including higher perioperative narcotic administration (> 0.32 mg/kg OR=11.6, p=0.004), abnormal airway anatomy (OR=4.52, p=0.045), 2+ intubation attempts (OR=4.43, p=0.006), history of reactive airway disease (OR=4.11, p=0.029), and syndrome other than PRS (OR=2.74, p=0.05). Protective factors included administration of reversal agent (OR=0.37, p=0.05) and use of gelfoam packing (OR=0.25, p=0.04). Patients were risk-stratified according to individual profiles as low (APE: 2.1%), average (APE: 5.7%), high (APE: 37.8%), or extreme risk (APE: 88.9%). Validation against our prior predictive tool found this prospective risk model was significantly more accurate with C-statistic=0.87 vs. C-statistic=0.74 (p=0.002).

CONCLUSION: APEs occurred in 16.3% of palatoplasties. Higher opioid doses, multiple intubation attempts, and syndromes not including PRS imparted significant perioperative risk while use of paralytic reversal agents was consistently protective. Validated prospective risk-assessment tools such as this provide discrete strategies for reducing risk and may better inform patient selection and perioperative management in an evidence-based manner.

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