Photon beam intensity modulation is known to improve treatment volume dose uniformity in tangential breast irradiation. However, the effects of different intensity modulation techniques on the contralateral breast dose are not well understood. When the radiation-induced cancer risk is a concern, the optimal treatment technique should give both a uniform dose distribution in the treated breast volume and a minimal dose to the contralateral breast tissue. In this study we measured the Rando phantom contralateral breast dose using TLD chips at different points following the study by Kelly et al.[1] The breast irradiations were designed with PLanUNC[2] using different intensity modulation methods including 1) conventional and virtual wedge techniques, 2) physical compensators[3] designed by a dose optimization algorithm[4], and 3) multiple MLC field segments. In this study the MLC field segments were computed based on the intensity maps predetermined by the dose optimization algorithm used for designing the physical compensators. The comparison of the measured contralateral breast doses and the dose uniformity of the treated breasts from the aforementioned intensity modulation techniques will be presented.

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