Evaluation of Clinical Target Volume Delineation Before and After a Teaching Intervention: Creation of a Post-operative Prostate and Seminal Vesicle Fossae Contouring Module

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Objective

We developed a contouring module to teach the delineation of a specific clinical target volume (CTV), the post-operative prostate and seminal vesicle fossae. We aimed to increase awareness of contouring resources, improve skill with treatment planning software, and strengthen knowledge of pelvic anatomy.

Methods

• Medical students (MSs) were given a clinical scenario for a post-operative prostate cancer patient.
• They independently contoured the CTV for this patient.
• MSs were then given instruction in the RTOG-based approach to contouring this CTV.
• After intervention, MSs re-contoured the CTV.
• Areas of deviation between student and expert contours were discussed.
• Metrics for volume overlap and surface distance were used to calculate discordance between contours.
• Post-session evaluations assessed MS perception of efficacy (1 = "not at all" to 5 = "extremely")

Results

Figure 1. Clinical scenario given to MSs prior to module.

Figure 3. Metrics for analysis of CTV accuracy before and after teaching intervention including A. number of CT slices contoured, B. volume of contour, C. volumetric difference of student CTV to gold standard CTV, D. Dice similarity coefficient, E. Hausdorff distance, and F. mean distance.

Conclusions

• We successfully developed and implemented a contouring module to teach CTV delineation for post-op prostate cancer radiation tx.
• All students regarded this exercise as moderately to extremely important.
• All reported improvement on every objective.
• A comparison of student and expert contours revealed significantly closer concordance after intervention.
• Additional modules to teach target delineation should be developed using this model.