Inverting papilloma (IP) is a rare, benign, sinonasal tumor that is locally aggressive and has a propensity to recur with incomplete resection. Complete resection is necessary if the tumor has been present for less than 6 months. In cases where there is incomplete resection or if the tumor has been present for 6 months, surgical management is indicated. The indications for surgical management include: (1) recurrent symptoms, (2) failure of medical management, and (3) evidence of tumor progression on imaging studies. Surgical management can be achieved through endonasal, transpalpebral orbitofrontal, or combined endonasal and transpalpebral orbitofrontal approaches. The choice of approach depends on the location and extent of the tumor within the anterior cranial base.

**Surgical Technique**

**ENDONASAL APPROACH**

The procedure is usually started with the endonasal portion. Lidocaine and epinephrine are injected into the nasal septum, base of the middle turbinate and lateral nasal walls. The middle turbinate is then medialized and decongested with topical cocaine. The uncinate process is then removed, and a maxillary antrostomy is performed. A cystome and a microdebrider are then used to remove the bony walls of the nose. The frontal sinus is then accessed through a frontoethmoidectomy. The frontal sinus ostium is then identified, and a frontal sinus burr is used to remove the medial aspect of the frontal sinus wall. A Draf III procedure is performed if visualization of the medial aspect of the target lesion is not adequate.

**TRANSPALPEBRAL ORBITOFrontal APPROACH**

The upper eyelid crease is outlined and infiltrated with lidocaine with epinephrine. Through a superior eyelid crease incision, a skin flap is elevated off the orbital septum to expose the orbit. A periorbital incision is made along the orbital rim and subperiosteal dissection is performed medially and inferiorly to create a three-dimensional operative space. The frontal sinus is then accessed through a frontoethmoidectomy. The frontal sinus ostium is then identified, and a frontal sinus burr is used to remove the medial aspect of the frontal sinus wall. A Draf III procedure is performed if visualization of the medial aspect of the target lesion is not adequate.

**Combined Endonasal and Transpalpebral orbitofrontal Approach for Management of Sinonasal Inverting Papillomas With Extensive Intracranial Involvement**

**Introduction**

To demonstrate the utility of a minimal-access combined orbitofrontal-endonasal approach for managing inverting papillomas with extension into the frontal sinus.

**Objective**

Four patients seen at the Johns Hopkins Hospital between 2007 and 2015 with biopsy-confirmed sinonasal inverting papillomas with far lateral frontal sinus extension underwent a combined endonasal and transpalpebral approach for resection of the tumor. Patient demographic data, preoperative characteristics, imaging, and follow-up data were compiled through retrospective chart review. Patients were selected for this approach when the tumor extended to the posterior frontal sinus wall, lateral frontal sinus recess and orbit. Tumors were first approached via the endonasal route until the frontal recess is reached. A Draf IIb or Draf III procedure was then performed to gain better exposure of the lesion. orbitofrontal and bone defects into the orbit are repaired with a layer of collagen regeneration matrix (DuraRepair). The Perorbita is elevated along the superior and medial orbital walls. With the aid of stereotactic navigation, the Draf exposure.

**Discussion**

Inverting papillomas extending into the frontal sinus can be a challenging entity to fully resect. The inherent characteristics of this type of tumor for local extension and bony remodeling with expansion into surrounding tissue necessitate a well-planned approach. Recurrence rates have been reported to range from 10% to 22%. Carney et al. demonstrated comparable outcomes between open and endonasal techniques. While endonasal approaches are appropriate when the inverting papilloma is distal to the frontal recess, tumors that extend more superiorly and spread laterally into the frontal sinus are difficult to resect successfully through a purely endonasal approach. The narrow working angle and restrictive anatomy obstruct full view and make it challenging to appreciate disease that is extending into the lateral aspects of the frontal sinus. Approaching the tumor from above and below expands the viewing window and allows tumor resection in continuity from the frontal sinus to the nasal cavity. The transpalpebral orbitofrontal craniotomy is a versatile and minimally-invasive approach that allows tailored bony access to the central anterosuperior skull base with minimal scarring and the patient had no evidence of recurrence on follow-up.

**Conclusions**

Combining a minimal-access orbitofrontal craniotomy with the traditional endonasal endoscopic approach allows complete resection of invasive inverting papilloma within the frontal sinus. This was achieved with great cosmetic results.

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**References**


