

AbstractID: 1399 Title: Monitor Unit and Subsequent Leakage Radiation Increases with the Inclusion of Pelvic Lymphatics in the Treatment of Prostate Cancer with Intensity Modulated Radiation Therapy

This study attempts to evaluate the effect on radiation leakage with the inclusion of pelvic lymphatics in the treatment of prostate cancer with IMRT. A series of patients were planned to deliver 76 Gy to the prostate and proximal seminal vesicles and 56 Gy to 3 subsets of pelvic lymph nodes: (1) periprostatic and periseminal vesicle, (2) obturator, external and internal iliac and (3) all of the above plus the presacral nodes. All plans were generated using similar input parameters and attempts were made to meet our clinical acceptance criteria. Plans were generated for SMLC delivery at 10 MV using a 1 x 1 cm<sup>2</sup> minimum beamlet size on an accelerator with individual leaves that project to 1 cm width at isocenter as well as 5 x 5 mm<sup>2</sup> and 5 x 10 mm<sup>2</sup> on an accelerator with leaves that project to 5 mm width at isocenter. The resultant MU and modulation scaling factors increased with lymphatic extent from 1080 and 3.7, to 1397 and 4.8, and 1705 and 5.8 respectively for the 1 x 1 cm<sup>2</sup> beamlets. Values increased from 2008 and 6.8, to 2882 and 9.7, and 3611 and 12.2 respectively for the 5 x 5 mm<sup>2</sup> beamlets. Strategically oriented 5 x 10 mm<sup>2</sup> beamlets were used in an attempt to decrease MU. Values associated with these beamlets increased from 1333 and 4.5, to 2204 and 7.5, and 2267 and 7.7 respectively. The leakage radiation increase from the inclusion of pelvic lymphatics with IMRT may be substantial.