

Frame-based and Masked Stereotactic Radiosurgery: A Patient Experience Comparison with the Gamma Knife Icon

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Objective(s): Patients undergoing stereotactic radiosurgery (SRS) for intracranial pathology have two technical treatment options: frame-based versus masked. Each has been shown to have similar clinical and radiographic outcomes for multiple diagnoses. There is sparse information on a patient's experience between the two types and to what extent a patient's diagnosis will predicts their SRS experience. A better understanding of these factors may help patients and their treating physicians choose the best method for each individual.

Methods: A retrospective analysis of patients who completed a questionnaire of their experience of framed-based or masked SRS using the Gamma Knife Icon from June through January 2019 at our institution was completed. Descriptive statistics were applied.

Results: A total of 58 patients who underwent SRS completed the questionnaire, where 60% of the procedures were frame-based and 40% masked. The average age was 63.3 +15.3 years old, 40% of which were male. Pathologies treated were metastasis (69%), meningiomas (9%), vestibular schwannomas (9%), arteriovenous malformations (7%), neurocytoma (2%), pituitary adenoma (2%), trigeminal neuralgia (2%) and glioblastoma multiforme (2%). Of the patients treated with a frame-based technique, 51% did not find SRS to be uncomfortable. Comparatively, 91% of patients who received masked treatments did not find SRS to be uncomfortable. Patients who underwent frame-based treatment rated their pain of frame placement on a visual analog scale (VAS) 1-3, 24%, VAS 4-6, 46%, VAS 7-10, 30%. Eight patients answered that they did not tolerate the procedure as expected. Most of the patients who perceived not tolerating the procedure as well as expected were treated using a framed compared to masked method (87% vs. 13%, respectively). Compared to previous surgery or SRS, five patients found their experience of SRS was not tolerable, while 93% of patients would consider repeat SRS if necessary. All patients who received frame-based and masked treatments felt adequately informed about the procedure. The median dose for treatment of all patients was 20Gy (range, 12-30Gy). The patient experience of discomfort during SRS and their evaluation of pain during frame placement between patients treated for benign lesions versus malignant lesions (discomfort during SRS: 59% vs. 22%, respectively and median VAS pain: 6 +2.67 [95% CI 4.6 – 7.4], 4.5+1.99 [95% CI 3.8 – 5.2], respectively) determined a benign diagnosis leaned towards more discomfort during SRS compared to a malignant diagnosis. Pain during frame placement was similar for benign and malignant diagnoses.

Conclusion(s): Patients experienced frame-based SRS as more uncomfortable than mask-based treatment. Benign pathologies appeared to have more discomfort compared to malignant pathologies. All patients of both techniques felt adequately informed about their procedure.

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