

ABSTRACT

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Transylvian Insular Glioma Surgery: New Classification System, Clinical Outcome in a Consecutive Series of 79 Cases.

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BACKGROUND: Surgery of insular glial tumors remains a challenge because of high incidence of postoperative neurological deterioration and the complex anatomy of the insular region.

OBJECTIVE: To explore the prognostic role of our and Berger-Sanai classifications on the extent of resection (EOR) and clinical outcome.

METHODS: From 2012 to 2017, a transylvian removal of insular glial tumors was performed in 79 patients. The EOR was assessed depending on magnetic resonance imaging scans performed in the first 48 h after surgery.

RESULTS: The EOR $\geq 90\%$ was achieved in 30 (38%) cases and $< 90\%$ in 49 (62.0%) cases. In the early postoperative period, the new neurological deficit was observed in 31 (39.2%) patients, and in 5 patients (6.3%), it persisted up to 3 mo. We proposed a classification of insular gliomas based on its volumetric and anatomical characteristics. A statistically significant differences were found between proposed classes in tumor volume before and after surgery ($P < .001$), EOR ($P = .02$), rate of epileptic seizures before the surgical treatment ($P = .04$), and the incidence of persistent postoperative complications ($P = .03$). In the logistic regression model, tumor location in zone II (Berger-Sanai classification) was the predictor significantly related to less likely EOR of $\geq 90\%$ and the maximum rate of residual tumor detection ($P = .02$).

CONCLUSION: The proposed classification of the insular gliomas was an independent predictor of the EOR and persistent postoperative neurological deficit. According to Berger-Sanai classification, zone II was a predictor of less EOR through the transylvian approach.

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Graphical Abstract

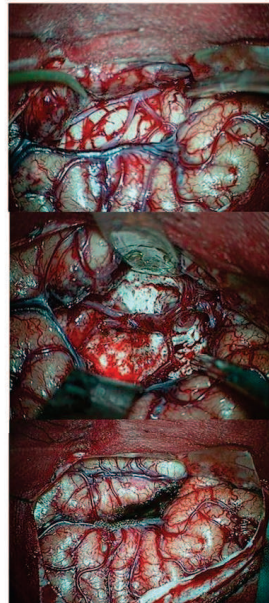
Transsylvian Insular Glioma Surgery: New Classification System, Clinical Outcome in a Consecutive Series of 79 Cases

Case series

A transsylvian removal of insular glial tumors was performed in 79 patients

Main stages of the transsylvian approach:

- A wide dissection of the Sylvian fissure
- A tumor removal while preserving the MCA
- The view of the surgical wound after the tumor resection



Classification system



Group 1 The tumor was located only in the insular lobe and did not extend beyond its borders, and the medial border.

Group 2 More than 50% of the tumor volume was located in the insula, but with an extension on to the adjacent lobes.

Group 3 More than 50% of the tumor volume was located in the insula, but with an extension medially, spreading on the anterior perforated substance up to subcallosal area including LSAs.

Group 4 More than 50% of the tumor volume was located outside the insular lobe.

Clinical outcomes

Extent of resection

- The EOR $\geq 90\%$ was achieved in 30 (38%) cases, and $< 90\%$ in 49 (62.0%) cases.

Complication rate

- In the early postoperative period, the new neurological deficit was observed in 31 (39.2%) patients, and in 5 patients (6.3%) it persisted up to 3 months.

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