

## **Comparative Long-term Morbidity of Intensity Modulated vs. Conformal Radiation Therapy for Prostate Cancer. A SEER-Medicare Analysis**

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**Purpose/Objective(s):** Intensity Modulated radiation therapy (IMRT) for prostate cancer has been rapidly adopted over older techniques because of its potential ability to reduce treatment-related morbidity. We examined the comparative morbidity of IMRT vs. non-IMRT using the Surveillance, Epidemiology, and End Results (SEER)-Medicare linked database.

**Materials/Methods:** A total of 39,662 men with non-metastatic prostate cancer diagnosed between 2000 and 2005, 66 years or older, were included. Patients with claims for any IMRT-related procedure codes were considered to have received IMRT. Patients were stratified into two cohorts for analysis: those receiving radiation (RT) only within 1 year of diagnosis (definitive RT, n = 38,159), and those receiving RT within 3 years after surgery (post-operative RT; n = 1,503). These time windows were set to minimize inclusion of palliative RT. Logistic regression models were used to examine the odds of morbidity diagnoses and procedures occurring more than 12 months after IMRT vs. non-IMRT while adjusting for year, age, race, tumor grade, SEER region, Medicaid eligibility, and education.

**Results:** Overall, 28% of definitive RT patients and 33% of post-operative RT patients received IMRT. In the definitive RT cohort, IMRT was associated with a lower risk of non-incontinence urinary morbidity diagnoses (OR 0.91, p = 0.003), urinary incontinence diagnoses (OR 0.86, p < 0.001) and procedures (OR 0.85, p < 0.001), and erectile dysfunction diagnoses (OR 0.92, p = 0.02). In post-operative patients, IMRT was associated with a lower risk of GI morbidity diagnoses (OR 0.68, p = 0.03) and procedures (OR 0.62, p = 0.002). In no case was IMRT associated with increased morbidity.

**Conclusions:** Prostate cancer patients undergoing definitive IMRT experienced lower rates of urinary morbidity and erectile dysfunction, and those undergoing post-operative IMRT had lower rates of GI morbidity. Prostatectomy is the dominant factor causing incontinence and erectile dysfunction in the post-operative patients, likely explaining the lack of difference from radiation technique. This is a large-scale study examining the comparative outcomes of IMRT vs. non-IMRT for prostate cancer, and suggests improved morbidity outcomes for IMRT in both definitive and post-operative patients.