the expander. Radiation oncologists and medical physicists will need to consider what effect the gas filled chamber and metal components within the expander have on their treatment planning and dosimetry. Breast air expanders require a wedged pair planning technique however, Saline expanders can be planned with a IMRT hybrid technique. It is critical to understand the contour and overrides to get an accurate dose distribution in pinnacle.

METHODS: All patients referred for radiation therapy with the AeroForm Tissue Expander in place were evaluated at the Genesis Cancer Care in Western Australia. Treatment planning was conducted after evaluation of the device properties. The Radiation Oncologist marks the clinical target volume (skin, subcutaneous tissue), a planning target volume is then created (beam generated ptv).

RESULTS: Patients referred to the radiation oncology team with the AeroForm Tissue Expander in place underwent routine CT guided treatment planning. Treatment plans were implemented with consideration of the density and position of the stainless-steel reservoir as well as the potential effects of radiation through an air-filled chamber. Details of the planning technique are included. A total of 9 patients with Aeroform Tissue Expanders in situ have been treated with chest wall Radiation Therapy for local control. All patients were able to complete their course of radiation without noticeable effect of the AeroForm Tissue Expander on acute toxicity.

CONCLUSIONS: CT based optimization of dosimetry with respect to the properties of the new gas-based expander was completed to successfully reduce dose variation in patients with the gas-filled expander in place. When patients are referred for breast radiation therapy, it is important to inform the radiation oncologist of the presence of this expander for optimal treatment planning.

Persistent Pain Following Breast Reconstruction: Prevalence, Risk Factors and a Cautionary Note on the Causal Attribution of Chronic Postsurgical Pain

Presenter: Tiffany N.S. Ballard, MD

Co-Authors: Ji Qi, MS; Jennifer B. Hamill, MPH; Hyungjin M. Kim, ScD; Andrea L. Pusic, MD, MHS; Edwin G. Wilkins, MD, MS; Randy S. Roth, PhD

Affiliation: University of Michigan, Ann Arbor, MI

INTRODUCTION: Acute postoperative pain following major surgery has come under increasing scrutiny as a harbinger for the development of potentially debilitating chronic postsurgical pain (CPSP), which is defined as the new onset of pain or intensification of presurgical pain persisting at least two to three months following surgery. We examined the prevalence of and risk factors associated with CPSP among women undergoing breast reconstruction.

METHODS: Women ≥18 years undergoing immediate or delayed post-mastectomy breast reconstruction were recruited as part of the NCI-funded Mastectomy Reconstruction Outcomes Consortium Study, a prospective cohort study including 10 centers across the U.S. and Canada. In the current analysis, women were assessed preoperatively and at two-years postoperatively for pain experience (NPRS, MPQ-SF), severity of anxiety (GAD-7), and depression (PHQ-9), relevant medical/surgical variables, and reconstructive procedure type. Mixed-effects regression modeling was used to assess the relationship between patient-specific factors as the independent variables and two-year postoperative pain.

RESULTS: Of the 1,996 patients included in the analysis, 92.7% (n=1851) underwent immediate reconstruction, with the majority (n=1263, 63.3%) choosing tissue expander-implant (TE/I) reconstruction. There was no significant difference between women reporting moderate or severe pain at two-year follow-up compared to preoperatively (11 vs. 10%, \( p=0.083 \)). Regression modeling indicated that both preoperative pain (\( p<0.001 \)) and depression severity (\( p<0.004 \)) were related to CPSP. Autologous flap reconstruction was associated with more severe CPSP than TE/I on the MPQ-Sensory and Affective ratings. BMI, bilateral reconstruction, axillary lymph node dissection, and adjuvant radiation and chemotherapy were associated with CPSP for at least one pain measure.

CONCLUSION: Women undergoing autologous reconstruction had significantly greater pain
levels on the MPQ compared to TE/I patients two-years postoperatively, an important point to consider during preoperative counseling. The presence of preoperative pain was also a risk factor for CPSP. While multiple studies in recent years have focused on the widespread and under-reported prevalence of post-mastectomy CPSP, only 10% of the sample had moderate-to-severe pain at two years. Therefore, approximately 90% were either pain-free or living with a level of pain that would not be expected to interfere with daily function. Overall, our data suggest that CPSP for this cohort may be of less clinical concern than previously described, and reports of persistent pain after breast reconstruction may not necessarily reflect surgery-induced pain.

The Effect of Intraoperative Nerve Blocks on Patient-Centered Outcomes after Tissue Expander Breast Reconstruction: A Prospective, Double-Blinded, Randomized Controlled Clinical Trial

Presenter: Steven T. Lanier, MD
Co-Authors: Kevin C. Lewis, BA; Brittany L. Vieira, BS; Gildasio De Oliveira, MD; Antoun A. Nader, MD; Mark C. Kendall, MD; John Y.S. Kim, MD, FACS; Mohammed Alghoul, MD;
Affiliation: Northwestern University, Feinberg School of Medicine, Chicago, IL

INTRODUCTION: Our study represents the first level I evidence to assess whether intraoperative nerve blocks improve the quality of recovery from immediate tissue expander/implant (TE/I) breast reconstruction.

METHODS: A prospective, randomized, double-blinded, placebo-controlled, clinical trial was conducted in which patients undergoing immediate TE/I breast reconstruction were randomized to either: 1) intraoperative intercostal and pectoral nerve blocks with 0.25% bupivacaine with 1:200,000 epinephrine and 4 mg dexamethasone or 2) sham nerve blocks with normal saline. Surgeon, patient and researchers collecting postoperative data were blind to group allocation. Quality of recovery (QoR 40), pain score, and opioid use in the postoperative period were compared between groups using the Mann-Whitney’s U test. Fisher’s exact test was used between categorical variables. Power analysis ensured 80% power to detect a 10-point (clinically significant) difference in QoR 40.

RESULTS: 47 patients were enrolled. Age, BMI, laterality, mastectomy type, and lymph node dissection were similar between groups. There were no statistical differences in quality of recovery, pain burden as measured by visual analog scale, or opioid consumption between groups at 24 hours following surgery. Mean global QoR scores were 169 (range: 155–182) for the treatment arm and 165 (range: 143 to 179) for the placebo arm (p = 0.36), indicating a relatively high quality of recovery in both groups. There was less total narcotic required by the treatment group compared to placebo in both PACU (8 v. 17 morEq, p = 0.26) and on the inpatient unit (92 vs. 114, p = 0.31), though these differences were not statistically or clinically significant. Ten patients in the placebo group and six patients in the treatment group required anti-emetic use postoperatively, P=0.56. Length of hospital stay averaged 1 day in both groups. There were no adverse events or injection-related complications.

CONCLUSION: While intraoperative nerve blocks can be a safe and effective adjunct to a comprehensive post-surgical recovery regimen, our results indicate no difference in quality of recovery between patients who received intraoperative intercostal and pectoral nerve blocks with bupivacaine and dexamethasone compared to those who received sham placebo injections.