

**DEMONSTRATION OF TISSUE ALTERATIONS BY ULTRASONOGRAPHY,  
MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY, AND  
HISTOLOGY IN BREAST CANCER PATIENTS WITHOUT  
LYMPHEDEMA AFTER AXILLARY NODE DISSECTION**

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*ABSTRACT*

*Estimates of the incidence of arm swelling after axillary lymph node dissection for breast cancer range from 10 to 37%. Yet the subjective sensation of edema is described in at least 54% of patients. The purpose of this research was to examine the structural changes occurring in the subcutaneous tissue that might explain these subjective complaints using multiple imaging modalities. Two female cadavers with unilateral breast amputation and axillary dissection were studied. The dermal and subcutaneous layers of both arms were visualized with high frequency ultrasonography, and magnetic resonance imaging and spectroscopy (MRS), and tissue biopsies were taken for histological evaluation.*

*On the operated side, ultrasound imaging showed a hyperechogenic subcutis and the fat-to-water relationship in adipose cells was higher as measured by MRS. Dissection of the arms revealed structural adipose tissue changes, which were confirmed by microscopic evaluation.*