

# Combined Endoscopic Endonasal and Supraorbital Excision of a Frontal Sinus Mucocele

Wesley Shoap MD, Katie Melder MD, Cole Lewis MD

## Background

Frontal sinus mucoceles are benign, slow-growing, mucus-filled pseudocystic lesions representing 60-65% of all paranasal sinus mucoceles. [1] These expansile lesions develop following obstruction of the frontal sinus ostium from trauma, infection, inflammation, prior surgery, anatomic variations, or tumors, leading to accumulation of mucoid secretions and desquamated epithelium. [1-3] These lesions can cause progressive bone resorption and expansion that can cause orbital complications (proptosis, visual disturbances, diplopia), intracranial extension, or anterior table erosion presenting as subcutaneous forehead masses. [1][4-5] Contemporary management has shifted toward endoscopic approaches. [6] Endoscopic marsupialization offers comparable recurrence rates to open approaches (P=0.20) with significantly lower minor complication rates (P0.001), similar major complication rates (P=0.23), and mean hospital stays of 2±1.4 days. [6-8] Open approaches, including osteoplastic flap with obliteration, remain indicated for specific scenarios including unfavorable anatomy, lateral disease extension, significant scarring, large anterior table defects, or concurrent subdural empyema. [6][9]

## Clinical Presentation

- 62 y/o M who presented to clinic with enlarging “bump” over the left eye over the previous 6 months
- Patient had a history of a frontal sinus fracture following an MVC s/p craniofacial repair in 1992
- Also endorsed pressure above the eye and inability to fully open the eye
- He denied vision loss

### Neurological Exam

- Tense but compressible mass above the left eye causing proptosis
- Full visual acuity
- Visual fields full
- EOMI
- Facial movement symmetric
- Full facial sensation

## Imaging Presentation

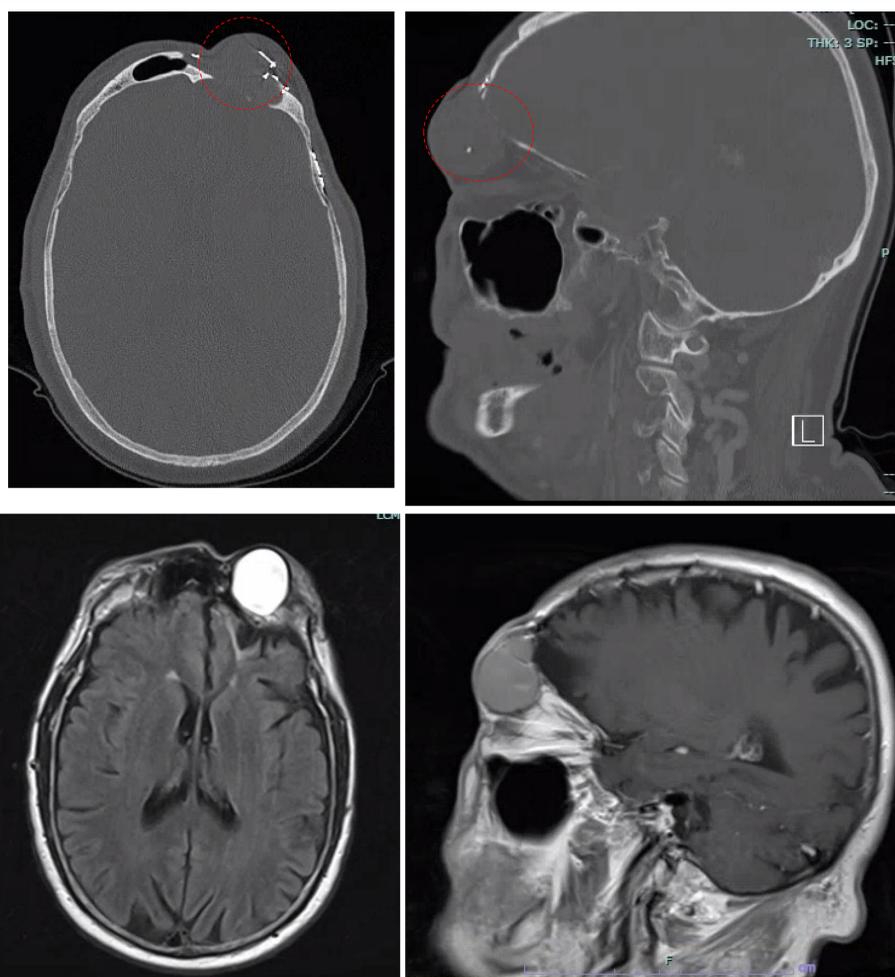


Figure 1. (Top) CTH demonstrating a left frontal sinus lesion causing expansion and destruction of the sinus. (Bottom) MRI brain demonstrating a T2 hyperintense lesion within the left frontal sinus consistent with mucocele.

## Surgical Management

- Combined endoscopic and trans-palpebral excision of the mass
- Draf III frontal sinusotomy performed
- Endoscopic fenestration attempted however unsuccessful due to a dense fibrotic capsule
- An open trans-palpebral approach was then used to successfully open and drain the lesion, including removal of floating plates and screws
- Endoscopic fenestration of capsule was then reattempted successfully
- Once the lesion was completely drained a red rubber catheter was then passed through the brow incision, into the lesion, and out through the nasal cavity
- The catheter was cut with the proximal end in the lesion and distal end in the nasal cavity
- Catheter was left in place for 4 weeks with the goal of recreating a mucosal tract

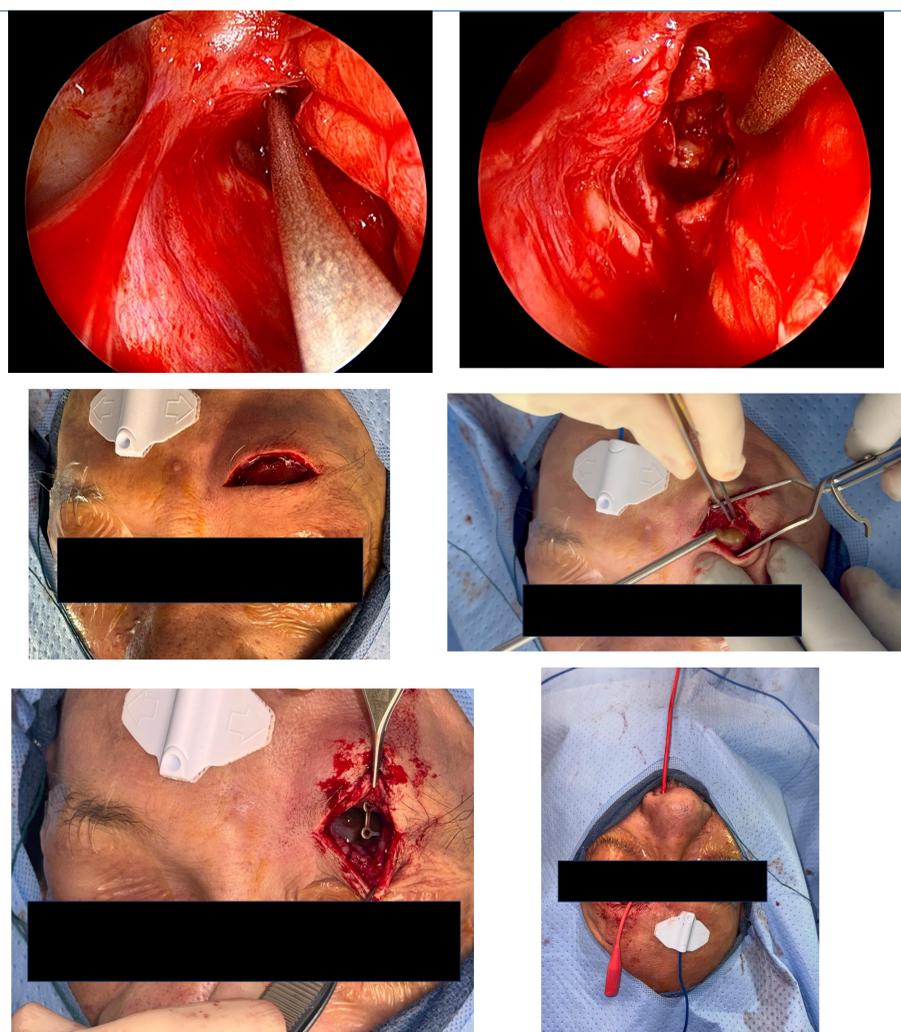


Figure 2. (Top left) Endoscopic attempt at fenestration of the capsule. (Top right) successful endoscopic fenestration of the capsule. (Middle) Trans-palpebral excision and drainage of the mucocele. (Bottom left) Floating hardware removed from the cavity. (Bottom right) Red rubber catheter was passed and ends cut to extend from the lesion into the nasal cavity.

## Post-op Course

- Pt was discharged on POD 2
- Catheter was removed at his four week follow up appointment
- No recurrence of the mucocele at 3 month follow up
- Plan for cranioplasty at a later date to address cosmetic deformity

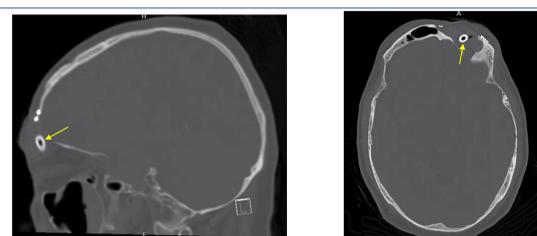


Figure 3. Post op CTH demonstrating complete excision of the lesion with the proximal end of the catheter (yellow arrow) positioned within the frontal sinus.

## Conclusion

Frontal sinus mucoceles result from ostial obstruction with subsequent bone resorption and expansion. Endoscopic marsupialization has emerged as the preferred surgical approach for most cases, offering excellent outcomes with lower morbidity compared to traditional open techniques. Open approaches retain an important role in complex cases with specific anatomic or infectious considerations. An interdisciplinary approach optimizes surgical planning and patient outcomes.

## Contact

Wesley Shoap  
LSU Department of Neurosurgery  
2021 Perdido Street, 8th Floor  
New Orleans, LA 70112  
(484) 638-1597

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