Cureus

Stereotactic Body Radiation Therapy for Ultra-Large (>100cc) Prostate Glands: Oncologic, Toxicity and Patient-Reported Outcomes

Open Access
Abstract
Published 02/11/2022

Jonathan Haas [1] , Christopher Mendez [2] , Matthew Witten [3] , Aaron Katz [4] , Jonathan Lischalk [3] , Astrid Sanchez [5] , Todd Carpenter [3] , Michael Repka [3] , Herbert Lepor [6] , Daniel Haas [7] , Anthony Robayo [2] , Mia Kotikovski [2] , Seth Blacksburg [8]

1. Radiation Oncology, Perlmutter Cancer Center at Nyu Winthrop Radiation Oncology, Mineola, USA 2. Radiation Oncology, Perlmutter Cancer Center at NYU Langone, Mineola, USA 3. Radiation Oncology, Perlmutter Cancer Center, NYU Langone Long Island, Mineola, USA 4. Urology, Perlmutter Cancer Center at NYU Langone, Mineola, USA 5. Radiation Oncology, Winthrop University Hospital, New York, USA 6. Urology, Perlmutter Cancer Center at NYU Langone, Manhattan, USA 7. Radiation Oncology, NYU University, Manhattan, USA 8. Radiation Oncology, Northwell Health, Mineola, USA

Corresponding author: Jonathan Haas, jonathan.haas@nyulangone.org

Categories: Radiation Oncology, Urology
Keywords: large gland size, stereotactic body radiotherapy, prostate cancer

How to cite this abstract
Haas J, Mendez C, Witten M, et al. (February 11, 2022) Stereotactic Body Radiation Therapy for Ultra-Large (>100cc) Prostate Glands: Oncologic, Toxicity and Patient-Reported Outcomes. Cureus 14(2): a710

Abstract

Objective: Historically, caution has been warranted when irradiating large target volumes particularly those in close proximity to organs at risk. Prior literature has demonstrated an increased incidence of GI and GU toxicity when men with large prostates were treated with conventionally fractionated radiation therapy. However, there is very limited data regarding the clinical outcomes when SBRT is used as a definitive treatment modality in these patients with much larger glands. We explore the long term oncologic, toxicity, and patient reported outcomes of men treated with definitive SBRT with ultra-large prostate glands (⩾ 100 cc.)

Methods: Between April 2006 and March 2021, 4,181 patients with low and intermediate risk prostate cancer were treated with definitive robotic based SBRT at a large academic practice. 71 patients with prostate volumes greater than or equal to 100 cc were treated and had a minimum of 2 years follow-up. All patients were treated to a dose of 35-36.25 Gray in 5 fractions. 18 patients received androgen deprivation therapy prior to treatment. All patients in this analysis had a prostate volume greater than 100 cc as the final volume prior to receiving radiation whether they received ADT or not. Biochemical control was assessed using the Phoenix definition. All patients were given pre and post treatment EPIC questionnaires at defined intervals. Long-term rectal and urinary toxicity was defined using CTCAE version 5.0 and was characterized as occurring > 6 months post treatment. Estimates of biochemical disease-free survival and freedom from rectal and urinary toxicity were calculated using Kaplan-Meier method.

Results: A total of 71 patients were identified with ⩾ 100 cc prostate glands. Of these, 18 patients received ADT prior to treatment. Overall, the median prostate volume was 111.6 cc (range 100 - 209 cc). The D'Amico risk classification was low (n = 20) and intermediate (n = 51). The median age was 70 years (range 54 - 87 years) and the median pretreatment PSA was 8.7 ng/ml. The mean pre-treatment EPIC bowel and urinary scores were 92.98 and 84.77, respectively. One-month following SBRT, mean EPIC bowel and urinary scores worsened to 80.12 and 60.71, respectively. Three months following SBRT, mean EPIC bowel and urinary scores improved to 86.31 and 80.48, respectively. At 1 year, bowel symptomatology continued to improve to 87.72. At 1 year, bladder further declined to 66.07, but by 2 years both improved above baseline to 95.09 and 85.78 respectively. There were no high grade (3+) GI toxicities observed, though one grade 3 urinary retention was identified. Excellent oncologic outcomes were observed with a 5-year median PSA nadir of 0.7 ng/mL and a biochemical relapse free survival (bRFS) of 100% at 5 years.

Conclusion: SBRT has been demonstrated to be oncologically effective with minimal toxicity, and has become a more ubiquitous radiation option in men with localized prostate cancer. Although there is a historical reticence for treatment of men with large glands, we report excellent clinical outcomes. Five-year bRFS was 100% and grade 3+ urinary toxicity was 2%. Although EPIC scores transiently dropped at 1 and 3 months following SBRT, bowel resolution was seen by 1 year following treatment and bowel and urine both resolved above baseline at 2 years. The use of SBRT for the treatment of localized prostate cancer in men with ultra-large prostate gland is feasible with minimal toxicity.