

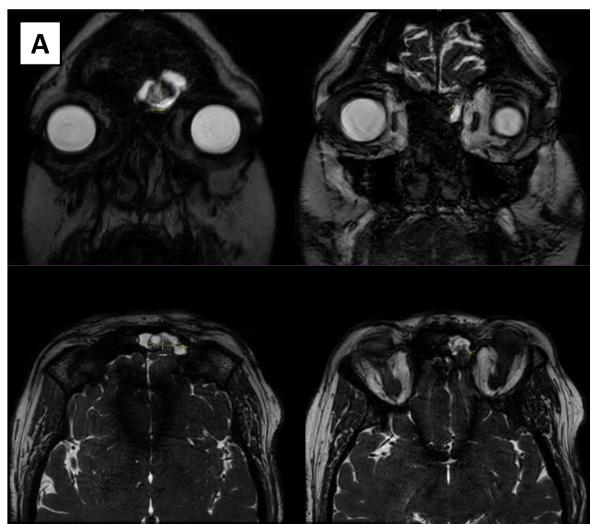
Combined Transnasal and Transcranial Approach for Repair of a Multifocal Meningoencephalocele

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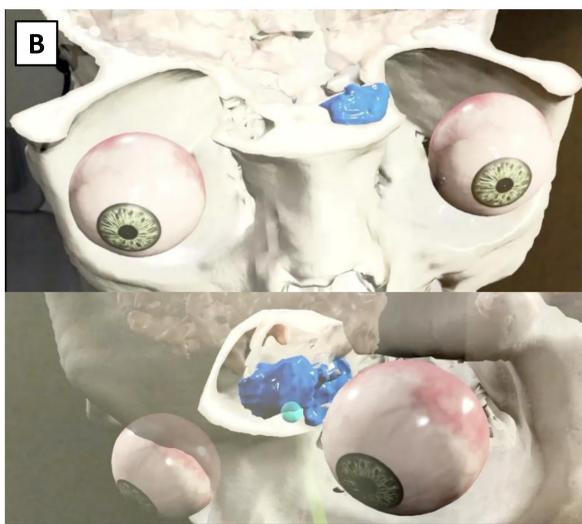
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Clinical Presentation

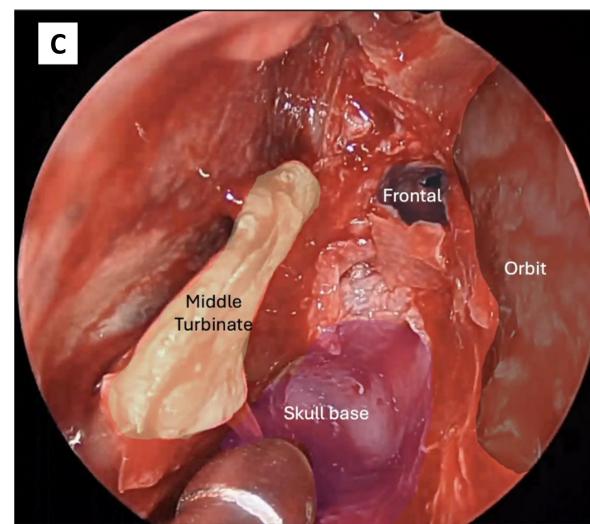
Patient is a 50-year-old-female who presented with a **10-year history of a frontal sinus lesion and prior nondiagnostic biopsy**. She was noted to have **clear nasal drainage** and admitted for **suspected meningitis**. Laboratory work-up revealed **nasal fluid positive for beta-2-transferrin**, confirming CSF leak, with imaging demonstrating frontal and cribriform meningoencephaloceles. She was referred to otolaryngology and neurosurgery for operative management.



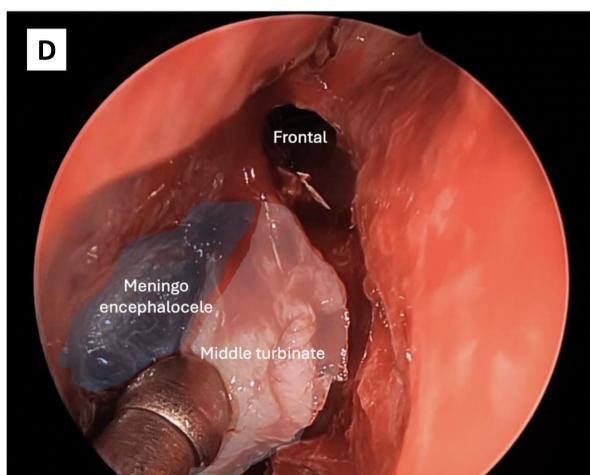
Axial and Coronal BFFE MRI revealed multiple frontal and cribriform meningoencephaloceles.



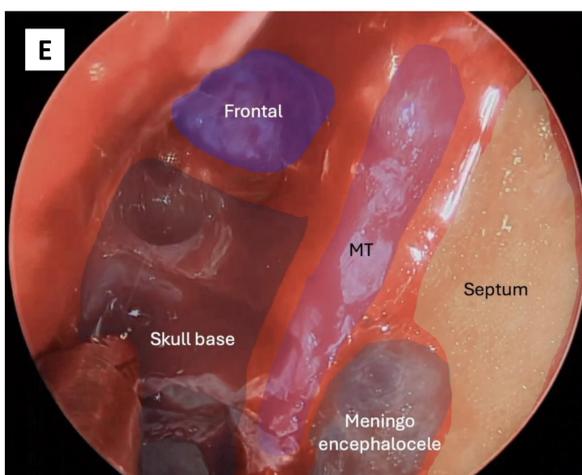
Augmented reality reconstruction supported 3D visualization and surgical planning.



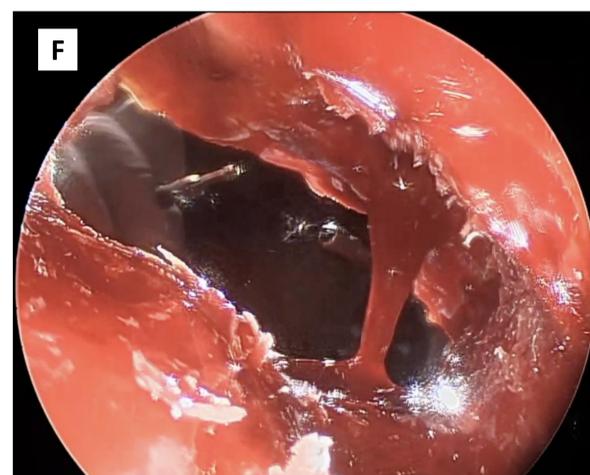
The left skull base and frontal recess were dissected.



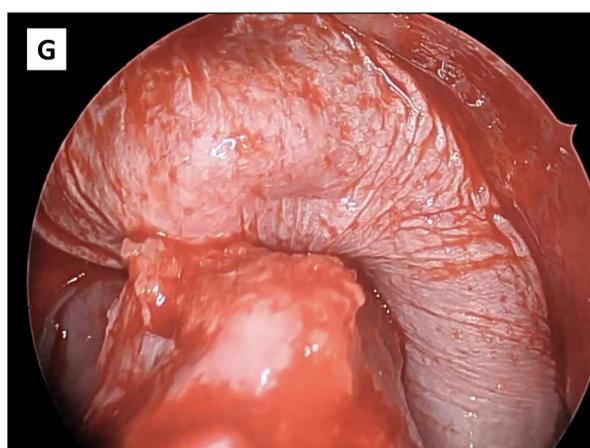
Meningoencephaloceles were exposed via combined transcranial and transnasal approaches.



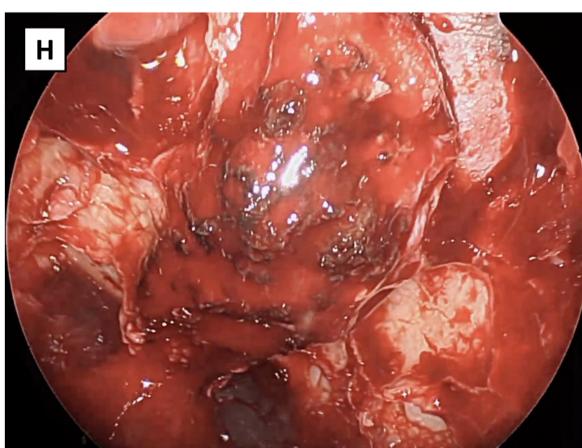
Bilateral middle turbinates were resected to the skull base following complete dissection of the frontal sinuses.



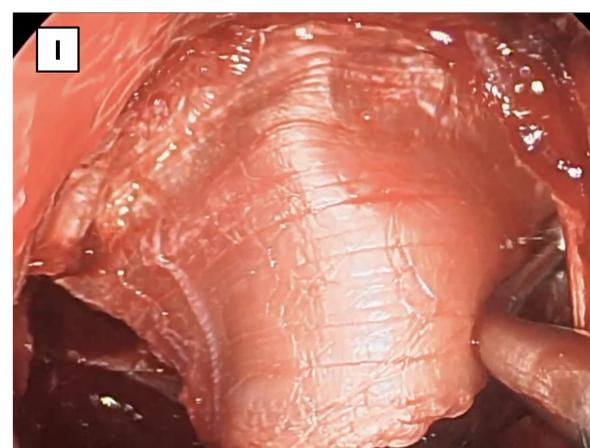
Extended frontal sinusotomy (Draf III) was performed, allowing multiplanar visualization of the lesions.



A pericranial flap was elevated and placed overlying the frontal sinus defect, bone, and meningoencephaloceles.



The cribriform meningoencephaloceles were fulgurated, and remaining skull base partitions drilled flush.



A fascia lata graft was placed over the fulgurated meningoencephaloceles and multilayer closure was achieved, including a nasoseptal flap.

Recovery & Conclusions

- 3-month post-operative MRI demonstrated stable reconstruction without evidence of residual meningoencephaloceles.
- A multiportal, transnasal and transcranial approach can be safely employed for complex anterior skull base defects.
- Collaboration between neurosurgery and otolaryngology is essential for managing pathology in critical skull base regions.
- Advanced imaging and augmented reality planning enhance intraoperative orientation and optimize outcomes.
- Multilayer reconstruction with vascularized flaps ensures durable closure and reduces the risk for postoperative complications.

Contact

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References

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