A case of a 46-year-old patient with a low-grade glioma recurrence of the right gyrus cinguli removed with a contralateral transfalcine approach using an exoscope (ORBEYE 4K-three-dimensional (3D) exoscope, Sony Olympus Medical Solutions Inc., Tokyo, Japan). The operating room setup for this approach is illustrated. During the procedure, the surgeon was seated with head and back in an upright position, while the camera was aligned with the surgical corridor. The exoscope provided detailed, high-quality 4K-3D images of the anatomical structures and optimal depth perception, making surgery accurate and precise. At the end of the resection, an intraoperative MRI scan showed complete removal of the lesion. The patient was discharged on postoperative day 4 with an excellent performance on neuropsychological examination.

In this clinical case the contralateral approach was favorable because the glioma was located close to the midline and because it offered a straight path to the tumor, minimizing retraction on the brain. The exoscope provided the surgeon with important advantages in terms of anatomical visualization and ergonomics during the entire procedure [1)].

A 34-year female underwent surgery for drug resistant epilepsy attributable to the lesion. A near-total resection was attained through a single-stage, trans-cortical route through the medial prefrontal cortex. Despite seizure-freedom and lack of tumor growth (42 months follow-up), she developed symptoms of major depressive disorder (MDD) soon after surgery that have persisted. To identify functional networks potentially engaged by the surgical corridor and tumor resection cavity, both were segmented separately and used as seeds for normative resting-state fMRI connectivity mapping. Then, to study depression specifically, networks associated with the tumor and surgical approach were compared to those associated with subgenual cingulate deep brain stimulation (DBS). The LNM results suggested that the surgical corridor, rather than the tumor, had greater overlap with DBS-based depression networks (32% vs 8%).

The early postoperative development of MDD following resection of a cingulate region tumor, though likely multi-factorial, should be considered and patients appropriately counselled preoperatively. Further validation of LNM as a viable methodology for correlating symptoms to lesion(s) could make it a valuable tool in selection of surgical approach and patient counseling [2)].

2014

Plaza et al. report the longitudinal case study of a right-handed patient harboring two frontal tumors that benefited from bilateral simultaneous surgery. The tumors were WHO Grade II gliomas located in the left inferior frontal area (including the cingulate gyrus) and the right anterior superior frontal gyrus. The double tumor resection was guided by direct electrical stimulation of brain areas while the patient was awake. Neuropsychological assessments were administered before and after the surgery to analyse how the brain functions in the presence of two frontal gliomas that affect both hemispheres and reacts to a bilateral resection, which can brutally compromise the neuronal connectivity, progressively established during the infiltrating process. We showed that both the tumor infiltration and their bilateral resection did not lead to a “frontal syndrome” or a “dysexecutive syndrome” predicted by the localization models. However, a subtle fragility was observed in fine-grain language, memory and emotional skills. This case study reveals the significance of brain plasticity in the reorganization of cognitive networks, even in cases of bilateral tumors. It also confirms the clinical relevance of hodotopical brain models, which considers the brain to be organized in parallel-distributed networks around cortical centers and epicenters [3)].

2010

A 27 year-old male, right handed, was admitted for a 2 years history of very frequent gelastic seizures accompanied sometimes by simple motor partial seizures in both arms, more often being involved his left arm, without impairment of his consciousness state. His neurological examination was normal. Diagnosis was made on native CT scan: minimal hypodense frontal right paramedian lesion, cerebral MRI showed a small well delimited right, parenchymal, homogeneous lesion (16/22/15 mm), involving gyrus cinguli, without perilesional edema and mass effect, hyperintense both on T1 and T2 MR sequences, non-enhancing after Gadolinium. The cerebral lesion was also documented on EEG and video-EEG recordings. Using an interhemispheric microsurgical approach, above the corpus callosum and the right pericallosal artery, at the level of gyrus cinguli, a yellow-gray, infiltrative tumor, having a moderate vascularisation, has been identified and totally removed. The anatomopathological analysis revealed a grade II astrocytoma. The patient recovered very well, without deficits, no gelastic seizures or epileptic manifestations; three months after operation he is still free of seizures.

A case of gelastic seizures accompanied by simple motor partial seizures in both arms, without the impairment of his consciousness state induced by a grade II right gyrus cinguli astrocytoma is described and documented by radiological and electrophysiological studies. Using microsurgical resection, the tumor was totally removed, the patient clinical condition improved. Without an affective connotation as in temporal or hypothalamus topography, gelastic seizures are not patognomonic for hypothalamic hamartomas and in the case of frontal localization of the lesion; they can be associated with motor involvement of the limbs as in this case [4)].

1)
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