Technique to Promote Symmetry in Two-Staged Bilateral Breast Reconstruction in the Setting of Unilateral Post-Mastectomy Radiation

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Introduction: Bilateral breast reconstruction in the setting of unilateral post-mastectomy radiation therapy (PMRT) remains one of the most difficult reconstructive challenges due to significant radiation-induced asymmetry from capsular contracture and superior migration of the irradiated reconstructed breast. We describe a novel and straightforward intraoperative technique for creating compensatory asymmetry to maximize post-radiation symmetry in immediate bilateral tissue expander (TE) and acellular dermal matrix (ADM) reconstruction requiring unilateral PMRT.

Materials and Methods: A cohort of 25 bilateral TE/ADM breast reconstructions with planned unilateral PMRT was performed using this approach and outcomes were reviewed. On the PMRT side, the ADM edge was inset to a lower inframammary fold (IMF) position resulting in a near "bottoming-out" effect. On the non-PMRT side, the ADM was inset using a triple point stitch onto the IMF in a higher chest wall location. The planned PMRT side TE was over-expanded and second-stage exchanges were performed 6+ months post-PMRT.

Results: Post-PMRT results showed improved symmetry as the PMRT side migrated superiorly to match the contralateral non-irradiated side. Minimal pocket or IMF adjustments were required during second-stage procedures, with just six patients (24%) requiring minor lowering and one patient (4%) requiring elevation of the PMRT side IMF. Thus, a majority (72%) of patients undergoing bilateral mastectomy and unilateral PMRT did not require any IMF modifications during the second-stage procedure.

Conclusion: A differential ADM inset and TE pocket creation for bilateral TE/ADM breast reconstructions with planned unilateral PMRT can minimize the typical adverse aesthetic effects of PMRT on reconstruction results and maximize symmetry.