AWAKE CRANIOTOMY FOR LOWER GRADE GLIOMAS IN ELOQUENT REGIONS – OUR EXPERIENCE

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Aim: Lower grade gliomas in eloquent regions present a specific surgical challenge regarding the proximity of various cortical and subcortical language, speech and motor areas. We aim to describe our series of 9 patients in which awake procedures were performed for resection of lower grade gliomas in frontotemporoinsular location.

Methods: A dedicated team of neurosurgeons, neuroanesthetists, neurologists and speech therapist was involved in presurgical workup regarding patients who underwent awake craniotomy procedures. Preoperative neuroradiological 3T MRI images were acquired with functional imaging and tractography performed at the same time. Preoperative cognitive, language and neurological testing was carried out establishing baseline values for postoperative evaluation comparation. Surgical procedures were performed in asleep-awake-asleep manner with patients positioned in a lateral decubital position and neuronavigation assistance. Intrasurgical brain mapping and ultrasonogram were performed with patient fully awake and cooperative. Transcortical approach was favoured in all cases, allowing the surgeon to observe minimal brain shift caused by CSF egression. Tools of removal included both aspiration by suction and CUSA.

Results : In our series of 9 patients, we achieved gross total tumor resection in all cases, sparing the subcortical areas where monopolar subcortical brain mapping discovered proximity of important deep white matter bundles such as arcuate fascicle, SLF and IFOF as well as primary motor areas such as corticospinal tract, Excellent postoperative results were achieved in all of the patients undergoing the awake procedure with patients experiencing no new neurological disorders and postoperative cognitive and language testing showed a discrete decline from the baseline values in immediate postoperative period, which recovered later in the follow up period.

Conclusion: Our experience determines that the awake craniotomy is the method of choice for resection of frontotemporoinsular lower grade gliomas, enabling feasible margin of tumor resection, preservation of important cortical structures and subcortical fiber bundles as well as providing a safe method for intraoperative electrophysiological and clinical monitoring of an "online" patient. We strongly advocate that awake craniotomy should be performed for such tumors whenever there are no absolute contraindications. Primary and repeat surgery in patients harboring a lower grade glioma in an eloquent region is an effective therapeutic option due to the hodotopic reorganisation of brain parenchyma.

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