Petroclival Expansion of the Anterior Petrosectomy: Lessons Learned from Cadaveric Study Applied to a Ventral Pontine Cavernoma

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Disclosures

• The authors have no pertinent disclosures
Introduction

• Lesions of clival zone 1-B are technically demanding
  – Depth of operative field and close proximity to critical neurovascular structures

• The middle fossa craniotomy with anterior petrosectomy (MF-AP) and its modifications are frequently used to address neoplastic and vascular lesions of clival zone 1-B
  – We previously compared petroclival expansion of the MF-AP approach and expanded endoscopic endonasal (EEE) approaches clival zone 1-B in 10 silicone-injected cadavers
    • Significantly larger surface area of operative window and surgical freedom for ventrolateral pontine lesions via petroclival expansion of the MF-AP.
    • Significantly larger medial surface area of operative window and surgical freedom for ventral lesions with the EEE approach.
Petroclival Expansion of the MF-AP Approach
Methods

• Retrospective Case Review
• PubMed Literature Review
Clinical Presentation

- 33yo male p/w 2 weeks left jaw pain and headache; two days weakness, dysarthria, nausea
  - Non-contrast CT head demonstrates left pontine hemorrhage
  - MRI demonstrates underlying cavernoma
Operative Approach

- Lumbar drain placed, ENT performed anterior petrosectomy
  - Anterior and inferior extension into petroclival fissure
  - Provides wide exposure of infratrigeminal region
- Lesion accessed via ventrolateral exophytic clot on pontine surface
Discussion

• Petroclival expansion of the anterior petrosectomy is safe and feasible in the hands of an experienced skull base surgery team.

• Provides direct surgical corridor to the ventrolateral brainstem
  – Bounded by the C3-4 bend anteriorly; CN-V3 superiorly, and CN-VI inferiorly.
  – Obviates the need for brain retraction; violation of the tentorium; or ligation of the superior petrosal sinus.

• The approach is not suited to lesions lateral to CN-VI or of the C3-segment of the internal carotid artery
Conclusions

• This case represents direct translation of cadaveric surgical anatomy studies to the treatment of a hemorrhagic pontine cavernoma.

• This is only the second case report, to our knowledge, that explicitly utilizes the petroclival expansion of the anterior petrosectomy to access pathology of clival zone 1-B.

• This clinical application of cadaveric study highlights the continued importance of basic anatomic research to improve our surgical access to technically demanding lesions.
References


