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Visual Outcomes in Surgically Treated Intracranial Meningiomas

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Abstract

Background: Intracranial meningiomas that arise from the medial sphenoid ridge, anterior clinoid process, tuberculum sellae, or planum sphenoidale often impair vision by compressing the optic nerves and optic chiasm. Although many studies have reported visual outcome following surgery for these tumors, documentation has often been incomplete and not validated by patient self-report.

Methods: Retrospective study of 40 patients drawn from a single, academic, medical center. We used a unique method of assessing visual outcome based on whether the change in visual function affected the preoperatively better-sighted or worse-sighted eye in the belief that this method would correlate with effects on activities of daily living (ADL). To elicit patient self-reports of those effects, we conducted telephone interviews of 25 patients with a standard questionnaire. We also assessed putative ophthalmic, imaging, and surgical predictors of visual outcome.

Results: Visual improvement occurred in 61% of patients with preoperative monocular visual dysfunction, but only 22% of patients reported improvement in their ability to conduct ADL, and 17% lost vision. Visual outcomes were better in patients with preoperative binocular visual dysfunction, where visual improvement occurred in 73% and no patient lost vision in the preoperatively better-sighted eye. However, only 27% of patients with preoperative binocular visual dysfunction reported improvement in their ability to conduct ADL. Long duration of vision impairment, presence of optic disc pallor, large tumor size, and imaging-based preoperative optic canal involvement did not preclude a favorable visual outcome. Aggressive surgical reduction in displacement of the optic nerves was not necessary to obtain a favorable visual outcome and sometimes led to an unfavorable visual outcome.

Conclusions: In this study, surgery often improved vision, especially in patients with preoperative binocular visual dysfunction. But patients indicated that the effect on their ability to perform ADL was more modest. Moreover, 17% of patients with preoperative monocular visual dysfunction lost vision in the only affected eye, often to a considerable degree. In those patients, surgery would be justified primarily to relieve the concern of having a large brain tumor and to prevent tumor growth. Preoperative ophthalmic and imaging features poorly predicted visual outcomes. Favorable visual outcomes occurred without aggressive surgical debulking of the tumors.

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