

Propensity Score Matched Comparison of Intensity Modulated Radiation Therapy (IMRT) versus Stereotactic Body Radiation Therapy (SBRT) for Localized Prostate Cancer: A Survival Analysis from the National Cancer Database

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Abstract

Objectives: No direct comparisons between extreme and conventional hypofractionation have been reported in randomized trials of the treatment of localized prostate cancer. The goal of this study is to use a propensity score matched (PSM) analysis with the National Cancer Database (NCDB) for the comparison of stereotactic body radiation therapy (SBRT) and intensity modulated radiation therapy (IMRT) for organ confined prostate cancer.

Methods: Men with localized prostate cancer treated with radiation dose greater than 72Gy for IMRT and 35Gy for SBRT to the prostate only were abstracted. Men treated with previous surgery, brachytherapy, or proton therapy were excluded. Matching was performed to eliminate confounding variables via PSM. Simple 1-1 nearest neighbor matching resulted in a matched sample of 5,430 (2715 in each group). Subset analyses of men with PSA>10, GS=7, and GS >7 yielded matched samples of 1020, 2194, and 247 men respectively.

Results: No difference in survival was noted between IMRT and SBRT at 8 years ($p=0.65$). A subset analysis of higher risk men with only PSA>10, GS=7 histology, and GS>7 revealed no difference in survival between IMRT and SBRT ($p=0.58$, $p=0.68$, and 0.62 respectively). Variables significant for survival for the matched group included: age ($p<0.0001$), primary payor ($p=0.0001$), Charlson/Deyo Score ($p=0.0002$), PSA ($p=0.0013$), Gleason score ($p<0.0001$), and use of hormone therapy ($p=0.02$).

Conclusions: Utilizing the NCDB, there is no difference in survival at 8 years comparing IMRT to SBRT in treating localized prostate cancer. Subset analysis confirmed no difference in survival even for intermediate and high risk patients based on Gleason Score and PSA. Until the results of the randomized trials are available (Royal Marsden-PACE, Scandinavian-HYPO-RT-PC, University of Miami-HEAT), this data helps support clinical treatment decisions.

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Abstract

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