

AbstractID: 3477 Title: Can Prostate CT contouring be improved?

Purpose: Contouring the prostate on a CT dataset remains a challenge, especially post implant. The prostate apex is not clearly defined on CT. It is difficult to distinguish the bladder neck from the base of the prostate. This study reports the variability in contouring the prostate on CT between individuals and the potential to reach a consensus with training.

Method and Materials: Five post permanent prostate implant CT studies scanned using a Picker scanner, 2 mm slice thickness, were open for contouring to participants at an international meeting. Thirty-nine participants who routinely contoured the prostate contoured all 5 studies using the Variseed software. The volume of the prostate contoured with reference to the standard MR prostate volume is reported.

The same five studies were also contoured by 6 experienced radiation oncologist. The participants first received a tutorial on CT contouring techniques. They were provided with 3 test cases to practice and then asked to contour the five studies.

Results: The average ratio of the CT to MR prostate volume for 39 participants without the tutorial was 1.09 ± 0.50 , 1.68 ± 1.00 , 0.92 ± 0.46 , 1.12 ± 0.55 , and 0.99 ± 0.56 , respectively for the five cases. The same average ratio for 6 experienced radiation oncologists with training was 1.02 ± 0.09 , 1.52 ± 0.35 , 0.85 ± 0.19 , 1.16 ± 0.17 , and 0.94 ± 0.13 , respectively.

Conclusion: The average ratio of CT to MR prostate in both studies were comparable. However, the standard deviations for the study with training are small indicating that it is possible to reduce the variability in prostate contouring between individuals.

Conflict of Interest: This work was supported by Oncura and Varian Medical Systems, Inc.