

Robot-Assisted Platform for Intratumoral Delivery (RAPID) System

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Technology description

Description

This technology relates to robot-assisted radioactive seed implantation for prostate brachytherapy. It is an automated system for delivery of seeds or other therapeutic or diagnostic capsules to internal organs of the patient's body for radiation brachytherapy and includes a needling mechanism, a 2DOF robot, an ultrasound probe driver, a 5DOF passive platform, and an easy lock cart. The needling mechanism implants radioisotope seeds by its cannula and stylet driven by two moving stages pushed by DC motors with ball screw transmission. Force sensors are included for detecting insertion forces and bending force. Robot-assisted brachytherapy, as compared to the traditional manual technique, is more accurate due to elimination of human-related variabilities. It is safe and efficacious giving the physician more control over the needle insertion and seed delivery. More precise treatment leads to lower morbidity profile. This system requires a short learning curve and can ultimately lower treatment cost.

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