Lingual gyrus

The lingual gyrus is a brain structure that is linked to processing vision, especially related to letters. It is thought to also play a role in the analysis of logical conditions (i.e. logical order of events) and encoding visual memories. The lingual gyrus is named after the shape it most closely resembles - the tongue.

Contrary to the name, the region has little to do with speech.

Operations on tumors of the lingual gyri are challenging to perform because of the deep-seated location of these tumors between critical cisternal neurovascular structures and the adjacent temporal and occipital cortexes.

Traditional surgical approaches require temporal or occipital transgression, retraction, or venous sacrifice. These approaches may result in unintended complications that should be avoided. To avoid these complications, the supracerebellar transtentorial approach to this region has been used as an effective alternative treatment in adult patients.

Alessandro De Benedictis et al. from the Bambino Gesù Children's Hospital, IRCCS, Rome described the case of a 17-yr-old patient who underwent resection of an epileptogenic low-grade glioma located within the left-dominant lingual gyrus. Seizures were characterized, as a first symptom, by the right-sided simple visual hallucination that pointed to the left pericalcarine region, corresponding to the lesion location. No signs of primary involvement of anterior temporal-mesial structures (hippocampus/amygdala) were found. As the anatomic-electroclinical correlation was concordant, direct tumor removal was indicated through an infra-occipital supratentorial approach. This route allowed direct access to the target through a safe extra-axial corridor, which limits intraparenchymal dissection until the tumor margin is identified and avoids critical vascular structures, such as the vein of Labbé.

External cerebrospinal fluid drainage was used to facilitate brain relaxation, minimizing brain and venous retraction and, consequently, reducing the risk of postoperative neurological complications, especially for vision. Postoperative magnetic resonance imaging (MRI) demonstrated no surgical complications. Pathological examination revealed a ganglioglioma. At 9-mo follow-up, the neurological examination was normal, antiepileptic therapy was stopped, and the patient was seizure-free. The video describes the main surgical steps, using both intraoperative videos and advanced 3-dimensional modeling of neuroimaging pictures [1].

1)
De Benedictis A, de Palma L, Herur-Raman A, Pepi C, Colafati GS, Carboni A, Randi F, Savioli A, Ricci G, Mastronuzzi A, Carai A, Specchio N, Marras CE. Infra-Occipital Supra-Tentorial Approach for Resection of Low-Grade Tumor of the Left Lingual Gyrus: 2-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2021 May 22:opab172. doi: 10.1093/ons/opab172. Epub ahead of print. PMID: 34022047.