Interhemispheric approaches to parasagittal and falcine meningiomas. Importance of bridging veins and sinuses

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Purpose: The presence of bridging veins and sinuses often renders interhemispheric approaches to parasagittal and falcine meningiomas hazardous. This is either caused by the close vicinity of these veins to the meningiomas or by brain swelling based on tumor compression and infiltration of the sinus or bridging veins. The purpose of our study was to evaluate how far microsurgical strategies (dissection and protection of bridging veins, reconstruction of the sinus) reduce the risk of brain swelling or venous infarction.

Method: From January 1995 to December 2001, 72 parasagittal and falcine meningiomas were operated on using an interhemispheric approach (male = 26, female = 46, mean age 56.3 ± 12 years). Histologically, a meningioma WHO I was found in 63 cases (88 %) and WHO II in 9 cases (12 %). The intraoperative findings (protection of bridging veins, sinus infiltration/reconstruction) were correlated with the postoperative CCT and the postoperative clinical neurological findings.

Results: In 35/72 (48 %) interhemispheric approaches, bridging veins were found in the vicinity of the meningiomas. In 24 (69 %) cases, these bridging veins could be dissected and preserved, whereas in 11 patients (31 %) the veins were coagulated immediately followed by intraoperative brain swelling in 2 cases. Among the 25 patients (34 %) with sinus infiltration, tumor resection was performed by coagulation the outer wall of the sinus in 14 cases, resection and partial reconstruction of the sinus wall using tissue patches in 11 cases. Two cases with coagulation of bridging veins showed hypodensities on CCT and became clinically manifest by temporary hemianopsia and hemiparesis. Four patients with sinus reconstruction developed a hemiparesis for which the reason (venous congestion, arachnoidal deficit) remained unclear.

Conclusions: Based on our experience, total tumor resection of parasagittal and falcine meningiomas is possible at low morbidity depending on factors such as tumor size, arachnoid integrity, preservation of bridging veins and continuity of the sinus.