

Frameless Image-guided Robotic Radiosurgery for Trigeminal Neuralgia and Epilepsy

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Stereotactic frame-based radiosurgery provides an established treatment option for Trigeminal Neuralgia (TN). Cyberknife image-guided frameless radiosurgery provides a thoroughly non invasive treatment option sparing to the patients the application of a stereotactic frame to fix the head. The efficacy and precision of Cyberknife robotic treatment for TN has been shown in a recently published paper (Romanelli et al, Image-Guided Robotic Radiosurgery for Trigeminal Neuralgia, Neurosurgery, 2018). This paper reports the largest published cohort of patients treated with Cyberknife Radiosurgery (138) with a prospective follow-up reaching over 6 six years. Overall, 75% of the treated patients achieved long-term control of the pain and was pain free 5 years after the treatment. No major neurological complication was described. Sensory complications such as hypoesthesias and paresthesias are rare and typically found after a second treatment. These results compare very favourably with any other surgical approach for TN, including microvascular decompression and percutaneous procedures, as well as with other frame-based radiosurgical series. Cyberknife treatment has been also performed on highly selected patients with medically-refractory epilepsy, with favourable results. Further work will be needed to determine patient selection, treatment protocols and outcomes.

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