3D Printed HDR Vaginal Cylinder Applicator for VariSource to Improve Dose Distribution

Title: 3D Printed HDR Vaginal Cylinder Applicator for VariSource to Improve Dose Distribution

Invention: An improved design on the distal dwell position on the vaginal cylinder applicators for radiation therapy to enhance dose delivery at the tip.

Background: Brachytherapy is one form of radiation therapy which is used to treat cancer. It requires the placement of minimal radioactive material near the center of a tumor or group of cancer cells. Brachytherapy uses a high concentration of radiation, unlike external radiation therapy. High dose rate (HDR) brachytherapy is a common form of treating cervical and endometrial cancer. HDR brachytherapy is applied to a small area so the radiation is performed for a shorter time. Current vaginal cylinders used for application are self-shielding and are designed in a way where the cylinder has an overshoot at the apex of the device. This means, there is a relatively large distance from where the radiation is to where the tumor is and therefore, there isn’t the best dose coverage. There is a need for an improved method of delivering radiation for high dose rate intracavitary brachytherapy procedures, such as in the vaginal region.

Applications:

• Brachytherapy for cervical cancer treatment
• High dose rate (HDR) brachytherapy

Advantages:

• Able to be 3D printed
• Cost effective
• Disposable

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