

Mammographic Changes After Stem Cell Supplemented Fat Transfer to the Breast Compared With Changes After Breast Reduction: A Blinded Study

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Background: While interest in fat grafting for soft tissue defects has grown, the question of whether lipoaugmentation-induced breast changes impede detection of breast cancer persists. Common breast surgeries, including reduction mammoplasty, are known to produce radiographic abnormalities without impeding cancer screening. Therefore, we sought to assess whether lipoaugmentation leads to a greater number of suspicious mammographic findings compared to reduction mammoplasty.

Methods: Twenty-seven Japanese women with normal pre-operative mammograms before aesthetic lipoaugmentation underwent repeat mammograms twelve months after surgery. As a control group, one year post-surgical mammograms from twenty-three American patients of similar age undergoing breast reduction were compared.

Eight attending radiologists reviewed each mammogram in a blinded fashion. Analysis of differences in outcomes accounting for repeated readings and radiologist tendencies was performed using a linked generalized estimating equation.

Results: The average volume of fat injected per patient was 526.5cc. Fifty mammograms were reviewed by eight radiologists. Differences between radiologists were relevant ($p < 0.10$) for each type of finding. When accounting for this and repeated readings, the differences in abnormality rates were non-significant for oil cysts ($p = 0.15$), benign calcifications ($p = 0.1$), and calcifications warranting biopsy ($p = 0.1$). Scarring ($p < 0.001$) and masses requiring biopsy ($p < 0.001$) were significantly more common in the breast reduction cohort (Table 1).

Table 1. Results of Radiologic Assessment Across All Readings

	Breast Reduction N = 184	Lipoaugmentation N = 216	P-value
Oil Cysts	58 (31.5%)	55 (25.5%)	0.18
Scarring	158 (85.6%)	38 (17.6%)	<0.001
Calcifications, Benign/Fat Necrosis	50 (27.2%)	37 (17.1%)	0.02
Calcifications, Warranting Biopsy	3 (1.6%)	10 (4.6%)	0.16
Mass or Distortion, Warranting Biopsy	25 (13.6%)	6 (2.8%)	<0.001
BIRADS (mean \pm sd)	2.3 \pm 0.8	1.8 \pm 0.8	<0.001

Rates of immediate biopsy versus followup study recommendation were non-significantly greater in the breast reduction group ($p=0.12$). Differences in suggested followup time favored the lipoaugmentation cohort ($p<0.01$). BIRADS scores were worse after breast reduction ($p<0.001$).

Conclusions: Technological advances have the potential to broaden the role of fat transfer in clinical plastic surgery. Breast lipoaugmentation has been controversial due to concerns regarding interference with cancer surveillance. We have demonstrated that when compared to a widely accepted procedure, lipoaugmentation with stem cell enrichment produces lower rates of radiographic abnormalities and a more favorable BIRADS score.

Financial Disclosures: None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.