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Radical prostatectomy versus high-dose-rate brachytherapy and hypo-fractionated external beam radiation combined with long-term androgen deprivation for high-risk prostate cancer

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Mori K.¹, Sasaki H.¹, Urabe F.¹, Honda M.¹, Yanagisawa T.¹, Aoki M.², Miki K.¹, Shariat S.F.³, Kimura T.¹

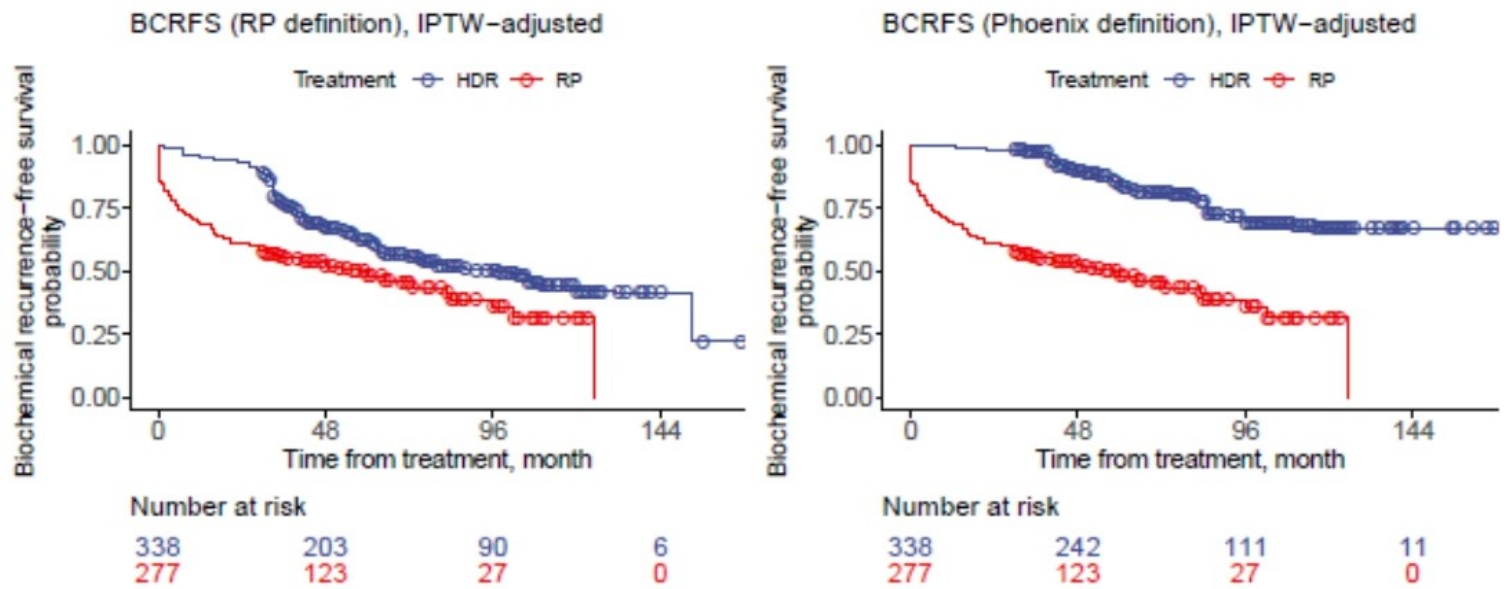
¹The Jikei University School of Medicine, Dept. of Urology, Tokyo, Japan, ²The Jikei University School of Medicine, Dept. of Radiology, Tokyo, Japan, ³Medical University of Vienna, Dept. of Urology, Vienna, Austria

Introduction & Objectives: There is currently a paucity of evidence on the comparative efficacy of radical prostatectomy (RP) versus high-dose-rate (HDR) brachytherapy and hypofractionated external beam radiation therapy (EBRT) combined with androgen deprivation therapy (ADT) in the high-risk (HR) prostate cancer (PCa) subpopulation. The aim of this study was therefore to compare these treatments for oncological outcomes in HR PCa patients.

Materials & Methods: This study retrospectively analyzed the data available for 636 patients with HR Pca undergoing RP or trimodal therapy between 2005 and 2018, with the endpoints defined as biochemical recurrence free survival (BCRFS) according to the Phoenix/RP definition, progression-free survival (PFS), and overall survival (OS). The multiple imputation method with predicted mean matching was used to impute missing data and generate 10 data sets. Each data set was examined for propensity score and mean inverse probability treatment weighting (IPTW) as well as for balance between the two groups and their results were pooled to compare for statistically significant differences between the two groups in restricted mean survival time (RMST) up to 120 months.

Results: After adjustment for IPTW, the two groups were found to be balanced in age, clinical T stage, PSA value, and Gleason score (SMD<0.1). During the 120-month follow-up, those undergoing RP reached BCR according to the RP definition ($P<0.001$) on average 30 months earlier than those undergoing HDR. Likewise, those undergoing RP reached BCR according to the Phoenix definition on average 50 months earlier than those undergoing HDR ($P<0.001$). While those undergoing RP had a shorter time to disease progression by 1.5 months on average than those undergoing HDR, this difference was not statistically significant. Again, while those undergoing RP had a longer time to death by 3.3 months on average than those undergoing HDR, this difference was not statistically significant.

Figure 1
BCRFS according to the Phoenix/RP definition



Conclusions: The oncological outcomes appeared to be favorable with either treatment. While BCRFS was significantly longer with trimodal therapy than with RP, this benefit did not favorably affect PFS or OS. Further study is required, with longer follow-up in a larger series of patients, to validate these findings, as well as to compare these treatments for their comparative safety.