REFERENCES:

1. Gruber RP, Kahn RA, Lash H, Maser MR, Apfelberg DB, Laub DR. Breast reconstruction following mastectomy: a comparison of submuscular and subcutaneous techniques. Plast Reconstr Surg. 1981;67(3):312–7.

2. Radovan C. Tissue expansion in soft-tissue reconstruction. Plast Reconstr Surg. 1984;74(4):482–92.

3. Sbitany H. Important Considerations for Performing Prepectoral Breast Reconstruction. Plast Reconstr Surg. 2017;140(6S Prepectoral Breast Reconstruction):7S-13S.

4. Jones G, Yoo A, King V, et al. Prepectoral Immediate Direct-to-Implant Breast Reconstruction with Anterior AlloDerm Coverage. Plast Reconstr Surg. 2017;140(6S Prepectoral Breast Reconstruction):31S-38S.

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Trends in and Factors Associated with Modality-Specific Immediate Breast Reconstruction in China: A 17-year Retrospective Cohort Study

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**BACKGROUND:** The implant-based immediate breast reconstruction (IBR) after mastectomy for cancer has gained the momentum in contrast to the autologous procedure in the United States. However, there have been limited studies to date that clarify the modality-specific trends in China. Therefore, the aim of our retrospective cohort study is to determine the prevalence and predictors of implant-based versus autologous IBR among Chinese patients.

**METHODS:** All female patients who underwent IBR after mastectomy from 2001 to 2017 at the largest breast cancer center in China were enrolled in the retrospective cohort. The annual trends in reconstruction rates, implant/autologous ratio, modality-specific hospital stay and healthcare charges were assessed. 12 variables consisting of sociodemographic characteristics and oncological features were evaluated through univariate and multivariate logistic regression modeling. The sensitivity and specificity of the regression models were tested by receiver operating characteristic (ROC) curve analysis.

**RESULTS:** Among 905 patients included in the study (median age, 40 [IQR, 35–45] years; median BMI, 22.48 [IQR, 20.58–24.43]), 479 (52.9%) patients received implant-based IBR and 426 (47.1%) underwent the autologous procedure. The number of IBR cases and the reconstruction rates rose significantly from 6 (0.55%) in 2001 to 142 (35.02%) in 2017. The average hospital stay decreased remarkably from 26 (IQR, 19.25–27.5) days in 2001 to 21 (IQR, 16–25) days in 2017 (p < 0.01). A notable paradigm shift from autologous to implant-based IBR was revealed with implant/autologous ratio increasing from 0 in 2001 to 3.33 in 2017. The hospitalization expenses of autologous-based IBR were significantly lower than that of implant-based procedure (p < 0.05), but they have approached the level of implant-based charges in 2017. Multivariable analysis showed that unmarried patients with BMI ≤ 24 kg/m², earlier clinical tumor stage, and preoperative pathological diagnosis of non-invasive lesion are more likely to have implant-based than autologous reconstruction. The models performed well in predicting the decision on type of reconstruction among the current cohort patients (areas under ROC curve, 0.766; 95%CI, 0.725–0.806).

**CONCLUSION:** The current study confirms that the implant-based paradigm is the predominant form of immediate postmastectomy breast reconstruction in China. The BMI, marital status, clinical tumor staging and preoperative pathological diagnosis strongly affect the choice of breast reconstruction modality. Our results may assist both surgeons and patients in making high-quality and individualized decision on the type of IBR.

**REFERENCES:**

1. Albornoz CR, Bach PB, Mehrara BJ, et al. A paradigm shift in U.S. Breast reconstruction: increasing implant rates. Plast Reconstr Surg, 2013, 131(1): 15–23.

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Tripedicled Extended Abdominal Perforator Flap: An Alternative for Low Body Weight Patients Requiring Large Autologous Bilateral Breast Reconstruction

**Presenter:** Farrah C. Liu, BS

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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 Tripediced 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

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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