CT-Guided Brachytherapy Using a Correlated 3D Stereotactic Arm

Several patients have been treated on an outpatient basis implanting I-125 seeds under CT guidance for recurrent disease. The coordinates for the seed implantation sites are preplanned using the patient's CT data set. On implant day, the I-125 seeds are inserted through a needle guide with the Mick applicator. The interventional radiologist (RV,SC) uses a local anesthetic along the needle tracks and requires multiple CT slices to follow the needle trajectories to the preplanned coordinates. Needle tracks are optimized on the preplan to deposit multiple seeds along each track. An average of 10 seeds were deposited in our first 8 patients. Recurrent paraspinal tumors post full-course radiotherapy were the most frequent case encountered. Recently, a 3D stereotactic arm attached to the CT scanner (PQ5000, Picker International) and correlated in space with the CT data set has been used to locate needle trajectories and seed deposit coordinates. The patient must be immobilized in the treatment position for the preplan data set and aligned to this position for the implant procedure. Postplans after seed deposition have correlated well with the preplan dose distribution. Several methods are being evaluated to test the congruence postplan to preplan including interseed distance matrices and dose-volume histograms.