

# Spatially Fractionated Radiation Therapy With Lattice Radiation in Far-advanced Bulky Cervical Cancer: A Clinical and Molecular Imaging Outcome Study

Beatriz Amendola <sup>1</sup>, Naipy C. Perez <sup>2</sup>, Nina Mayr <sup>3</sup>, Xiaodong Wu <sup>4</sup>, Marco A. Amendola <sup>1</sup>

1. Radiation Oncology, Innovative Cancer Institute, South Miami, USA 2. Innovative Cancer Institute 3. Radiation Oncology, Washington University 4. Radiation Oncology, Innovative Cancer Institute, Cyberknife Center of Miami, South Miami, USA

**Corresponding author:** Beatriz Amendola, bamendola@innovativecancer.com

**Categories:** Obstetrics/Gynecology, Radiation Oncology

**Keywords:** spatially fractionated radiation therapy, lattice radiation therapy, cervix cancer

## How to cite this abstract

Amendola B, Perez N C, Mayr N, et al. (April 02, 2020) Spatially Fractionated Radiation Therapy With Lattice Radiation in Far-advanced Bulky Cervical Cancer: A Clinical and Molecular Imaging Outcome Study . Cureus 12(4): a470

## Abstract

**Objectives:** Spatially fractionated radiation therapy (SFRT) has shown promise in generating high tumor response and local control rates in the treatment of various palliative and locally advanced bulky tumors. SFRT has not yet been studied systematically in cancer of the cervix. Here we report the first series of patients with far-advanced/bulky cancer of the cervix treated with SFRT, using Lattice Radiation Therapy (LRT).

**Methods:** A cohort of 10 patients, with far-advanced bulky cervical cancer, FIGO stages IIIB-IVA (7 squamous cell, 3 adeno/adenosquamous carcinomas) were treated with LRT, a variant of SFRT. The LRT regimen consisted of a dose of 24 Gy in 3 fractions, given with VMAT technique, to an average of 5 (range: 2-11) high-dose spheres ("vertices") distributed within the total gross tumor volume (GTV). The dose in the peripheral GTV was limited to 9 Gy in 3 fractions. LRT was followed by conventionally fractionated whole-tumor radiation therapy of 39.60-45.00 (mean: 44.28) Gy at 1.8 Gy per fraction. All patients received concurrent weekly Cisplatin chemotherapy. Tumor response was assessed clinically and volumetrically by pre-therapy CT and cone beam CT at the end of conventional radiation therapy. 18FDG PET/CT imaging was performed pre-therapy in all, and post-therapy in all but one patient. Tumor control and survival rates were estimated using the Kaplan Meier analysis.

**Results:** Tumor regression was highly variable. At the end of conventional radiation therapy, tumor volumes regressed by an average of 51.5% (range: 6-91%). Post-therapy, the complete metabolic response was 78% (7/9), and the remaining 2 patients had partial response (residual SUVmax of 3 short- or long-term treatment-related complications).

**Conclusions:** Our preliminary data suggest that Lattice-based SFRT combined with conventionally fractionated whole-tumor radiation therapy is well tolerated in patients with far-advanced bulky cervical cancer and results in high tumor response and local tumor control. These observations are consistent with prior reports of favorable tumor control and toxicity outcomes with SFRT in other advanced/bulky malignancies. Our findings are corroborated by the high molecular-imaging-based tumor response. These encouraging hypothesis-generating results require confirmation with larger patient cohorts and preferably through a multi-institutional clinical trial.

## Open Access

### Abstract

Published 04/02/2020

### Copyright

© Copyright 2020

Amendola et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Distributed under

Creative Commons CC-BY 4.0

