Educational
Point / Counter Point:
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Has Photon RT Hit the Limits?

Bulent Aydogan, PhD
Associate Professor and Director of Medical Physics at UIC
University of Chicago

Speakers

Stephen Hahn, MD
Professor and Chair of Radiation Oncology, UT MD Anderson Cancer Center

Harald Paganetti, PhD
Professor and Director of Research, MGH

Cedric Yu, PhD
Professor of Radiation Oncology, University of Maryland
President and CEO, Xcision Medical Systems, LLC

Photon RT -> Proton RT

![Graph showing dose distribution between Photon RT and Proton RT](image)
Proton = Conformal Dose & Less Integral Dose

Photon RT -> Proton RT

“We’ve found a mass. The good news is we have weapons of mass destruction.”
Do we need much higher dose conformity than photon can provide?

A. Yes
B. No

Organ motion

Considering the fact that there are considerable uncertainties in RT from target definition to set up to organ motion to the extent of micro disease, do we want higher dose conformity than photon RT can provide?

A. Yes
B. No
The work of the Massachusetts General Hospital has tested a number of hypotheses:

- There is undoubtedly less of a “dose bath” to the anterior and posterior tissues but more radiation passes through the femoral heads and, because of beam uncertainty, the high-dose volume is actually a little larger with protons than IMRT.

**Does proton beam produce superior dose distributions over IMRT for prostate cancer?**

- Yes
- No
**Critical Organ Dose**

- Two regions associated with morbidities (the prostatic urethra and peri-prostatic nerve bundles) are treated equally with the two techniques.

- The volume of rectum treated likely depends more on image guidance, choice of margins, and the use or not of a rectal balloon than it does the delivery technique.

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**Can photon RT continue to improve in order to provide the dose conformity needed to further cancer care?**

A. Yes
B. No

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**Improvement in photon RT**
Do we need clinical trial evidence beyond planning comparison evidence of improved dosimetry to justify Proton RT?

A) Yes
B) No

The main reason we use proton to treat prostate cancer is the need for higher doses (more conformal) for better outcome

1. Yes
2. No
Case-controlled study from the Massachusetts General Hospital comparing patients treated with either high-dose proton beam radiation or low-dose-rate brachytherapy. Figure shows cumulative biochemical recurrence rates.

Do we have enough scientific and clinical evidence to treat with protons?

A) Yes
B) No

Proton RT will be the eventual future standard for the radiation treatment of prostate.

A) Yes
B) No
C) I am not sure
If you answered “NO” to the previous question. Which one of the followings had influenced your answer the most?

A) Economics
B) Lack of clinical evidence
C) Organ motion
D) Technology has not matured yet