



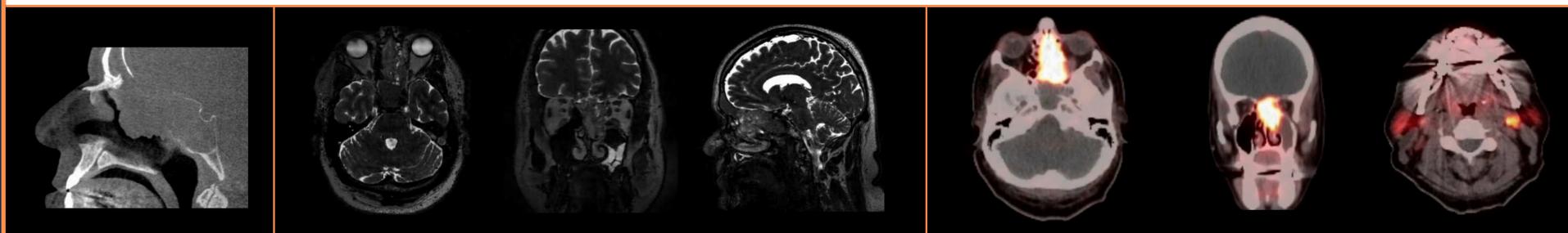
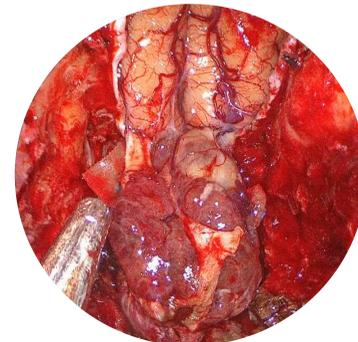
Expanded Endoscopic Endonasal Skull Base Resection of Olfactory Neuroblastoma with Draf III & Pedicled Pericranial Flap Reconstruction

UC San Diego
SCHOOL OF MEDICINE

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History of Present Illness

A 58-year-old healthy male presented with eight months of persistent left-sided nasal congestion, anosmia, and thick discharge, refractory to medical therapies. Preoperative imaging revealed a heterogeneously enhancing sinonasal mass measuring 4.9 x 2.7 x 4.0 cm, centered in the left olfactory recess and ethmoid sinuses. The mass demonstrated intracranial extension through the cribriform plate and fovea ethmoidalis into the anterior cranial fossa, with resultant mild mass effect on the adjacent anteroinferior frontal lobes without brain parenchymal edema or enhancement. The tumor crossed midline and involved the left orbital medial wall and maxillary sinus wall, without definite orbital invasion. A peripherally enhancing 1.4 x 1.2 cm left parapharyngeal lymph node was identified, concerning for nodal metastasis. Post-obstructive changes with trapped secretions were also present in the left frontal and sphenoid sinuses. The primary mass and parapharyngeal node demonstrated intense 68Ga-DOTATATE uptake, with additional suspicious uptake in the submandibular region. Specimen biopsy revealed esthesioneuroblastoma, staged as IVA (cT4a, cN1, cM0), requiring expanded endoscopic endonasal skull base resection with vascularized flap reconstruction.



Surgical Approach

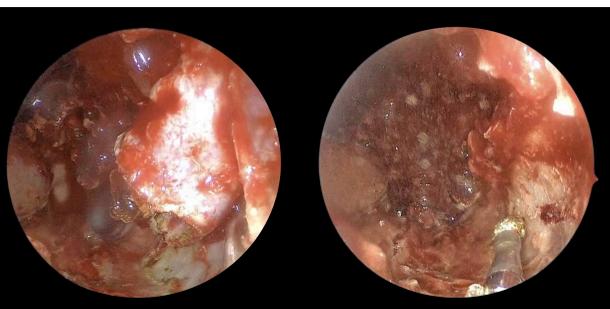
Step 1: Bilateral Exposure & Sinonasal Clearance

- Inferior turbinate outfracture bilaterally
- Tumor in bilateral olfactory clefts with posterior septal artery involvement
- Frozen section positive at right orbital apex → bone resected for true margin
- Complete right-sided ESS to skull base and orbital apex
- Bilateral septectomy with negative septal margins



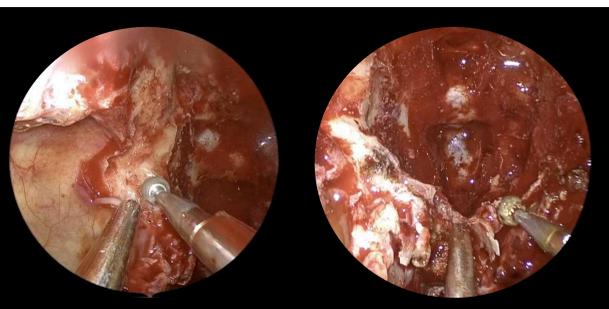
Step 2: Left Orbital & Maxillary Resection

- Left medial maxillectomy
- Nasolacrimal duct sacrificed
- Medial orbital wall dehiscent → resected to apex and skull base
- True lateral orbital margin achieved



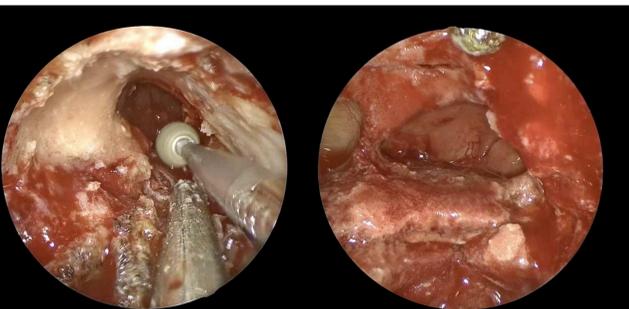
Step 3: Posterior & Lateral Extension

- Bilateral sphenoidotomy
- Tumor found in clival recess, paraclival carotid mucosa, and lateral sphenoid recess
- Transpterygoid approach
- Middle cranial fossa + infraorbital canal involvement addressed



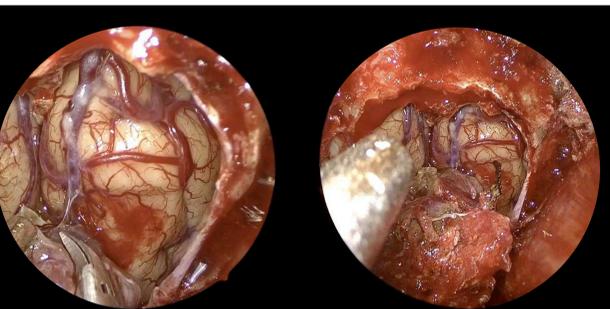
Step 4: Frontal Sinus

- Draf III via outside-in technique
- Frontal sinus floor and intersinus septum drilled to create a single neo-ostium



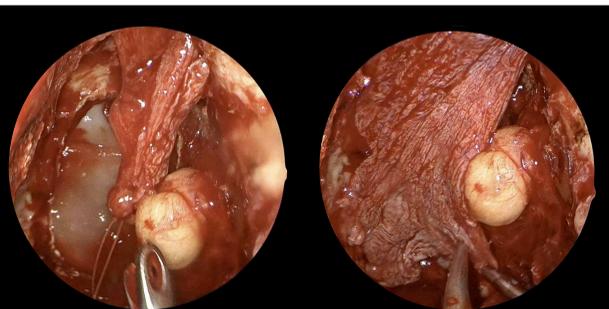
Step 5: Anterior Skull Base Resection

- Bilateral ethmoid roof mucosa stripped
- AEA & PEA divided
- Cribriform plate drilled
- Bilateral dural opening
- Olfactory apparatus resected en bloc
- Frozen dural margins negative



Step 6: Reconstruction

- Pericranial flap was harvested via bicoronal incision
- Flap delivered into nasal cavity through extended Draf III corridor and tunneled to cover entire defect
- DuraGen Plus underlay with pericranial flap overlay, stented and packed



Postoperative Outcome & Follow-Up



MRI imaging at 4 months postoperatively

Final pathology confirmed esthesioneuroblastoma (Hyams grade II). Following EEA resection, he underwent bilateral modified radical neck dissection sparing IJV, CN XI, and SCM (left: levels 1b-IV, right: levels II-IV) in addition to a resection of a left parapharyngeal mass. Of 34 lymph nodes examined by pathology, metastatic disease was identified on the left in levels I (1/4), II (3/12), and III (3/4), while the right neck showed involvement limited to level II (3/6). Levels IV bilaterally and right level III were negative (0/12 combined).

The patient received adjuvant proton beam radiation therapy to the primary site and bilateral neck with concurrent cisplatin-based chemotherapy. At 4 months postoperatively, he demonstrated no evidence of recurrent disease on MRI and reported only residual xerostomia and dysgeusia that were gradually improving.

