Endoscopic Contra-lateral Transmaxillary Approach to the Orbital Roof

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INTRODUCTION

The contra-lateral transmaxillary (CTM) approach to the skull base utilizes the maxillary sinus as a corridor for access to contra-lateral skull base regions.[1-3] Recently, use of the CTM approach in conjunction with a traditional endoscopic endonasal approach (EEA) has shown feasibility in expanding access to the petrous apex and petroclival region,[4-5] allowing for a more favorable angle of attack without extensive manipulation of the ICA.

PURPOSE

We performed a proof-of-concept study in order to assess the feasibility of using the CTM approach to gain access to the orbital roof and apex.

METHOD

Anatomical dissection was performed in 2 heads. A Caldwell-Luc approach, ipsilateral medial maxillectomy and superior septectomy were performed. Instruments were inserted through the maxillary sinus to reach the contra-lateral orbit. A 30-degree endoscope was used to better visualize the lateral wall anatomy.

RESULTS

The CTM approach provided a favorable angle of instrumentation, enabling complete resection of the orbital roof. This approach also facilitated direct access to the anterior clinoid and orbital apex. By further widening the anterior extent of the medial maxillectomy, exposure could be extended to the posterior table of the frontal sinus. Endoscopic visualization through the Caldwell-Luc corridor provided a unique, panoramic view of the orbit and skull base, an anatomical perspective rarely achievable in live surgery and typically only appreciated in sagittally split cadaveric dissections. However, this expanded exposure came at the cost of increased morbidity relative to standard endonasal techniques, requiring both a Caldwell-Luc incision and a superior septectomy, as well as possible transection of the nasolacrimal duct based on extent of maxillectomy.

CONCLUSION

An endoscopic CTM approach to the skull base offers an attractive alternative to transcranial approaches, affording expansive access to the anterior cranial base as well as orbital apex and roof in this proof-of-concept study. We plan to undertake further study with cadaveric studies on 5 cadavers to assess this novel approach and compare access to described transorbital approaches.

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FIGURE 1 Resection of the lateral portion of the orbital roof (instrument through nasal cavity)

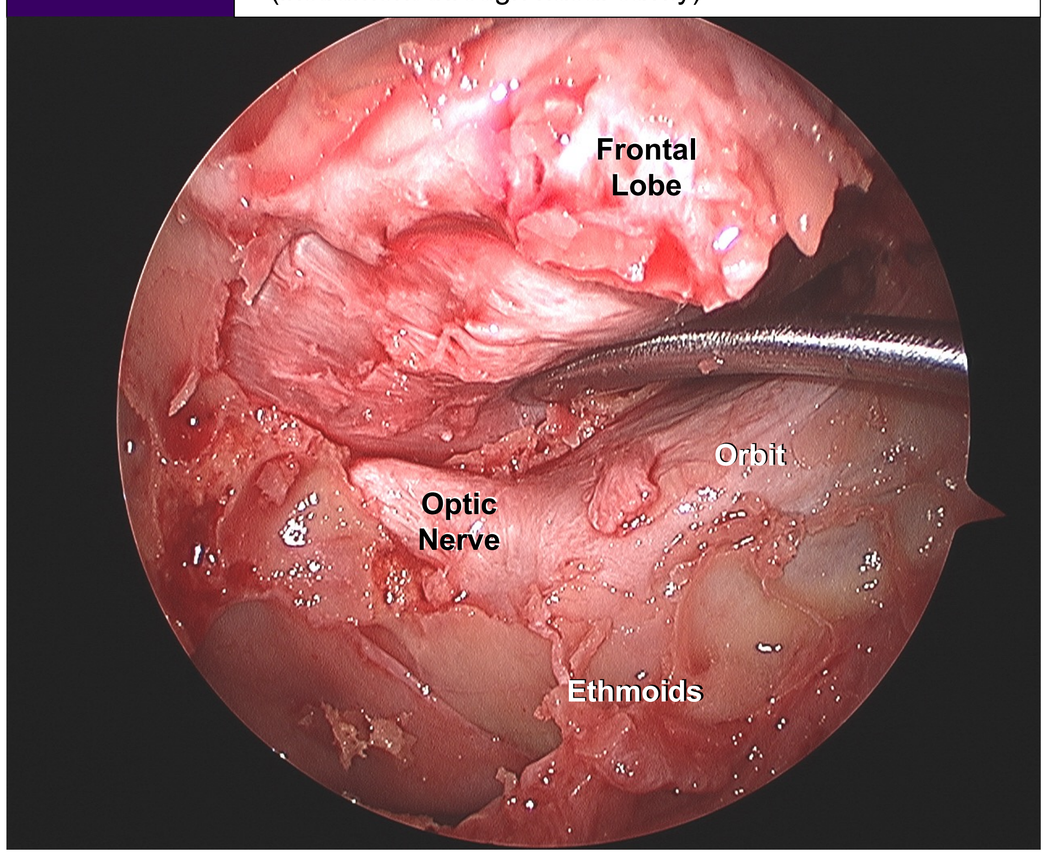


FIGURE 2 Resection of the lateral part of the orbital roof (instrument through transmaxillary incision)

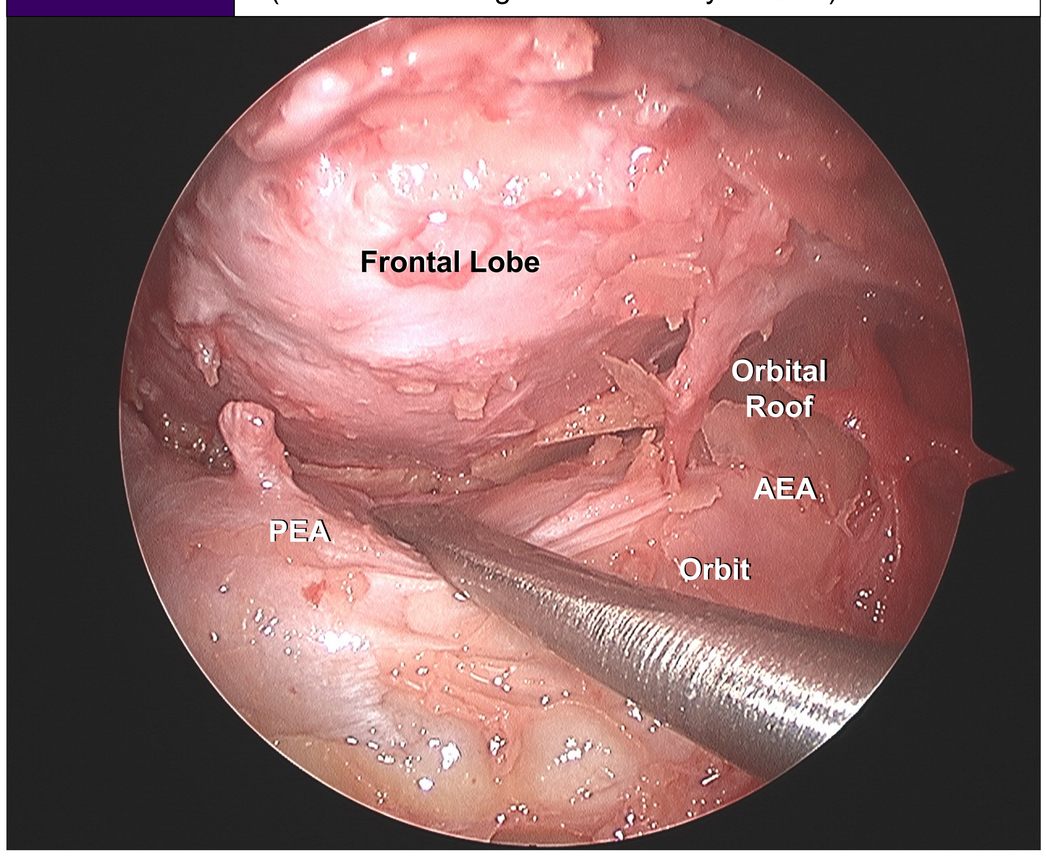
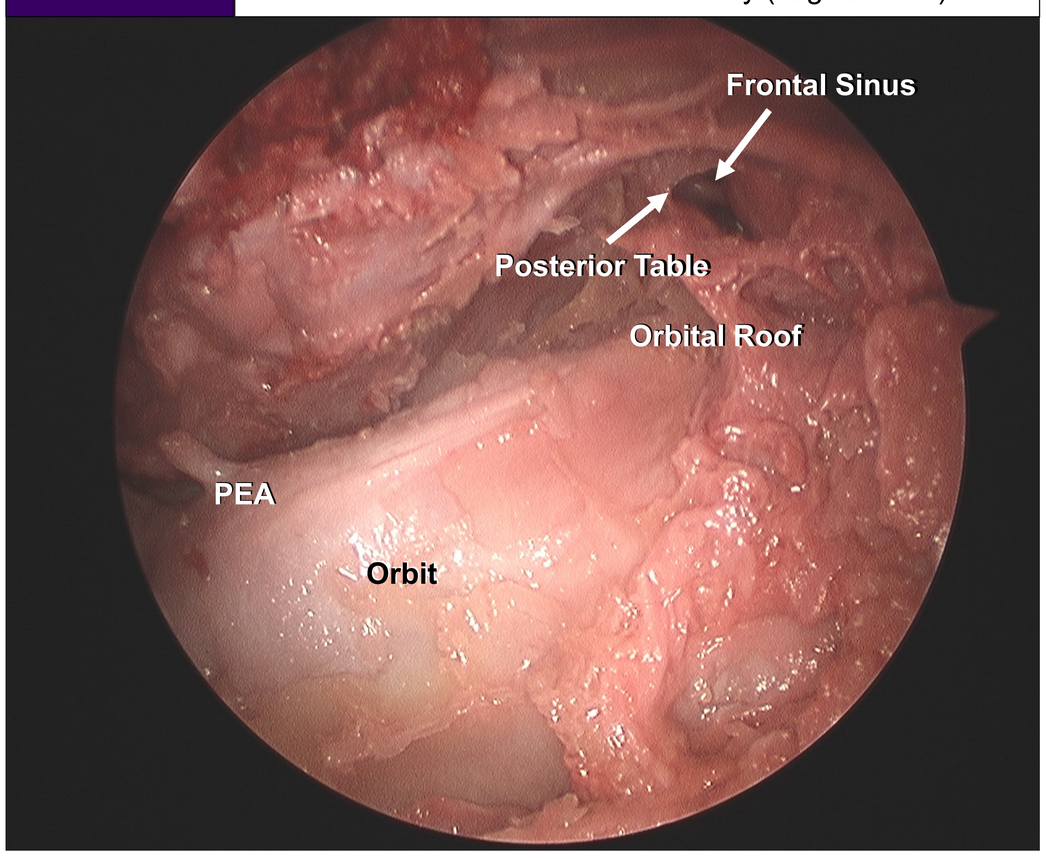


FIGURE 3 View of posterior table of frontal sinus after anterior extension of the medial maxillectomy (sagittal view)



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