reconstructive failure compared to PMRT applied to permanent silicone implants (20% vs. 13.4%, RR = 2.33, p = 0.0083, 95% CI 1.24 – 4.35), but lower rates of capsular contracture (24.5% vs. 49.4%, RR = 0.53, p = 0.083, 95% CI 0.26 – 1.09).

CONCLUSION: Regardless of timing, PMRT applied to implant-based breast reconstruction was associated with high risk of reconstructive failure and capsular contracture. Surgeons should consider alternative strategies, such as autologous tissue reconstructions, in patients requiring PMRT.

Outcomes Following Breast Reconstruction in Patients with Prior Mantle Radiation for Treatment of Hodgkin’s Lymphoma

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INTRODUCTION: External beam radiation in the mantle field has been a mainstay of therapy for Hodgkin’s lymphoma for several decades. While the incidence of breast cancer in patients treated with mantle radiation is known to be elevated and mastectomy is often indicated, little has been reported regarding the outcomes of breast reconstruction in this high-risk group. The current study presents the largest series of immediate breast reconstruction in this population and aims to evaluate reconstruction outcomes and examine differences between implant-based and autologous reconstructions.

METHODS: A retrospective review of records from a 10-year period at two institutions was performed. Patients with prior mantle radiation for Hodgkin’s lymphoma therapy who subsequently underwent mastectomy with immediate reconstruction were identified and included for analysis. Patient demographics, clinical characteristics, and outcomes including complications and operative revisions were collected. Univariate and multivariate analyses were performed to examine differences between implant-based and autologous reconstructions.

RESULTS: A total of 99 breast reconstructions were performed in 53 patients. 81 reconstructions were implant-based and 18 were autologous. Patients with autologous reconstructions were younger than implant-based reconstructions (42±6.5 vs 47±8.8 years, p<0.05), otherwise, the groups were similar with respect to BMI, medical comorbidities, oncologic diagnosis, and therapy. The time between mantle radiation and reconstruction was similar for implant-based and autologous groups (23.4±9 vs 21.3±6.1 years, p=0.6). The overall breast complication rate was not statistically different between the implant-based and autologous groups (35% vs 16%, p=0.16). Three implant-based reconstructions (3.7%) failed requiring explantation, and there were no complete flap losses in the autologous group. Autologous reconstruction group was associated with over 5-fold higher rate of unplanned revisions compared to the implant-based reconstruction group (OR: 5.29, 95% CI: 1.24–22.51, p=0.025).

CONCLUSION: Immediate breast reconstruction in patients with prior mantle radiation can be achieved safely with an acceptable complication profile utilizing both implant-based and autologous techniques. Autologous breast reconstruction is associated with higher rate of revisions compared to implant-based breast reconstruction.

Radiation of the Breast: Optimization of Treatment Planning with a Gas-Filled Tissue Expander

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INTRODUCTION: Radiation of the breast with a saline tissue expander in situ has been managed successfully for many years despite the presence of an embedded metallic injection port. A new breast tissue expander has been introduced that is filled with carbon dioxide released via remote control from a stainless-steel reservoir located within
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

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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...