

# Accepted Manuscript

Title: Late toxicity after post-prostatectomy intensity modulated radiation therapy: evaluating normal-tissue sparing guidelines

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PII: S2452-1094(18)30072-1  
DOI: <https://doi.org/10.1016/j.adro.2018.04.009>  
Reference: ADRO 193

To appear in: *Advances in Radiation Oncology*

Received date: 12-10-2017  
Revised date: 5-3-2018  
Accepted date: 30-4-2018

Please cite this article as: Adil S. Akthar, Anthony C. Wong, Akash D. Parekh, Greg Hubert, Christina H. Son, Charles A. Pelizzari, Stanley L. Liauw, Late toxicity after post-prostatectomy intensity modulated radiation therapy: evaluating normal-tissue sparing guidelines, *Advances in Radiation Oncology* (2018), <https://doi.org/10.1016/j.adro.2018.04.009>.

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**Title:** Late Toxicity After Post-Prostatectomy Intensity Modulated Radiation Therapy: Evaluating Normal-Tissue Sparing Guidelines

**Short Title:** Post prostatectomy RT dose constraints

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**Conflict of Interests:** No other authors have conflict of interest disclosures.

**Acknowledgements:** Preliminary data was presented at the 2015 American Society for Radiation Oncology (ASTRO) meeting in San Antonio, Texas. No financial support was received for the following project.

**Summary**

Dose-volume histogram toxicity relationships are poorly defined in men receiving radiation after radical prostatectomy (RP). We evaluated RTOG 0534 and institutional intact normal tissue-sparing guidelines, as well as dose to the bladder trigone, for their ability to minimize late toxicity. Over 90% of men were free from late G2+ toxicity 4 years after post-RP IMRT and no tested parameters were associated with late toxicity. Use of intact guidelines may be reasonable in the post-operative setting.

**Abstract: Purpose:** Dose-volume histogram (DVH)-toxicity relationships are poorly defined in men receiving radiation after radical prostatectomy (RP). We evaluated RTOG 0534 and institutional intact normal tissue-sparing guidelines, as well as dose to the bladder trigone, for their ability to minimize late toxicity.

**Methods and Materials:** 164 men received intensity-modulated radiation therapy (IMRT) to a median prostate bed dose of 66.6 Gy at a median of 22 months after RP. Androgen deprivation (ADT) and pelvic lymph node irradiation to a median dose of 50.4 Gy were used in 46%. DVH relationships for the rectum, bladder, trigone, and bladder-CTV were analyzed against Common Terminology Criteria for Adverse Events version 3.0 late grade 2+ (G2+) gastrointestinal (GI) and

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