

## Safety of Cyberknife Radiosurgery in Optic Nerve Sheath Meningioma

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## Abstract

**Objective(s):** The role of radiosurgery (SRS) in optic nerve sheath meningioma (ONSM) is a topic of debate. The aim of our study was the characterization of our patient cohort to analyze the safety of single or hypofractionated SRS for the treatment of ONSM by Cyberknife.

**Methods:** We retrospectively identified all the patients with (ONSM) who were treated by stereotactic radiosurgery (SRS) using Cyberknife (CK) in our institution since 2011. Subsequently, we analyzed clinical data including previous surgical treatments, vision and local treatment response.

**Results:** A total of 20 patients with 21 ONSM were identified. The mean follow up time was  $1.9 \pm 1.8$  years with a range of 3 months to 5 years. A total of 8 patients (38%) were operated previously with optic canal decompression. Prior to SRS 40% of the patients suffered from blindness for the side of the lesion. In the residual cohort with preserved vision prior to the treatment two were lost to follow up, overall the vision remained the same in 60%, improved in 30% and deteriorated in only one patient (10%). A MRI follow up was available in 77% of the cases. Tumor progress was detected in none of these cases, while a remission was achieved in 12%. The mean planning target volume was  $2.01 \pm 2.9$  mm<sup>3</sup> with a mean prescription dose of  $19.9 \pm 3.2$  Gy. A multisession SRS was applied with 4-5 fractions each 5 Gy in 81% of the cases, while in the remaining 19% a single fraction with a dose of 14-15 Gy was used.

**Conclusion(s):** Treatment of the patients with ONSM with residual vision represents a challenge. Our study highlights the safety of radiosurgery. The real boundaries of efficacy of radiosurgery for ONSM have to be further evaluated in a larger number of patients with longer follow up to establish the best treatment protocol.

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