Introduction

Standard treatment plan library has been often used to ensure a quick turn-around time for vaginal cylinder treatments. Recently there is an interest to move conventional brachytherapy to 3D image based treatment planning. New treatment planning systems like Oncentra MasterPlan are being introduced into the market to cater to this segment requiring 3D images yet without any option for a standard treatment plan library. We demonstrate here a novel technique using which the CT-based vaginal cylinder treatment planning time could be significantly reduced.

Methods

Oncentra allows multiple sets of data points to be classified as applicator points. It relies on two hard anchor points [i.e., the first dwell position and a predefined dwell position as the origin] and a soft anchor point beyond the last active dwell position to define the axis of the catheter. Information about the spatial location of various points on the applicator and at 5 mm depth is stored in an excel file which can be easily pasted in actual treatment plan. The rest treatment planning process moves identical to any other treatment plan. We evaluated the accuracy and the time needed for the whole process of CT based vaginal cylinder planning.

Results

The treatment plans generated using our method on Oncentra on patient CT scans and on Plato TPS using standard treatment plan library yielded comparable results in terms of treatment times, dwell weights, dwell times for a given optimization and normalization points. Less than 1% difference was noticed between the treatment times generated between both the systems. Using the above method, the entire planning process on a CT data set, including CT importing, point definition, optimization and dose prescription, was usually around 5 minutes.

Conclusion

The proposed method allows a smooth transition from no image to the 3D brachytherapy for vaginal cylinder treatments.

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