

Determining the Oncologic Safety of Autologous Fat Grafting as a Reconstructive Modality: an Institutional Review of Breast Cancer Recurrence Rates and Surgical Outcomes

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INTRODUCTION:

The increasing use of autologous fat grafting (AFG) in breast cancer patients has raised concerns regarding its potential to obscure radiographic monitoring and enhance cancer recurrence. Given the paucity of strong data addressing these concerns, this study evaluates patient outcomes and tumor recurrence following oncologic resection and AFG.

MATERIALS AND METHODS:

Retrospective chart review identified patients who underwent oncologic resection for breast cancer or carcinoma in situ, followed by breast reconstruction, from 2010 to 2015. 524 patients met inclusion criteria: 148 (28.2%) patients underwent AFG (test group), while 376 (71.7%) patients did not undergo AFG (control group). Patient demographics, cancer characteristics, oncologic treatment, surgical treatment, surgical complications, local recurrence, and distant metastases were analyzed.

RESULTS:

Both patients who underwent AFG and those who did not were of similar BMI, smoking status, and BRCA status. Patients who underwent AFG were significantly younger (47.6 years vs. 52.1 years, $p<0.05$), and were less likely to have diabetes (2% vs. 7.2%, $p<0.05$) than those who did not undergo AFG.

In per breast analysis, the two groups demonstrated similar surgical indication rates (therapeutic vs. prophylactic), distribution of Stage 1, 2, and 3 cancer, and similar rates of chemotherapy and radiation. DCIS was more common in the AFG group (20.6% vs. 14.5%, $p=0.013$), while hormone therapy was less common (52.4% vs. 67.5%, $p=0.012$). Patients underwent 1 to 4 AFG procedures: 2 in 16.9%, 3 in 3.2%, and 4 in 0.4%.

Mean follow-up time from initial surgery was 42.1 months in the AFG group and 34.5 months in the control group ($p<0.01$). The overall complication rate following AFG was 9.4%; with a 1.7% infection rate, 1.3% fat necrosis rate, 6.0% oil cyst rate, and 0.4% wound healing problem rate. There were no incidences of seroma or hematoma following AFG. Additionally, the AFG and non-AFG groups demonstrated no significant differences in overall reconstructive complication rates (25.2% vs. 23.5%), or individual rates of infection, wound healing complications, hematoma or seroma formation, implant exposure, or flap failure. Among breasts receiving surgery for therapeutic indications (AFG $n=162$, control $n=414$), there were similar rates of local recurrence: AFG group 2.5%, control group 1.9% ($p=0.688$). Interestingly, the mean time to recurrence was significantly longer in the AFG group (52.3 vs. 22.8 months from initial surgery, $p=0.02$).

CONCLUSION:

AFG is a powerful tool in breast reconstruction. This large single-institution study, which evaluates patients of comparable BRCA status, cancer staging, chemotherapy, and radiation therapy, provides valuable evidence-based support for its oncologic safety.