AbstractID: 1517 Title: Clinical Implementation of Hypofractionated Treatment for Breast Cancer Using Optimized Photon and Electron Beams

A new hypofractionated treatment technique has been implemented for breast treatment using optimized photon and electron beams. The whole breast was treated to 45Gy using tangential photon IMRT and the tumor bed was treated to a total of 56Gy with an incorporated electron boost. The treatment is 20 fractions over 4 weeks which is at least 10 fractions less than standard conventional treatment. Biologically effective doses to the whole breast and tumor bed were calculated and they were equal to those of the conventional technique. After each patient was simulated using a conventional simulator and scanned using a CT scanner, a Monte Carlo based IMRT plan was generated for the whole breast treatment using two opposite tangential photon beams with a prescription dose of 2.25Gy per fraction. Then electron beams were created based on the shape and the depth of the tumor bed. The intensities of electron beams were optimized based on the exiting dose given by the photon IMRT to ensure the tumor bed received at least 2.8Gy per fraction. Patient setup for simulation and treatment was the same as the conventional technique. The daily treatment can be finished in 15 minutes. 4 patients have been treated using this new technique and the skin dose at the center of the electron field was measured using TLDs. The skin dose was lower than 2Gy per fraction. The observed acute side effects have been limited to mild grade 1 skin erythema. The technique has proved practical for breast cancer treatment.