AbstractID: 6547 Title: Using Beak Slit with MIMiC in Clinical IMRT

The Multileaf Intensity Modulating Collimator (MIMiC) was used for Intensity Modulated Radiation Therapy (IMRT) in our institute. The MIMiC consists of 40 tungsten leaves arranged in two rows, each with the ability to independently modulate the radiation pencil beam, and to optimize the treatment delivery. In order to further improve the conformity of the dose delivery, a Beak slit collimator was attached on the MIMiC to finely tune the beams. In commissioning the clinical use of the Beak slit, a new couch index was established. Film dosimetry was employed to obtain the penumbra profiles of both cross-plane and in-plane. As a clinic example, the Beak slit was used in the treatment of a patient with post excision of a glioblastoma multiforme. The Clinical Treatment Volume (CTV) was 2x3x1 cm^3. A treatment plan was generated using CORVUS3.0 (NOMOS Corp.), which included three arcs with gantry rotation from 210° to 150° clockwise. The Dose Volume Histogram (DVH) showed that 100% dose line covered 98% of the CTV. The space between 100% and 90% isodose line was 2.1 mm, and between 90% and 50% isodose line was 2.8 mm. It is found that the use of the Beak slit provided more conformal dose delivery than that using regular MIMiC, and the dose conformity was compatible with the conventional stereotactic system in fractionated radiosurgery treatment.