

1: Neurosurgery. 2004 Apr;54(4):799-810; discussion 810-2.

Preliminary visual field preservation after staged CyberKnife radiosurgery for perioptic lesions.

Pham CJ, Chang SD, Gibbs IC, Jones P, Heilbrun MP, Adler JR Jr.

Department of Neurosurgery, Stanford University Medical Center, 300 Pasteur Drive, Stanford, CA 94305, USA.

OBJECTIVE: The limited radiation tolerance of the optic nerves and the optic chiasm makes it a challenge to treat immediately adjacent lesions with radiosurgery. Staged or hypofractionated radiosurgery has the virtue of combining the accuracy and conformality of radiosurgery with the normal tissue-sparing benefits of fractionation. We describe a consecutive series of patients with meningiomas and pituitary adenomas abutting the anterior visual pathways who were treated with staged, image-guided radiosurgery.

METHODS: Thirty-four patients with either meningiomas (20 patients) or pituitary adenomas (14 patients) within 2 mm of the optic apparatus were treated. Several patients had previously been treated with conventional fractionated radiotherapy (5 patients) or subtotal surgical resection (23 patients). Radiosurgery was delivered in two to five stages to a cumulative average marginal dose of 20.0 Gy. Visual testing and clinical examinations were performed before treatment and at follow-up intervals beginning at 6 months after treatment.

RESULTS: The mean follow-up period was 29 months (range, 15-62 mo). Pre- and posttreatment vision was unchanged in 20 patients, improved in 10, and worse in 3. One patient died during follow-up as a result of an unrelated cardiac event. Visual loss was accompanied by tumor progression in two cases. In a third patient with a multiply recurrent adrenocorticotrophic hormone-secreting pituitary adenoma, injury to one optic nerve occurred after both a prior course of radiotherapy and three separate sessions of radiosurgery.

CONCLUSION: Staged radiosurgery resulted in high rates of tumor control and preservation of visual function. Ninety-one percent of patients retained their presurgical vision. Staged radiosurgery may be a safe and effective alternative to either surgery or fractionated radiotherapy for selected lesions adjacent to the optic apparatus.

PMID: 15046645 [PubMed - indexed for MEDLINE]