

Purpose: To identify and resolve issues associated with transferring brain tumor patients, after placement of Leksell frame (LF) and the completion of MRI and CT scans for Gamma Knife (GK) radiosurgery, to linac-based stereotactic radiosurgery (SRS) with BrainLAB Novalis.

Method and Materials: Three patients were studied. These patients could not technically be treated with GK radiosurgery given the technical limitations posed by frame placement or tumor location. CT and MRI scans were transferred to the BrainLAB treatment planning system (TPS), BrainSCAN. Treatment plans were then generated and evaluated. Systematic and potential issues were identified. Compatibility of the LF and the BrainLab system was evaluated. Imaging issues were investigated, and time restriction considerations to have the patient treated the same day were addressed.

Results: The LF is compatible with the Novalis system using a special adapter. The MRI scans presented no issues. CT imaging may constitute an issue since the Leksell localizer box is shorter than the BrainLab box. Depending on the frame placement on the patient head, part of the anatomy may not be localized by BrainSCAN and cannot be used. While the GK TPS can extrapolate parts of the anatomy, BrainSCAN cannot. As a result, planning options are limited (novertex beams/arcs). In this case, a new CT scan with the LF and the BrainLAB localizer is required. Once imaging issues are resolved, a plan, quality assurance, evaluation and treatment can be completed the same day.

Conclusion: Patients scheduled for GK radiosurgery can be efficiently transferred to Novalis the same day of the procedure when tumor location or frame placement does not allow GK radiosurgery. The issues associated with the transfer are manageable and allow same day treatment with the Novalis system.