

AbstractID: 6414 Title: An Alternative IMRT SBRT Treatment Technique utilizing Solid IMRT

**Purpose:** To show an alternative method for providing IMRT for SBRT in a more efficient manner.

**Method and Materials:** Hypofractionated stereotactic body radiosurgery has shown very promising results in radiation oncology. At times it is difficult to limit the doses to normal structures using 3DCRT planning only. IMRT can offer a better advantage for obtaining a more optimal plan. With MLC based IMRT the number of monitor units and the limited dose rate created very high treatment times. If using any gating techniques treatment times increase to unmanageable times. Solid IMRT has shown to be a viable alternative for IMRT (Chang, 2004). Solid IMRT has shown that it can provide a more uniform dose for a moving tumor (Ehler, 2006). An investigation in IMRT with brass modulators was investigated as an alternative.

**Results:** Using 3DCRT with a typical 9-field treatment plan on average necessitated ~3000MU. If one needed to use IMRT to limit normal structure doses, with MLC based IMRT, approximately 8000MU was necessary. Using a dose rate of 300MU/min and a gating cycle with a duty cycle of 0.4, the amount of treatment time to deliver was close to 60 minutes. Using a compensator based IMRT delivery the number of monitor units needed was around 5000, but since a higher dose rate could be used, treatment times decreased to 21 minutes and 12.4 minutes for dose rates of 600MU/min and 1000MU/min respectively with the same gating technique.

**Conclusion:** The use of solid IMRT for treating SBRT lung lesions with hypofractionated doses clearly showed a lower treatment time for patients, allowing more time for image guides processes and increased comfort for patients.

**Conflict of Interest (only if applicable):**