

AbstractID: 1182 Title: Simultaneous Integrated Boost for Breast Cancer Using IMRT: a Radiobiological and Treatment Planning Study.

The treatment of early stage breast cancer with breast conserving surgery (BCS) and radiotherapy (RT) is highly effective with limited toxicity. However, a substantial number of women eligible for BCS are still treated with mastectomy. The long duration of the RT treatment may be a factor that discourages women to choose BCS. The purpose of this work is to explore the possibility of reducing the treatment time by delivering the boost to the tumor bed simultaneously with the whole breast schedule using intensity modulated radiotherapy (IMRT). In doing so, the treatment time is reduced from 6 to 7 weeks to 5 weeks. We considered a series of schedules that match the biological effect of the conventional treatment. We selected one possible prescription dose as a working example and investigated the dosimetric merits of the scheme in two patients. One patient had a shallow tumor that is typically treated with an electron boost and the other patient had a deep-seated tumor that is commonly boosted with tangential photon beams. For each patient several plans were generated: an IMRT forward plan, an IMRT inverse plan, and for the purpose of comparison, a “conventional” plan with the boost delivered simultaneously with the whole breast treatment. We find that it is biologically and dosimetrically feasible to reduce the overall treatment time for breast radiotherapy by using an SIB IMRT boost. For a selected patient group, the IMRT plan with a new regimen can be dosimetrically equal or better than the conventional plan.