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**PURPOSE:** Current evidence has not linked breast implants to autoimmune or other systemic diseases; however, women continue to pursue explantation due to a heterogenous constellation of symptoms referred to as “breast implant illness” (BII). Although BII has no clear medical definition, pathophysiological explanation or diagnostic testing, a subset of patients report symptomatic improvement after explantation. Although several studies have attempted to clarify and better define this phenomenon, none have considered patient satisfaction and quality of life following implant removal. This study aims to assess patient reported satisfaction with the removal of implants through the use of the BREAST-Q.

**METHODS:** Patients who underwent breast implant removal due to concerns for BII were asked to complete the augmentation BREAST-Q. Additionally, a survey was administered that queried 35 different BII-related symptoms and their response to implant removal. Questions specifically referencing the implants were removed because they were not applicable to this cohort. Consistent with scoring guidelines, missing data were replaced with the mean of remaining scores as long as 50% of questions were still completed. Outcomes in this cohort were compared with normative data for all modules this information was available for. Furthermore, satisfaction for patients who underwent explantation alone was compared with those who pursued explantation with cosmetic reconstruction.

**RESULTS:** Of the 29 patients who underwent implant removal for BII, 16 patients (55.2%) completed the BREAST-Q and symptom survey. Mean age was 49.1 ± 10.8, and mean BMI was 25.1 ± 8. Interestingly, all patients were Whites. En bloc capsulectomy was requested by patients and performed in 100% of cases. The average time between augmentation and implant removal was 11.3 ± 6.2 months. Only 11 patients (68.8%) underwent implant removal and the other five underwent a cosmetic procedure (either autologous reconstruction or mastopexy) in addition to implant removal. Subjects report on average a total of 13.1 symptoms with brain fog, fatigue, chest discomfort, and anxiety being the most common. On average, symptoms of 14.9% of patients did not improve, those of 48.1% partially improved, and those of 37.0% were completely resolved. Compared with normative data, BII patients with implant removal alone had scores comparable to those of normative BREAST-Q data in the psychosocial well-being ($P = 0.928$), sexual well-being ($P = 0.819$), and satisfaction with breast modules ($P = 0.529$). They had lower scores for physical well-being (17 versus 86, $P < 0.001$). Upon subgroup analysis, implant removal with cosmetic procedures had a higher score in the satisfaction with breast module when compared with implant removal alone (76 versus 48, $P = 0.022$), though no other differences were seen.

**CONCLUSIONS:** Concurrent with previous literature, patients with BII report some degree of symptomatic improvement after removal of implants. Patient-reported outcomes are similar to normative data in recently augmented patients. However, despite reported improvement of symptoms, physical well-being remains lower for patients with breast implant illness even after implant removal. Implant removal may be combined with cosmetic procedures to improve satisfaction with breasts. These results may aid in preoperative patient counseling.

**National Disparities in Autologous Breast Reconstruction**

**Presenter: Jacob Dinis, BS**

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**PURPOSE:** Autologous breast reconstruction has evolved from more morbid procedures that sacrificed the patient’s abdominal muscle (the TRAM or transverse rectus abdominus muscle flap) to more elegant autologous reconstructions termed “perforator” flaps that spare fascia and muscle to harvest only the adipose tissue. Commercial insurers have recognized the higher technical demand for perforator flaps relative to other autologous reconstructions by creating separate procedural codes with significantly higher professional fees. This study examined whether a perforator flap procedure code unavailable with Federally issued Medicare or Medicaid disproportionally incentivizes perforator flaps among the commercially insured and, subsequently, patients from a higher socioeconomic status.

**METHODS:** Autologous reconstructions performed between 2008 and 2014 were reviewed from the National Inpatient Sample using the ICD-9-CM procedure codes 85.72, 85.73, 85.74, 85.75, and 85.76. Extracted variables included age, race, comorbidities, hospital type, hospital region, insurance
payers, and median household income quartile. Autologous breast reconstruction was subdivided into microvascular perforator flaps (85.74, 85.75, 85.76), microvascular TRAM flaps (85.73), and pedicled TRAM flap reconstructions (85.72). Demographics, comorbidities, and access to care were compared between cohorts by chi-squared and ANOVA tests. A logistic regression comparing microvascular reconstructions only was created to predict the effects of insurance, geography, income quartile, and race on the likelihood of perforator flap reconstruction while controlling for age and comorbidities.

RESULTS: After querying and weighting National Inpatient Sample data, 33,246 microvascular perforator flap breast reconstructions, 16,804 microvascular TRAM flap reconstructions, and 16,918 pedicled TRAM flap reconstructions were compared. The majority of patients undergoing autologous reconstruction were Whites (64.1%), with a mean age of 51.1 years. Patients receiving microvascular perforator flaps had fewer total comorbidities than patients receiving microvascular TRAM (P < 0.001) or pedicled TRAM (P = 0.003) flaps.

Perforator flaps were significantly more likely among the commercially insured (perforator flap: 85.8% versus microvascular TRAM: 75.9% versus pedicled TRAM: 75.0%, P < 0.001), while TRAM flaps were more likely among patients with Medicare or Medicaid (perforator flap: 14.2% versus microvascular TRAM: 24.1% versus pedicled TRAM: 25.0%, P < 0.001). Patients of higher income quartiles were significantly more likely to receive perforator flap autologous reconstruction (P < 0.001).

When comparing microvascular reconstruction, logistic regression revealed an odds ratio of 1.72 (P < 0.001) for perforator flaps among the commercially insured when compared with patients with Medicare or Medicaid. Income trends paralleled insurance status. When compared with the lowest income quartile, the second quartile had an odds ratio of 1.11 (P = 0.003) for perforator flap reconstruction, the third 1.07 (P = 0.029), and the fourth 1.36 (P < 0.001).

Compared with rural locations, urban nonteaching hospitals had an odds ratio of 2.42 (P < 0.001) for perforator flap reconstruction and urban teaching hospitals had an odds ratio of 4.08 (P < 0.001). Asian patients had a higher odds ratio of receiving perforator flaps than White patients, with an odds ratio of 1.16 (P = 0.010). Black and Hispanic patients had comparable rates as White patients, with odds ratios of 0.97 and 0.95, respectively (P = 0.342, P = 0.192).

CONCLUSIONS: Reimbursement incentives disproportionally favor perforator flap autologous reconstruction among the commercially insured. Differences across insurance status exaggerate already existing disparities in breast reconstruction across socioeconomic status.

Breast Cancer Recurrence after Implant-based Reconstruction: A Cohort Analysis of Time to Cancer Recurrence between Smooth versus Textured Devices

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BACKGROUND: A recent study demonstrated that reconstruction with textured breast implants is associated with breast cancer recurrence. Laboratory studies have implicated that local inflammation—secondary to postoperative complications—may contribute to cancer recurrence via cytokine and chemokine signaling. Implant surface texture may impact local inflammation in the breast, thereby impacting tumor regrowth and metastasis. We compared breast cancer recurrence rates in our own population of breast reconstruction patients with smooth versus textured devices.

METHODS: Retrospective review of patients who underwent two-stage expander/implant reconstruction between 2006 and 2019 was performed. Demographics, cancer characteristics, device characteristics, postoperative complications, and local/distant cancer recurrences were collected. Kaplan-Meier analysis was performed for time to cancer recurrence. Unpaired t-test or Fisher exact test were performed to compare covariates between patients with and without recurrence. Binary logistic regression was performed for covariates that were significant on univariate testing. Patients with prophylactic mastectomy or stage IV cancer at the time of mastectomy were excluded.

RESULTS: Of the 926 patients, 757 (81.7%) received textured versus 169 (18.2%) smooth devices. Average age was 49.4 years and average follow-up was 75.2 months. There was no difference in age, BMI, radiation, chemotherapy, ER-status, or cancer stage between textured and smooth expander patients. Local recurrence occurred in 11 (1.5%) textured device patients and no smooth device patients (P = 0.23). Distant recurrence occurred in 66 (8.7%) textured device patients and 10 (7.0%) smooth device patients.