AbstractID: 8500 Title: Clinical Evaluation of New BrainLab Image Guided Frameless SRS System

Purpose:
To evaluate the results and accuracy of Image Guided Frameless SRS

Method and Materials:
A new image guided frameless system for Novalis has been installed at our institution for Stereotactic Radiosurgery (SRS) treatment. The main features of the system are its utilization of an Infrared camera, a pair of kV x-ray, and a 6D couch for patient setup. The system works at any couch angle. The tracking computer will generate DRRs for the corresponding couch angle and compares them with OBI kV images to determine the shift corrections in 6 Dimensions (3 Translational and 3 Rotational). The shift corrections are carried out by the 6D robotic couch, The same process is repeated to confirm the correction was successful, and that further correction is no longer needed. The same process is required for every couch angle during the SRS treatment. The SRS fields are shaped by employing either BrainLab micro MLC or BrainLab cones. We have treated various types of brain tumors including trigeminnal nerves.

Results:
The system is very intutive, and in general only one OBI guided frameless correction procedure is needed for each couch angle. The OBI kV images obtained for confirmation of correction on average show that the mean deviation by automatic imaging fusion computer are 0.5±1, 0.2±1 and 0.3±1 degree for pitch, roll and yaw, 0.3±0.3, 0.3±0.4, 0.2±0.8 mm for longitudinal, lateral and vertical translation movement. Included are the pre and post trigeminal nerve MRI scan that shows clearly that we hit the target of planned treatment.

Conclusion:
The new type of BrainLab' Image Guided Framless SRS system coupled with an 6D robotic couch, imaging at any couch angles, is accurate, and easy to use. Initial experience shows that clinical results are equivalent to the Frame based SRS system.

Conflict of Interest (only if applicable):