

AbstractID: 1349 Title: Changes in prostate position over time periods typical of IMRT treatment times

Current forms of image guidance for prostate radiation therapy are designed to align the prostate in the beam port prior to each radiation fraction. The treatment time for intensity modulated radiation therapy can range from 15 to 30 minutes and few data are available on the intrafraction motion of the prostate.

A TomoTherapy unit is in operation at our facility and several prostate cancer patients were treated with the unit to date. Prior to each treatment fraction a mega voltage (MV) CT image is acquired and the visualization of implanted gold markers is used to correct the prostate position. Until a level of confidence in this procedure was established a second verification scan was acquired prior to treatment. The time between the two scans averaged about 28 Minutes. Thus, data on changes in the prostate position over a time period that is typical of IMRT treatment times was acquired.

Data from 2 patients and 70 treatment fractions are available to date. In 17 % of the cases a change in the prostate position > 3 but ≤ 5 mm was seen between the two MVCT scans. In 3 % a deviation > 5 mm was detected. In the lateral and sup./inf. directions the changes are mostly due to patient movement. In the ant./ post direction both organ and patient motion contribute equally. A strong difference was seen between the two patients. All, except one of the positional changes were recorded in one of the two patients.