

AbstractID: 4899 Title: Evaluation of surface and superficial dose for head and neck treatments using conventional or intensity-modulated techniques

With increased use of intensity-modulated radiation therapy (IMRT) techniques questions have arisen as to selection of an optimum treatment approach when either superficial sparing or treatment is desired. Other work has pointed out the increased skin dose resulting when multiple tangential beams are applied to head and neck treatment, as is the general case in IMRT planning. Helical tomotherapy might be expected to result in even further enhanced skin dose compared with conventional bilateral field treatment. We have designed a typical nasopharyngeal target volume in an anthropomorphic head and neck phantom. Three different treatment techniques have been used to optimally treat this target, including bilateral static fields, a standard 8 field IMRT approach and helical tomotherapy. The phantom was immobilized in a standard treatment position and treated on a Varian 2300cd linear accelerator and on a Hi-Art Helical tomotherapy unit. Thermoluminescent dosimeters (LiF) were placed on the surface of the phantom at a number of test positions. Kodak EDR2 films were also sandwiched between three of the phantom sections in the treated volume. Measured doses at the surface and as a function of depth are compared with the planning system predictions for each treatment technique. Preliminary surface dose measurements indicate 10-15% higher lateral surface doses and 20-30% higher anterior doses for both IMRT and tomotherapy, as compared with bilateral treatment, but lower intermediate doses 5cm anterior to the lateral CA for both IMRT techniques. The tomotherapy planning system appears to overestimate surface doses while Eclipse appears to better estimate these doses.