Reviewer’s report

**Title:** Respiratory-gated (4D) contrast-enhanced FDG PET-CT for radiotherapy planning of lower oesophageal carcinoma: feasibility and impact on planning target volume

**Version:** 0  **Date:** 03 May 2017

**Reviewer:** Alessandro Sindoni

**Reviewer's report:**

In this study, the Authors have evaluated the feasibility and potential impact on target delineation of respiratory-gated (4D) contrast-enhanced 18Fluorine-Fluorodeoxyglucose positron emission tomography - computed tomography, in the treatment planning position, for a prospective cohort of patients with lower third oesophageal cancer.

Major comments:

1. **Background section, page 5, lines 110-111.** "However, motion artefacts with 3D PET-CT can reduce target contrast and overestimate lesion size." Moreover, un-gated imaging of moving lesions can decrease Standardized Uptake Values. 4D PET scanning is able to recover SUV. Please rephrase considering this comment.


3. **Results section.** Can the Authors evaluate the centre of mass coordinates and assess differences between 4D PET-CT, 3D PET-CT and 4D CT?

4. **Results section.** Have the Authors data to evaluate the degree of association between PTV values and tumour motion vectors?

5. **Results section, "Positional Analysis" paragraph.** Please improve statistical analysis evaluating if presented data reach statistical significance.
Minor comments:

1. Please, revise English and punctuation throughout the manuscript.

2. References' style is not homogeneous. Please refer to the instructions for Authors provided by the Journal.


Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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