

A program of Stereotactic Radiotherapy was recently implemented in our department, utilizing a commercial supplier for circular collimators, collimator mount and thermoplastic face mask (BrainLAB) and a commercial 3D Radiotherapy Treatment Planning system (ADAC Pinnacle³) for SRT planning. This is the first known use of a commercial, non-dedicated 3D treatment planning system for frame-based stereotactic radiotherapy or radiosurgery. Three patients have completed treatment at this time for courses of 25 to 30 fractions. Quality assurance films were taken daily using a 3mm tungsten sphere and 8 different couch and gantry angle combinations. The mean deviation of the image of the sphere from the center of the collimated beam was 0.64mm at the outset and increased to 0.66mm after 48 treatments. Daily recordings were made of the AP, VRT and LAT digital couch readouts (reported to the nearest tenth of a millimeter) at isocenter. Results indicate that Standard Deviation of the mean for setup error (visually aligning the isocenter with the target center) was in the range of 0.08 to 0.26cm for all three patients. Weekly measurements were also made of left and right BB markers. Couch coordinates were recorded and mean displacement relative to isocenter was compared to that calculated from the RTP code. Mean errors were in the range of 0.00 to 0.26cm. Numerous problems were encountered trying to combine systems from different manufacturers and several work-arounds had to be devised. This program verifies predictions that 3D RTP and stereotactic radiosurgery programs would some day merge.