

HYBRID IMRT TREATMENT FOR LEFT CHEST WALL/BREAST AND COMPARISON WITH SEVEN FIELD IMRT PLANNING

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Purpose: Hybrid intensity-modulated radiotherapy (IMRT) treatment for chest wall/breast in 5.66:1 ratio and its comparison with seven field IMRT planning.

Methods & Materials: For hybrid IMRT, we delivered 86% of prescription dose using conventional tangential beam without using any wedge or beam modifier and remaining dose were delivered using IMRT beam having two same tangential differ by 5 degree gantry angle from lateral tangential side. To avoid beam divergence to lung half beam block technique was used simultaneously with monoisocenter share with supracleval fossa (SCF). Twenty five left breast/ chest wall cases were selected for the study. Average volume of treated areas are 991cc, 813cc, 109.18cc, 78.51cc for clinical target volume (CTV) whole breast, CTV chest wall, planning target volume (PTV) SCF and PTV breast respectively. Average central lung distance (CLD) was found to be 2.78 cm which corresponds to 29.4% irradiation of lung volume on an average and maximum heart distance (MHD) of 2.82 (avg.) corresponds to irradiation of 13.6% of heart volume. Mean heart dose goes up to 7.27 Gy for all 25 patients. V20 for ipsilateral lung were 13% more for chest wall/breast with supracleval fossa field compare to those without SCF using hybrid IMRT technique.

Results: Hybrid IMRT treated significantly smaller total and contralateral lung volumes with low doses than seven field IMRT plan. Largest V5, V10 reductions were for ipsilateral lung (-35.62%, -19.7%), total lung (-18.52%, -9.79%) and heart (-29.39%, 3.3%). PTV's coverage were improved for IMRT plans and high dose volumes V20, V30 for ipsilateral lung, total lung and heart is reduced by on an average 3.77%, 12.4%, 1.7%, 5.57%, 5.42%, 9.19% as compared to hybrid IMRT plans.

Conclusions: Hybrid IMRT can be beneficial over IMRT technique as compare to low dose volume sparing of lung and heart and can be adopted clinically for breast/chest wall treatment.

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