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# Cerebellopontine Angle Meningiomas: A Multi-Institutional Cohort Study

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## Abstract

**Background and objectives:** Cerebellopontine angle (CPA) meningiomas present challenges given their proximity to neurovascular structures. Postoperative complications and persistent symptoms can debilitate patients, and our ability to predict recovery course remains variable. Here, we examine the presentation, management, and outcomes of patients with CPA meningiomas.

**Methods:** We retrospectively reviewed CPA meningiomas resected at Mass General Brigham, using descriptive statistics and logistic regression to identify predictors of progression or recurrence.

**Results:** In total, 95 patients were identified (median age 59.1 years, 82.1% female) who presented most commonly with hearing loss (49.5%), ataxia (42.1%), and headaches (29.5%). The retrosigmoid (78.9%) or transmastoid retrosigmoid (17.9%) approaches were most frequently used for resection, with gross total resection (GTR) achieved in 62.1% of patients: Simpson grade 1 (32.6%), grade 2 (17.9%), and grade 3 (11.6%). Smaller tumor size ( $t = 3.17$ ,  $P = .002$ ) is associated with GTR. For tumors with intracanalicular invasion, drilling the internal auditory canal (IAC) was also associated with GTR ( $\chi^2 = 21.8$ ,  $P < .001$ ). Among cases with invasion, GTR was achieved in 88.5% of cases when the IAC was drilled vs 11.8% of cases when the IAC was not drilled. The cranial nerve VII/VIII complex was frequently inferior (45.6%) or superior (19.1%) to the meningioma. Postoperative hearing loss was stable (38.7%) or improved (54.8%) in most of patients at the final clinical follow-up (median: 39.4 months). 25.3% of patients had progression/recurrence, with some difference between World Health Organization grade 1 (median: 3.0 years, IQR: 2.9 years) and World Health Organization grade 2 (median: 1.6 years, IQR: 2.8 years) tumors. After multivariate adjustment, Simpson grade I ( $P = .02$ ), Simpson grade II ( $P = .01$ ), or being of older age ( $P = .003$ ) were associated with lower odds of progression/recurrence.

**Conclusion:** GTR remains critical to achieve optimal symptom control and reduce progression/recurrence rates for CPA meningiomas. Drilling the IAC is an important predictor of GTR in tumors with intracanalicular invasion.

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