

## LYMPH CIRCULATION IN THE BREAST AFTER RADIOTHERAPY AND BREAST CONSERVATION

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### ABSTRACT

*The aim of this study was to investigate the breast lymph circulation and skin blood circulation after radiotherapy and breast conservation. In 23 patients who had undergone lumpectomy for breast cancer (mean age 58 years, range 44-75) and 12 patients with lumpectomy for benign lesions (mean age 51 years, range 33-72), lymph circulation in the breast was measured by <sup>99m</sup>Tc-nanocolloid clearance and skin circulation by Laser Doppler Fluxmetry (LDF). Measurements were made 2-5 years after radiotherapy (50 Gy) in the former group and at a corresponding time in the latter. The lymph circulation was measured 2 cm above and medial or lateral to the areolar border in the quadrant not operated on for carcinoma. Skin circulation was measured at corresponding sites. The lymph circulation expressed as the ratio of <sup>99m</sup>Tc- nanocolloid clearance in the operated irradiated to that in the non-operated (radiation 2-4 Gy) breast was 2.33 (2.66) (median, interquartile range) (p value 0.01) and the skin circulation ratio over the corresponding area was 0.92 (0.21). Corresponding ratios in the non-radiotherapy group were 2.07 (1.96) (p value 0.03) and 1.04 (0.18) respectively. Compared with the control breast (i.e., the non-operated non-irradiated breast), there was a 4-fold increase in lymph flow in the operated, irradiated breast, a 2.5-fold increase in the contralateral non-operated (2-4 Gy) breast and a 1.5-fold increase in the operated non-irradiated breast. Radiotherapy after breast conservation surgery leads to increased long-term changes in basal lymph circulation and smaller increases in lymph flow in the contralateral breast receiving 2-4 Gy and after surgery. If maximal lymph transport capacity is unchanged, edema may be more likely in this circumstance of reduced lymphatic transport reserve.*