

IMRT heart sparing in post-operative left breast cancer radiation therapy: A dosimetric study

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Abstract

Purpose: To compare and evaluate cardiac radiation doses in intensity modulated radiotherapy (IMRT) and 3D-conformal radiotherapy (3D-CRT).

Patients and methods: Sixty patients with left breast cancer were included in this study. IMRT and 3D-CRT plans were generated for each patient using XIO planning system and analyzed with respect to doses to heart. Parameters used were (V30Gy, V40Gy, Dmax, Dmean, NTCP).

Results: Heart radiation doses were significantly better in IMRT than in 3D-CRT particularly V30Gy ($5.221 \pm 3.052\%$ VS $13.184 \pm 5.868\%$ with P-value=0.001), V40Gy ($0.381 \pm 0.795\%$ vs $8.791 \pm 4.546\%$ with P-value=0.001), and NTCP ($0.7563 \pm 0.287\%$ vs $2.436 \pm 1.051\%$ with P-value=0.001).

Conclusion: IMRT technique spared more heart volume from receiving excess radiation doses. NTCP values were significantly better in IMRT than in 3D-CRT technique.