Two patients developed a seroma at the donor site. There was no partial flap loss and no evidence of fat necrosis noted in follow-up examinations. Only one patient underwent a subsequent flap revision. Flap survival was 100% with no return to the OR in the immediate post-operative period.

**DISCUSSION:** When the patient requires or prefers to have an autologous breast reconstruction, the stacked LTP flap should be considered an effective and viable option if the patient’s body habitus consists of excess lateral hip adiposity. The LTP flap has an anatomically reliable vascular supply that allows for a straightforward dissection, provides adequate volume and shape, and decreases operative time as 3 surgical teams can work simultaneously. The addition of the stacked LTP flap to the perforator flap collection allows the reconstructive surgeon to tailor breast reconstruction to the patient while focusing on body habitus and minimizing donor site deformity.

**Uncovering Synergistic Predictors of Complications in Microvascular Breast Reconstruction: A Retrospective Cohort Study**

**Presenter:** Melissa Roy, MDCM

**Co-Authors:** Stephanie Sebastiampillai, HBSc; Toni Zhong, MD, MHS; Stefan O.P. Hofer, MD PhD; Anne C. O’Neill, MD PhD

**Affiliation:** University of Toronto, Toronto, ON

**PURPOSE:** Microvascular breast reconstruction is a complex procedure that can be associated with high complication rates. While a number of individual predictors of post-operative complications have been identified, few studies have explored interaction between risk factors.

Understanding the synergistic effects of multiple risk factors is crucial to accurate and personalised pre-operative risk prediction.

**METHODS:** We conducted a retrospective cohort study of patients who underwent microvascular breast reconstruction at our institution between 2009 and 2017. All intra- or post-operative complications were recorded. An exploratory multivariable logistic regression model identified independent predictors of complications. Interactions between individual variables were then assessed using the Relative Excess Risk Index (RERI) and Synergy Index (SI).

**RESULTS:** Nine hundred and twelve patients were included in the study and 26.1% experienced at least one intra- or post-operative complication. Obesity (OR1.54, \( p=0.01 \)), immediate reconstruction (OR1.49, \( p=0.03 \)), and comorbidities (OR1.43, \( p=0.03 \)) were identified as independent predictors of complications. Obesity and comorbidities had significant synergistic interactions with immediate reconstruction (RERI 0.54, SI 1.78, \( p=0.01 \)), bilateral reconstruction (RERI 0.12, SI 1.15, \( p=0.002 \); RERI 0.59, SI 3.16, \( p=0.01 \)) and previous radiotherapy (RERI 0.62, SI 4.43, \( p=0.01 \); RERI 0.11, SI 1.23, \( p=0.04 \)). Smoking had a synergistic interaction with immediate breast reconstruction (RERI 1.99, SI 4.36, \( p=0.03 \)).

**CONCLUSION:** Patient and treatment related variables interact in a synergistic manner to increase the risk of complications for microvascular breast reconstruction. In light of the known multifaceted repercussions of complications, individualized comprehensive risk assessment should guide surgical decision making and patient counselling.

**REFERENCES:**

1. Masoomi H, Clark EG, Paydar KZ, et al. Predictive risk factors of free flap thrombosis in breast reconstruction surgery. *Microsurgery.* 2014;34:589–594.

2. Las DE, de Jong T, Zuidam JM, Verweij NM, Hovius SE, Mureau MA. Identification of independent risk factors for flap failure: A retrospective analysis of 1530 free flaps for breast, head and neck and extremity reconstruction. *J Plast Reconstr Aesthet Surg.* 2016;69:894–906.

3. Andersson T, Alfredsson L, Källberg H, Zdravkovic S, Ahlbom A. Calculating measures of biological interaction. *Eur J Epidemiol.* 2005;20:575–579.

**Laser-Assisted Indocyanine Green Angiography Reduces Fat Necrosis in DIEP Flap Breast Reconstruction**

**Presenter:** Austin S. Hembd, MD

**Co-Authors:** Nicholas T. Haddock, MD; Sumeet S. Teotia, MD

**Affiliation:** University of Texas Southwestern Medical Center, Dallas, TX
PURPOSE: This study aims to determine if the intraoperative use of laser-assisted indocyanine green (ICG) fluorescence angiography affects postoperative fat necrosis through a multivariable analysis of 409 DIEP free flaps for breast reconstruction.

METHODS: A retrospective review was performed on free flaps for breast reconstruction at a single center from 2010–2016. Inclusion criteria ensured that only single pedicle deep inferior epigastric artery perforator flaps with a single artery and venous anastomosis to the cranial internal mammary vessels for both unilateral or bilateral breast reconstruction were analyzed. ICG was used after the flap had been anastomosed on the chest to subjectively assess for areas of hypoperfusion if there was clinical concern. Less commonly, it was utilized to subjectively assess perforator quality on the abdomen if there was a discrepancy with clinical findings versus the preoperative CT angiography.

A univariable logistical regression analysis was first conducted on the use of ICG angiography along with 27 other patient demographic and surgical factors including row of perforator, perforator diameter, perforator number, flap weight, and the year the surgery. From this, an odds ratio (OR) with 95% confidence intervals of the effect on DIEP flap fat necrosis was derived for each variable. All variables with a p<.15 for the calculated OR in univariable analysis were then entered in a backward selection algorithm to yield the parsimonious multivariable logistic regression model. This subsequent multivariable analysis was done to determine if ICG angiography had an independently significant effect on fat necrosis when other conceivable confounding factors, which were significant in the univariable analysis, were included.

RESULTS: 409 total DIEP flaps were included in both univariable and multivariable statistical analyses. The average age of the patients was 50.5 years old. The average BMI of the patients was 30.7. The average follow up for these patients was 18.5 months, with a median of 15.75 months. 14.4% of flaps had fat necrosis in total.

Intraoperative ICG angiography was used for 130 flaps (31.8%) and was independently associated with a decrease in the odds of fat necrosis (OR .46, p-value = .04). ICG angiography directly guided excision of hypoperfused areas in 50 flaps (38.5%), ensured the presence of adequate perfusion in 78 flaps (60%), and identified a pedicle kink after anastomosis in 2 flaps (1.5%).

Prophylactic excisions of the flap without using ICG angiography were done in 107 flaps (26%) and did not affect fat necrosis rates (OR 1.74, p-value = .1). The average weight of the resected portion of flaps without ICG angiography was 250.8 grams, whereas the average weight of the resected portion of flaps with ICG angiography was 152.3 grams. This 98.5-gram per flap difference was statistically significant (p-value=.01).

CONCLUSION: Our results indicate that intraoperative laser-assisted ICG fluorescence angiography decreases the odds of fat necrosis in DIEP flap breast reconstruction by guiding a more accurate flap debulking at inset. This can save an average of 98.5 grams of tissue per flap when compared to excising areas of hypoperfusion by just clinical signs alone.

Transversus Abdominis Plane Blocks in Microsurgical Breast Reconstruction: An Analysis of Pain, Narcotic Consumption, Length of Stay and Cost Implications

Presenter: Ara A. Salibian, MD
Co-Authors: Jordan D. Frey, MD; Nolan S. Karp, MD; Mihye Choi, MD
Affiliation: New York University Langone Health, New York, NY

PURPOSE: Transversus abdominis plane (TAP) blocks are increasingly utilized in abdominally-based microvascular breast reconstruction. Studies, however, have not reliably shown improvements in postoperative pain,1–3 and cost implications remain unknown. The purpose of this study is to elucidate the global effects of TAP blocks on reconstructive and institutional outcomes after microvascular breast reconstruction.

METHODS: Patients undergoing abdominally-based microvascular breast reconstruction from 2015–2017 were reviewed. Length of stay, complications, narcotic consumption, donor-site pain and hospital expenses were compared between patients that did and those that did not receive TAP blocks with liposomal bupivacaine. Patient that did not receive TAP blocks had local infiltration of the rectus fascia and abdominal flaps with bupivacaine.

Medication consumption was summated for the first 72 hours of inpatient stay and donor-site pain was determined from nursing-reported pain scores. Hospital expenses were calculated...