Isodose Contours and Depth-Dose Behavior of Multi-Catheter Breast Applicators

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ABSTRACT

Purpose: HDR brachytherapy is commonly achieved using multiple multi-source multi-catheter systems, often with multiple sources in a single lumen. The challenge is to develop a brachytherapy planning system that will accommodate multi-catheter systems with varying numbers of sources.

METHODS

Software: A software program written in LabVIEW was used to create dose distribution software models. Models were developed for the Axxent System, for both single and multi-lumen systems. Additional models were created for an 8-source, 2.2 cm radius, single-lumen model.

RESULTS

Depth Dose Effects

• High variation from the isodose centers creates very steep dose falloff from sources, which may be important for some treatment situations.

Normalized Dose Histograms

• The dose variations are significant, and can be improved by using different configurations or other techniques.

SUMMARY

• A 3-dimensional computer model was used to study dose distributions from a variety of multi-source multi-catheter systems. The model allows for the evaluation of dose distributions from a variety of multi-source multi-catheter systems. The model allows for the evaluation of dose distributions from a variety of multi-source multi-catheter systems.