

Discussion: Should Immediate Autologous Breast Reconstruction Be Considered in Women Who Require Postmastectomy Radiation Therapy? A Prospective Analysis of Outcomes

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Breast cancer treatment continues to evolve as multidisciplinary specialties challenge established practice concepts to improve patient outcomes. Much has been written about the evolution of mastectomy, from radical to modified radical and now skin- and nipple-preserving mastectomy procedures without oncologic detriment to the patients. In a similar way, radiotherapy has undergone significant changes in the past 50 years. The delivery of radiation has moved from rudimentary two-dimensional planning with cobalt to more targeted three-dimensional planning with intensity-modulated radiation therapy, volumetric-modulated arc therapy, and proton therapy with pencil beam scanning. This specificity has allowed improved targeted therapy and reduced the bystander effect on surrounding normal tissue, and this has been essential to the paradigm shift of radiation therapy as a salvage modality to radiation therapy as an integral part of modern breast cancer treatment. This was demonstrated in the 2005 Oxford Collaborative study, which showed a decrease in locoregional recurrence from 23 percent to 6 percent and an overall survival advantage of 5 percent at 15 years in patients following mastectomy.¹ Standard dose regimens of 50 Gy are typically prescribed; however, some differences remain in the total dose, fractions delivered per session, and whether incisional and chest wall boost doses are given. As the delivery of radiotherapy continues to improve, it seems the indications continue to expand. Current literature supports radiation therapy for tumors larger than 5 cm and four or more lymph nodes and consideration of radiation therapy for select tumors smaller than 5 cm and one to three lymph nodes.² Therefore, radiation therapy is becoming an increasingly common component of the multidisciplinary plan

for breast cancer care, and understanding how it impacts normal tissue and breast reconstruction is critical to deliver the best treatment option at the right time for each individual patient.

Autologous reconstruction is an ideal option for many patients following mastectomy, particularly in the setting of radiotherapy. The transition from predominantly superiorly based inflow to inferior inflow has improved overall perfusion to the flaps, and it has arguably improved abdominal wall morbidity. As technical experience has been gained, the incidence of total and partial flap loss has decreased and the rates of fat necrosis continue to improve. Unquestionably, the vitality of the flap in immediate reconstruction is related directly to the outcome following radiation therapy.

Immediate autologous reconstruction has several advantages, including the psychological benefit of awakening from mastectomy surgery with a breast mound, and the practical benefits of fewer operations and decreased operative time if the reconstruction is begun simultaneously with the mastectomy. However, experience gained from large series in the past showed high incidences of fat and flap necrosis, volume loss, and complications when immediate autologous reconstruction was performed before radiation therapy.³ Therefore, delayed autologous reconstruction has been the most common choice in patients destined to undergo postmastectomy radiotherapy. However, with improvements in surgery and radiation techniques combined, several authors have begun to reexplore immediate autologous reconstruction in this setting.

The Mastectomy Reconstruction Outcomes Consortium Study offered a potential way to answer the question of whether immediate autologous reconstruction should be performed in women who require postmastectomy radiation therapy. In this article, immediate reconstruction was performed in 108 patients. This cohort was unique in having no total or partial flap losses

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and a very low (3.7 percent) rate of fat necrosis, which is a testament to the technical skills of the surgeons involved. Although the study plan was meant to have multicenter representation, the vast majority of these patients (93.5 percent) came from one center. Information regarding the delivery of radiotherapy specifics was not collected at all sites, but the regimen at this center used slightly smaller fractions of radiation for delivery compared to other sites where doses were known, there were no radiation boosts, and selected nodal treatment was performed. In comparison, the delayed cohort (67 patients) offered a true multicenter experience and reported rates of partial flap necrosis (7.5 percent) and fat necrosis (10.5 percent) comparable to those in the literature. Overall, there was no difference in total breast complications between immediate and delayed reconstruction. Furthermore, patient-reported satisfaction scores between immediate and delayed cohorts were similar at 1 and 2 years.

The results from this study show that as surgery and radiation therapy continue to evolve, immediate breast reconstruction should definitely be considered. However, the question of whether immediate breast reconstruction should

be performed can only be answered at each institute based on surgical expertise and radiotherapy delivery unique to each health care system. Future studies in radiotherapy may help guide us to the best targeted delivery to decrease locoregional recurrence and improve survival and minimize unnecessary skin and flap changes.

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