

AbstractID: 2954 Title: A Pseudo-tangential IMRT Technique for the Whole Large Left Breast Radiation Therapy Using Helios/Eclipse System

**Purpose:**

A pseudo-tangential IMRT (PT-IMRT) technique was developed to achieve high dose uniformity for the whole large left breast (separations >24 cm and volumes > 1200cc) radiation therapy and to reduce the early and late skin and subcutaneous reactions.

**Materials and Methods:** The proposed PT-IMRT technique basically combines two pairs of tangential beams with two additional beams angled less than 10 degree from each side. In most situations, the two additional beams were angled anterior to the tangential plane. An additional OAR was drawn around the high dose (>110%) area at the lateral side. The PT-IMRT is an inverse planning approach. After the optimization, 2 cm skin flash was added to each beam. Multiple static segments were used for the IMRT delivery. For comparison purpose, four other plans were also run for each patient: an inverse tangential-IMRT plan (T-IMRT), a 3D plan, a forward field-in-field (FIF) plan and a forward electronic compensator (EC) plan (all use the tangential beams only.) In-homogeneity correction was included in all plans. Dose volume histogram (DVH) was used for the evaluation of all plans.

**Result:** The PT-IMRT provided the best dose volume uniformity for PTV. The dose volume to heart and left lung for doses less than 15 Gy was 2-3% higher for PT-IMRT, but was 2-3% lower for doses larger than 25 Gy. The dose increment to a point 1 cm deep and 5 cm right to the mid-sternum inside the right breast was 2-5% higher compared to other four plans. The normal tissue volume for doses larger than 105% was significantly reduced with the PT-IMRT compared to the other four plans.

**Conclusion:** The PT-IMRT resulted in the most homogenous dose distribution among all the five techniques and has the potential to reduce the early and late skin and subcutaneous reactions.