Posterior petrous bone

Different microsurgical transcranial approaches (MTAs) have been described to expose the posterior surface of the petrous bone (PPB). A quantitative, anatomical comparison of the most used MTAs, for specific areas of the PPB, is not available. Anatomical dissections were performed on five formalin-fixed, latex-injected cadaver heads (10 sides). Six MTAs were analyzed: Kawase approach (KWA), retrosigmoid approach (RSA), retrosigmoid approach with suprameatal extension (RSAS), retrolabyrinthine approach (RLA), translabyrinthine approach (TLA), and transcochlear approach (TCA). Surgical volumes and exposed areas of each approach were quantified with a dedicated neuronavigation system (ApproachViewer, part of GTx-Eyes II, University Health Network, Toronto, Canada) and adjuvant software (ITK-SNAP and Autodesk Meshmixer 3.5). Areas and volumes were compared using linear mixed models. TCA provided the best exposure of Trautmann's triangle and the retromeatal, suprameatal, meatal, and premeatal regions. RSAs provided the best exposure to the inframeatal region, with RSAS gaining significant exposure to the suprameatal region. KWA had the highest surgical volume, and RLA the lowest. Transpetrosal approaches offer the widest exposure of PPB proportionally to their invasiveness. Retrosigmoid approaches, which get to the studied region through a postero-lateral path, are paramount for the exposure of the inframeatal and suprameatal region and, given the adequate exposure of the remaining PPB, represent an effective approach for the cerebellopontine angle (CPA). These anatomical findings must be considered with approach-related morbidity and pathological features in order to choose the most appropriate approach in clinical practice [1)].

[1)]
Serioli S, Agosti E, Buffoli B, Raffetti E, Alexander AY, Salgado-López L, Hirtler L, Rezzani R, Maroldi R, Draghi R, Borghesi I, Calbucci F, Peris-Celda M, Fontanella MM, Doglietto F. Microsurgical transcranial approaches to the posterior surface of petrosal portion of the temporal bone: quantitative analysis of surgical volumes and exposed areas. Neurosurg Rev. 2023 Feb 6;46(1):48. doi: 10.1007/s10143-023-01956-y. PMID: 36745228.

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