Lateral Transorbital Endoscopic Approach

In 2014 Bly et al. designed and assessed the quality of a novel lateral retrocanthal endoscopic approach to the lateral cavernous sinus. Design Computer modeling software was used to optimize the geometry of the surgical pathway, which was confirmed on cadaver specimens. We calculated trajectories and surgically accessible areas to the middle fossa while applying a constraint on the amount of soft tissue retraction. Setting Virtual computer model to simulate the surgical approach and cadaver laboratory. Participants The authors. Main Outcome Measures Adequate surgical access to the lateral cavernous sinus and adjacent regions as determined by operations on the cadaver specimens. Additionally, geometric limitations were imposed as determined by the model so that retraction on soft tissue structures was maintained at a clinically safe distance. Results Our calculations revealed adequate access to the lateinterdral cavernous sinus, Meckel cave, orbital apex, and middle fossa floor. Cadaveric testing revealed sufficient access to these areas using <10 mm of orbital retraction. Conclusions Our study validates not only the use of computer simulation to plan operative approaches but the feasibility of the lateral retrocanthal approach to the lateral cavernous sinus [1)]

Transorbital endoscopic approach for middle fossa exposure

Transorbital endoscopic approach for middle fossa exposure

Transorbital endoscopic approach for posterior fossa exposure

Transorbital endoscopic approach for posterior fossa exposure.

Case reports

Two patients with mesial temporal lobe pathology presenting with seizures underwent surgery. The use of a transpalpebral or Stallard-Wright eyebrow incision enabled access to the intraorbital compartment, and a lateral orbital wall 'keyhole' opening permitted visualization of the anterior temporal pole.

Results: This approach afforded adequate access to the surgical target and surrounding structures and was well tolerated by the patients. To the best of our knowledge, this report constitutes the first case series describing the endoscope-assisted lateral transorbital approach to the temporal lobe. We discuss the limits of exposure, the nuances of opening and closing, and comparisons to open craniotomy.

Conclusion: Further prospective investigation of this approach is warranted for comparison to traditional approaches to the mesial temporal lobe [2)].

1)
Bly RA, Ramakrishna R, Ferreira M, Moe KS. Lateral transorbital neuroendoscopic approach to the lateral cavernous sinus. J Neurol Surg B Skull Base. 2014 Feb;75(1):11-7. doi: 10.1055/s-0033-1353363. Epub 2013 Sep 9. PMID: 24498584; PMCID: PMC3912142.
2)
Chen HI, Bohman LE, Emery L, Martinez-Lage M, Richardson AG, Davis KA, Pollard JR, Litt B, Gausas RE, Lucas TH. Lateral Transorbital Endoscopic Access to the Hippocampus, Amygdala, and Entorhinal Cortex: Initial Clinical Experience. ORL J Otorhinolaryngol Relat Spec. 2015;77(6):321-32. doi: 10.1159/000438762. Epub 2015 Sep 30. PMID: 26418017.