

AbstractID: 11199 Title: Evaluation of a new reclining technique for improved patient set up

Purpose: To investigate patient set-up accuracy using a reclining table top for external beam radiotherapy and compare it with conventional methods.

Method and Materials: A patient positioning system has been constructed which allows the smooth translation from standing position into horizontal position by means of reclining a treatment table. A conventional immobilization bag has been used as support for the patient. The daily positioning procedure has been performed on the treatment table. Once the patient stands comfortably in the immobilization position, he is reclined to horizontal position approximately 95 cm above floor height. For patient position localization, a laser scanner is used to register the patient position. The same person has been used for investigating the accuracy in positioning using a traditional way of immobilization, direct horizontal immobilization on the couch, as well. In this procedure the patient is immobilized horizontally, directly on the treatment couch, and adjusted according to the body marks. Once either set-up procedure has been finalized, the exact position on the table was monitored using a laser scanning system. The position-of-the-day was compared using the laser scanner towards a reference data set obtained at the day of first immobilization. The deviation from this position was given in the x-, y- and z-direction. This procedure was carried out during 30 separate occasions.

Results: The daily deviation for the correction for vertical and horizontal set-up respectively was found to be $-0.6\sigma \pm 0.3$ mm and $-0.9\sigma \pm 0.5$ mm in lateral-, $-0.7\sigma \pm 1.8$ mm and $1.5\sigma \pm 4.7$ mm in longitudinal- as well as $-0.2\sigma \pm 0.7$ mm and 0.7 ± 0.4 mm in vertical direction. The full reclining set-up takes 1 minute.

Conclusion: Daily patient re-positioning, accuracy and consistency can be improved by this practice-changing approach; using vertical and reclining set-up.

Conflict of Interest: Research sponsored by Oncolog Medical and C-Rad.