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Breast radiotherapy in a single day: innovation advancing clinical care

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In 2012 BC Cancer became only the second institution worldwide to offer a novel radiation treatment for early stage breast cancer called Permanent Breast Seed Implant (PBSI). Briefly, patient specific treatment plans are designed that use strands of radioactive Pd-103 sources to deliver a prescription dose of 90Gy to the target region. Treatment consists of an operation where needles, pre-loaded with the planned sources, are used to permanently implant the Pd-103 into the breast guided by a template grid and freehand ultrasound imaging. Completed in a single outpatient session, PBSI is highly attractive to breast cancer patients compared to the standard 3.5 –5 weeks of whole breast radiation therapy. However, at present this implant technique is technically challenging and largely limited to implementation by highly experienced clinical practitioners. Our research team is focused on developing tools and techniques aimed at reducing technical barriers to PBSI, with the goal of helping to enable widespread access to breast seed implant for breast cancer patients. This talk will introduce PBSI and our experience with this advanced radiation treatment technique, present dosimetry results for our first 50 patients, and describe ongoing research efforts in developing 3D ultrasound for implant guidance and standardized, relevant dose reporting.

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