

## Identifying Risk Factors for Fat Necrosis After Autologous Fat Transplantation to the Breast

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**Purpose:** Fat necrosis is a concerning complication after autologous fat grafting for breast reconstruction and aesthetic augmentation. It can present as a palpable mass concerning for malignancy. As such, we sought to evaluate risk factors for fat necrosis and identify methods for prevention.

**Methods:** We reviewed 83 consecutive patients who underwent large volume fat transplantation to the breast performed by the senior author between September 2011-May 2015. Patients with a minimum of 100cc of transplanted fat were included.

**Results:** A total of 148 breasts underwent 170 autologous fat transplantations. Indications included 72 reconstructions after surgical therapy for breast cancer and 98 cosmetic augmentations. BRAVA was used in 133 cases- 45 reconstructions and 88 augmentations. Twenty-three cases had previous radiation therapy. Seventeen breasts had simultaneous implant exchange with fat (SIEF). Mean age was 48 years, with average graft volume of 336.9cc(100 - 1000), and average length of follow-up 485 days(14 - 1219). Overall incidence of necrosis was 32.9%, with 47.8% in irradiated patients compared to 30.6% in nonirradiated patients. Increased rates of necrosis were demonstrated in groups with fat grafting volumes over 500cc ( $p=0.001$ ) and those who underwent SIEF( $p=0.003$ ). Within a group of six patients that had bilateral fat grafting with unilateral radiation, there was a significant increase in necrosis on the radiated side ( $p=0.015$ ). In a cohort of non-BRAVA patients, reconstruction (compared to augmentation) was associated with necrosis ( $p=0.036$ ).

**Conclusion:** In this study, increased rates of fat necrosis were associated with volumes greater than 500cc, SIEF, radiation, and non-BRAVA reconstruction.