

**Abstract:**

*Background:* High-grade and recurrent meningiomas are often treatment resistant and pose a therapeutic challenge after surgical and radiation therapy (RT) failure. Temozolomide (TMZ) is a DNA alkylating agent that appears to have a radiosensitizing effect when used in combination with RT and may be worthwhile in meningioma treatment. Thus, we investigated the potential efficacy of concomitant RT plus TMZ compared to historical controls of just RT used in the treatment of high-grade and recurrent meningiomas.

*Methods:* We performed a retrospective analysis of patients with meningioma treated at the University of Colorado with TMZ chemoradiation. Progression free survival (PFS) and overall survival (OS) were calculated from the start of chemoradiation to local recurrence or death, respectively.

*Results:* Eleven patients (12 tumors) were treated with chemoradiation with a median follow-up of 41.5 months. There were two WHO grade 1, eight grade 2 and two grade 3 meningiomas. Three patients died during the follow-up period—one being disease related (11.1%). Two patients had meningioma recurrence - at 2.3 months (WHO grade 3), and 5.4 years (WHO grade 2). Three-year OS and PFS for grade 2 meningiomas were each 88%. Historical controls demonstrate a 3-year median OS and PFS of 83% and 75.8%, respectively.

*Conclusions:* Treatment options are limited for meningiomas after local failure. In this study, TMZ chemoradiation demonstrated no statistical significance in PFS and OS in the treatment of grade 2 meningiomas compared to historic controls. Further study is warranted to find novel methods for the treatment of malignant and recurrent meningiomas.