Introducing the Varian Edge™ with frameless stereotactic radiosurgery capabilities

The University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center now has a faster, more accurate, noninvasive way to administer stereotactic radiosurgery for treating malignant and benign brain tumors. The Varian Edge linear accelerator represents the newest and most advanced platform for frameless SRS, giving many patients the additional comfort of not needing to be immobilized with an invasive frame.

Optical Surface Monitoring System Facilitates Accurate, Frameless Treatment

Frameless SRS on the Edge is made possible by an optical surface monitoring system (OSMS) that monitors the cranial skin surface in real-time, without markers or ionizing X-ray, in all six degrees of freedom. The OSMS allows the Edge to detect when the patient moves outside of the predetermined limits so the radiation beam can be gated.

Independent studies of this OSMS have demonstrated accuracy within 0.3 – 0.9 mm of patient movement vertically, laterally or longitudinally and within 0.3 degrees of rotation,[1] leading researchers to conclude that frameless SRS performed in such a fashion had accuracy comparable to that of frame-based SRS.[2] These studies involved phantoms, and a third study comparing the accuracy of internal X-ray, cone beam computed tomography, BrainLab and OSMS noted that the phantom did not provide the OSMS with a clean surface. The researchers therefore surmised that the OSMS's accuracy would be improved in an actual treatment scenario.[3]

Faster Treatments More Convenient for Patients

Radiosurgery with the Edge can be delivered quickly, precisely, and without a head frame that is required for Gamma Knife.

Shorter Wait for Treatment

In addition to making treatments less time-consuming for patients, the Edge speeds up patient throughput. That means that patients who need SRS can be treated without delay on the Edge.

Frame-based Treatment Still an Option

Although the OSMS provides sufficient accuracy for safe frameless treatment, should a patient's physician deem that frame-based immobility is necessary, the Edge allows for this extra precaution.

Proton Therapy Also Available

For patients with large, complex or recurrent brain tumors, proton therapy may be a preferred treatment option over photon SRS. Pencil-beam scanning proton therapy at the Maryland Proton Treatment Center allows University of Maryland radiation oncologists to deliver high doses of radiation that stop at the treatment site, protecting healthy brain tissue.

RADIATION ONCOLOGISTS

William Regine, MD, FACR, FACRO
Professor of Radiation Oncology
Isadore and Fannie Schneider Foxman Chair,
Department of Radiation Oncology
410-328-6080

Mark Mishra, MD
Assistant Professor of Radiation Oncology
410-328-6080

[1]Mancosu P, et al. Accuracy evalutation of the optical surface monitoring system on EDGE linear accelerator in a phantom study. Med Dosim. 2016 Summer,41(2):173-9.

[2]Wen N., et al. Technical note: evaluation of the systematic accuracy of a frameless, multiple image modality guided, linear accelerator based stereotactic radiosurgery system. Med Phys. 2016 May;43(5):2527.

[3]Pursley J, et al. Comparison of Brainlab ExacTrac, AlignRT, and CBCT positional accuracy for SRS set-up on a TrueBeam STx. Med Phys. 2012 Jun;39(6Part7);3666.

If you have a patient with a brain tumor who could potentially benefit from SRS, consider referring him or her to UMGCCC. We will keep you informed of your patients' progress until they can be transitioned back to your care.

To Refer a Patient to the Department of Radiation Oncology at UMGCCC, call **410-328-6080** or **800-373-4111.**