

# Endonasal Endoscopic Transethmoidal Transcribriform Approach for Anterior Cranial Fossa Tumors: Technical Update and Case Series

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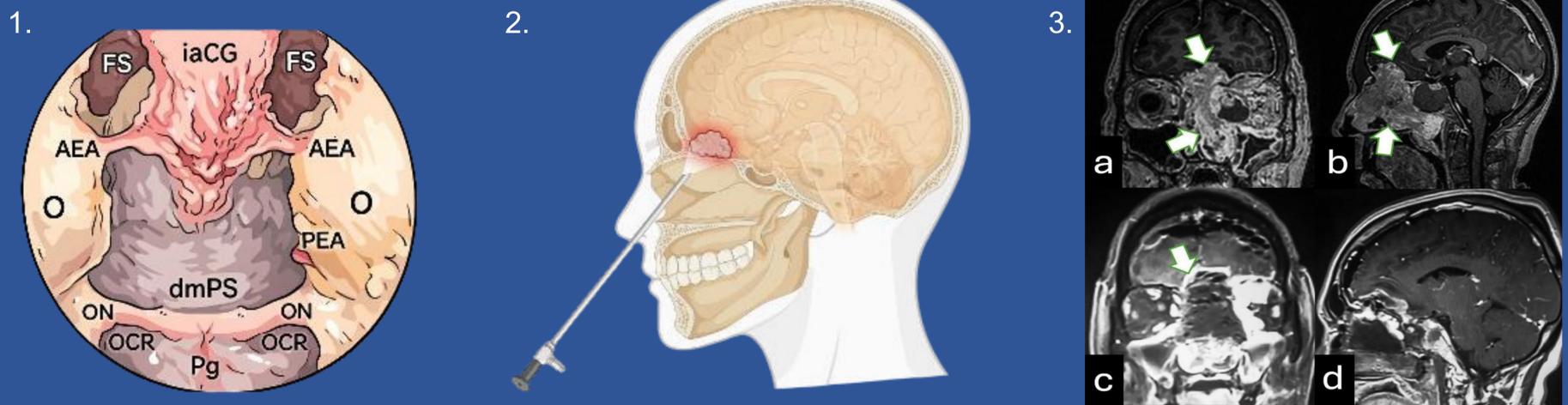
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## Endoscopic endonasal access to midline anterior cranial fossa tumors

Compared to transcranial approaches



- Near-total / gross-total resection
- No brain retraction
- Acceptable morbidity
- CSF leak: uncommon / manageable
- Short hospital stay

1. Illustrative graphic of the endoscopic endonasal trans-ethmoidal trans-cribriform approach to the anterior cranial fossa. (a) Endoscopic anatomical landmarks of the anterior skull base. dmPS, dura mater of the planum sphenoidale; iaCG, inferior aspect of the crista galli; dmC, dura mater of the clivus; CP, carotid protuberance; Pg, pituitary gland; FS, frontal sinus; AEA, anterior ethmoidal artery; PEA, posterior ethmoidal artery; O, orbit; ON, optic nerve.

2. While purely intracranial lesions would be most suitable for transcranial approaches (e.g., supraorbital, mini pterional)

3. Endonasal resection of an ENB. (a, b) Preoperative enhanced MRI of the brain demonstrates a giant tumor compromising the nasal cavity, extending primarily into the right side, posteriorly extending to the nasopharynx, and superiorly intracranially. (c, d) Postoperative enhanced MRI of the brain shows an aggressive, satisfactory resection including the intracranial component in the midline and the whole endonasal part.

### Introduction

- Tumors of the anterior cranial fossa (ACF) include meningiomas, esthesioneuroblastomas, and sinonasal malignancies with variable intracranial and endonasal extension.
- Traditional transcranial approaches often require brain retraction and are associated with relevant morbidity.
- We describe the endoscopic endonasal transethmoidal transcribriform approach and its clinical application in midline anterior cranial fossa tumors.

### Methods and Materials

- Retrospective descriptive case series conducted at a tertiary referral center.
- Four patients with midline anterior cranial fossa tumors treated using an endoscopic endonasal transethmoidal transcribriform approach (EETTA).
- Indications included midline location, endonasal extension, and limited lateral spread.
- Surgical technique followed a stepwise endoscopic endonasal approach with multilayer skull base reconstruction.
- Clinical, radiological, and perioperative outcomes were reviewed.

### Results

- Four illustrative cases were included: olfactory groove meningiomas, recurrent meningioma, inverted papilloma, and esthesioneuroblastoma.
- Near-total or gross-total resection was achieved in all cases, with intentional residual left in high-risk areas when appropriate.
- The endonasal corridor provided direct midline access without brain retraction in all patients.
- One postoperative cerebrospinal fluid leak occurred and was successfully managed.
- No intracranial infections or perioperative mortality were observed.

### Discussion

- The endoscopic endonasal transethmoidal transcribriform approach provides a direct midline corridor to selected anterior cranial fossa tumors, avoiding brain retraction.
- Appropriate patient selection is essential, particularly regarding tumor lateral extension and sinonasal involvement.
- In experienced centers, EETTA represents a complementary alternative to transcranial approaches rather than a universal replacement.
- Mastery of skull base anatomy and reconstruction techniques is critical to minimize complications, particularly cerebrospinal fluid leakage.

### Conclusions

- EETTA is a feasible option for selected midline anterior cranial fossa tumors, allowing direct access without brain retraction.
- Appropriate patient selection and expertise in skull base reconstruction are critical for optimal outcomes.

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### References:

