Evaluation of pendulous breast patients undergoing radiotherapy with and without bra immobilization

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Purpose

Patients with pendulous breasts who undergo radiotherapy in the supine position often encounter challenges such as positioning due to the mobility of the target volume, dose constraints to the organs-at-risk (OARs) as well as higher risk of radiation dermatitis due to the infra-mammary fold [1-2] (Fig. 1). For left-sided treatment, the cardiac dose is often at risk of exceeding constraints [3-4]. This study evaluated the OARs doses of pendulous breast patients treated with and without an immobilization bra.

Figure 1. Radiation dermatitis

Materials & Methods

A retrospective dosimetric study of 20 patients, 10 treated with Chabner XRT® bra (Fig. 2) and 10 treated without, with 5 right-sided and 5 left-sided pendulous breast cancer patients treated with radiotherapy to the breast (40Gy/15#) in each group was evaluated. Three-dimensional conformal radiotherapy using opposing tangential fields with field-in-fields to increase dose homogeneity was used to plan for the radiation treatment.

Data was matched based on similar anatomical parameters such as breast separations measured from anterior surface to posterior field edge along the central axis and beam path from medial to lateral field edge. Plan parameters such as volume of lung receiving 20Gy and mean heart dose were compared between the two groups of patients.

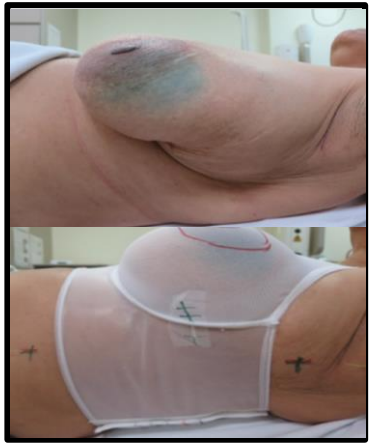

Figure 2. Before and After Chabner Bra

Results

All the left-sided breast cases treated with the Chabner XRT® bra reported lower mean heart dose 1.24Gy vs 2.9Gy compared to those without. Similarly, they had lower V20Gy of the left lung compared to those without (3.15% vs 5.57%) (Fig. 3). For the right-sided cases, 4 out of 5 patients treated with Chabner XRT® bra had lower V20Gy of the right lung compared to those without (4.03% vs 5.3%).

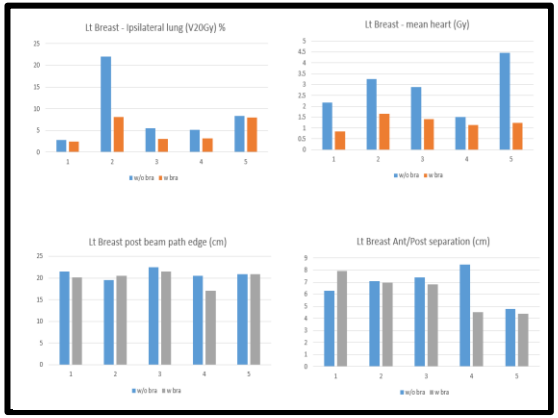

Figure 3. Comparison of left-sided heart and lung sparing for patients treated without vs with bra [5].

Acknowledgments

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