

AbstractID: 4762 Title: Stereotactic Radiotherapy: Varian 120-leaf MLC verses Radionics" MMLC

Purpose: With the continuing rapid development of technology, more options are becoming available for the clinician. However, this is bringing forth technical challenges to the Physicist, especially in the integration of these technologies. The most commonly used Varian linear accelerator that has the 120 leaf MLC attached to its head prohibits the use of an additional Radionics' MMLC. Hence the 120 leaf MLC was integrated into the Radionics' XKnifeRT system to be used in both cranial and extracranial applications. This presentation provides technical information and clinical experience using this combination.

Methods and Materials: The stereotactic technology utilizes the Radionics' XKnifeRT system consisting of a) treatment planning software capable of both 3D conformal as well as step and shoot IMRT; b) stereotactic frames for cranial and extracranial applications. The Varian 120 leaf MLC with an inner leaf width of 5 mm was integrated into the XKnifeRT system so that either the 120MLC or the MMLC could be used clinically. The limitations in the use of the MMLC in this configuration include reduced clearance, especially for extracranial applications, and a reduced maximum field size of 9 x 11 cm. Thus far nearly 40 patients have been treated, mostly using the IMRT component, and include GTC/TLC for cranial sites, and, Head & Neck Localizer(HNL)/Body Localizer(BL) for extracranial sites.

Results: A comparison of dose distributions/DVHs of the 120 MLC and the MMLC indicate only marginal improvement if the MMLC were to be used. Not only is the setup time at the linac reduced, the actual IMRT delivery is only a few seconds more than a corresponding dynamic delivery. A cranial and a C-spine application of the technology validates this integration.

Conclusions: We continue to utilize the 120 leaf MLC successfully for all stereotactic applications with XKnifeRT.