

AbstractID: 9048 Title: Feasibility of helical tomotherapy on a wide superficial area treatment.doc

**Purpose:**

To investigate the feasibility of helical tomotherapy on a wide superficial area, and its accuracy of calculation near the superficial region

**Method and Materials:**

Two types of treatment plans were made with the cylinder-shaped 'cheese phantom'. In the first plan, 2 Gy was prescribed to the 1 cm thick ring shaped target at the surface area. In the second plan, we expanded the surface by 5 mm so that the target includes the 5 mm thick air ring. The inner part of the phantom below depth 2 cm was selected as a complete block so that we can make sure only the surface area can be irradiated. To measure the surface dose and the depth dose profile, an EDR2 film was inserted into the phantom. The film measured doses and planned doses were compared

**Results:**

After irradiation, the surface dose of the former case was about 120 cGy and the latter case was about 130 cGy. 95 % of the prescribed dose could be obtained from roughly at 2 mm depth in both cases. The maximum dose was about 110 % of the prescribed dose. As the depth became deeper, the dose decreased rapidly, and at 2 cm depth, it became 20 % of the prescribed dose. However, in the air region and up to 2 mm depth in the phantom, the planning system overestimated superficial dose.

**Conclusion:**

We found that helical tomotherapy could be applied usefully to treatment of wide area of the skin with curvature. However, to treat the more shallow regions, it is safe to bolus.

**Conflict of Interest (only if applicable):** Research sponsored by TomoTherapy Corporation