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1: [J Neurosurg.](#) 2008 Dec 12. [Epub ahead of print]

**JNS**

**Reduced local recurrence of a single brain metastasis through microscopic total resection.**

[Yoo H.](#), [Kim YZ.](#), [Nam BH.](#), [Shin SH.](#), [Yang HS.](#), [Lee JS.](#), [Zo JI.](#), [Lee SH.](#)

1 Neuro-Oncology Clinic, Center for Specific Organs Cancer., 2 Cancer Registration and Biostatistics Branch; and, 3 Center for Lung Cancer, National Cancer Center, Goyang, Republic of Korea.

Object The goal of this study was to evaluate the therapeutic impact of the resection of metastatic brain tumor cells infiltrating adjacent brain parenchyma. Methods Between July 2001 and February 2007, 94 patients (67 males and 27 females, with a mean age of 55.0 +/-12.0 years) underwent resection of a single brain metastasis, followed by systemic chemotherapy with or without radiotherapy. In 43 patients with tumors located in noneloquent areas, the authors performed microscopic total resections (MTRs) that included tumor cells infiltrating adjacent brain parenchyma, and they pathologically confirmed during surgery that the resection margins were free of tumor cells (MTR group). In 51 patients with lesions in eloquent locations, gross-total resections (GTRs) were performed without the removal of neighboring brain parenchyma (GTR group). The 2 groups were then compared for local recurrence and survival. Results The MTR group had better local control of the tumor than did the GTR group; 10 (23.3%) of 43 patients in the MTR group and 22 (43.1%) of 51 patients in the GTR group had a local recurrence (p = 0.04). The median time to tumor progression in the MTR group could not be calculated using the Kaplan-Meier method, whereas it was 11.4 months in the GTR group. The 1- and 2-year respective local recurrence rates were 29.1 and 29.1% in the MTR group and 58.6 and 63.2% in the GTR group (p = 0.01). Multivariate analysis showed that the MTR procedure was associated with a decreased risk of local recurrence (p = 0.003). A Cox regression analysis revealed that the hazard ratio for a local recurrence in the MTR group versus the GTR group was 3.14 (95% CI 1.47-6.72, p = 0.003). There was no significant difference in the local recurrence rate between the MTR group without radiotherapy (10 [30.3%] of 33) and the GTR group with postoperative radiotherapy (5 [26.3%] of 19). Conclusions The results in this study suggest that MTRs including tumor cells infiltrating adjacent brain parenchyma for a single brain metastasis provide better local tumor control.

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