

## **PERCUTANEOUS IMPLANTATION OF FIDUCIAL MARKERS FOR IMAGING GUIDED**

### **RADIATION THERAPY**

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**Background:** Imaging guided radiation therapy (IGRT) integrates imaging into the radiation treatment planning and delivery to allow more precise localization and targeting of tumors. As radiotherapy evolves into exploiting hypofractionated courses of treatment using large doses of radiation per fraction, precision is crucial for both treatment efficacy and safety. In this poster, we review the process of IGRT and describe techniques to implant fiducial markers based on literature and in our experience, showing some procedures performed in our interventional radiology center.

**Hypothesis:** Implantation of fiducial markers can be challenging. A better understanding of the physics of IGRT can help optimize fiducial marker placement for precise tumor targeting.

**Methods:** Usually 3-5 gold fiducial markers are percutaneously implanted via a 19 gauge introducer needle in and around the tumour. A system that uses orthogonal x-rays to visualize radiopaque fiducial markers is performed and it can be possible reconstruct radiographs derived from the planning CT. Then anatomic translation and rotation in the three axes are measured. This is made before and during each session of radiotherapy. Electronic adjustments are made in order to robotic manipulator retargets the radiation in a great spatial precision.

**Results:** All the procedures were performed in our interventional radiology department and were related here emphasizing tools for fiducial marker implantation, and illustrative cases of IGRT.