

**Purpose:** Pd-103 sources have recently been produced in coil form. These coils offer advantages over conventional seeds including high stability in tissue, better visualization under ultrasound, and more homogeneous dose distribution. We report the first use of Pd-103 coils for treatment of prostate cancer.

**Methods and Materials:** Fully TG-43 compliant parameters for a 1 cm long source were entered into the treatment planning system and multiples of these 1 cm sources were used to model coils of lengths up to 5 cm. Dosimetry was compared between Theragenics Pd-103 seeds and the new RadioCoil sources. Plans were compared with equivalent geometries, unlike sources placed with their centers matched. Ten patients have been implanted with Pd-103 coils. Intraoperative treatment planning was performed and needles were custom loaded as with conventional seeds.

**Results:** The dosimetry of coils is roughly comparable to that of seeds. Required activity of the coils is approximately 8% higher than that of seeds to achieve the same minimum target dose. Even with effectively higher activity per cm, coils deliver a more homogeneous dose distribution with maximum doses to tissues significantly lower than that delivered by seeds.

**Conclusions:** Coils are an interesting new source for delivery of therapeutic doses by brachytherapy. They promise better stability in tissues, higher dose homogeneity, and better visualization under ultrasound compared to conventional seeds. Fully compliant TG-43 algorithms are required for accurate dose calculation.

**Conflict of interests:** None