RUSH UNIVERSITY MEDICAL CENTER

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Recalcitrant chronic rhinosinusitis

Pete Papagiannopoulos, MD

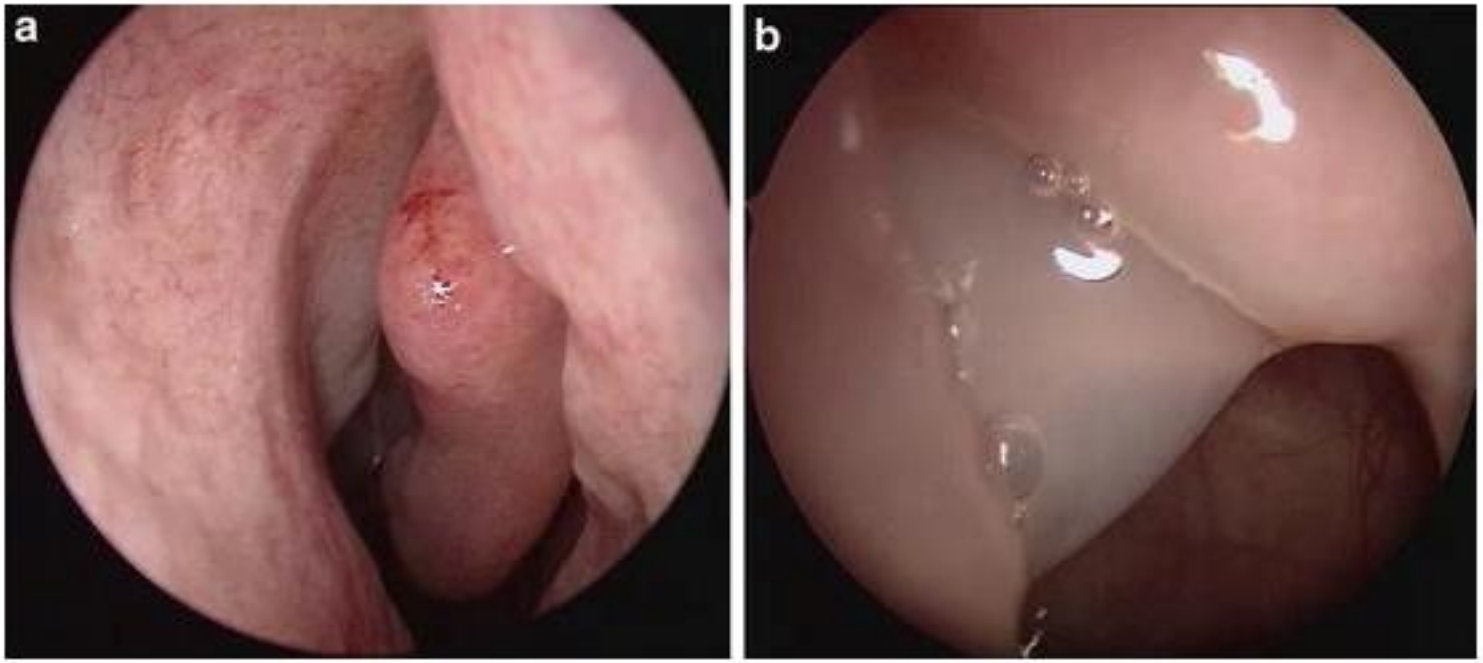
Assistant Professor

Overview

- Recalcitrant maxillary sinus disease
  - Recirculation
  - Mucociliary dysfunction phenotype
- Frontal Disease
  - DRAF3

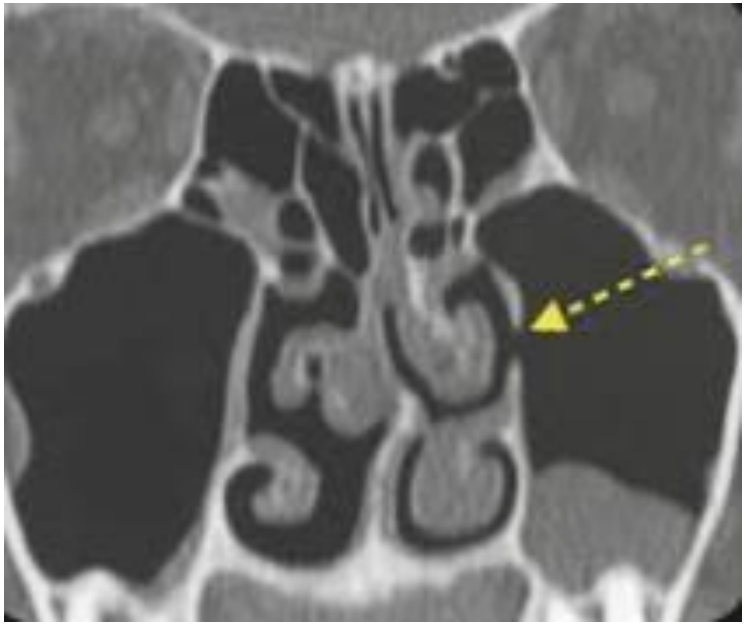
RE-CIRCULATION

Re-circulation - Etiology

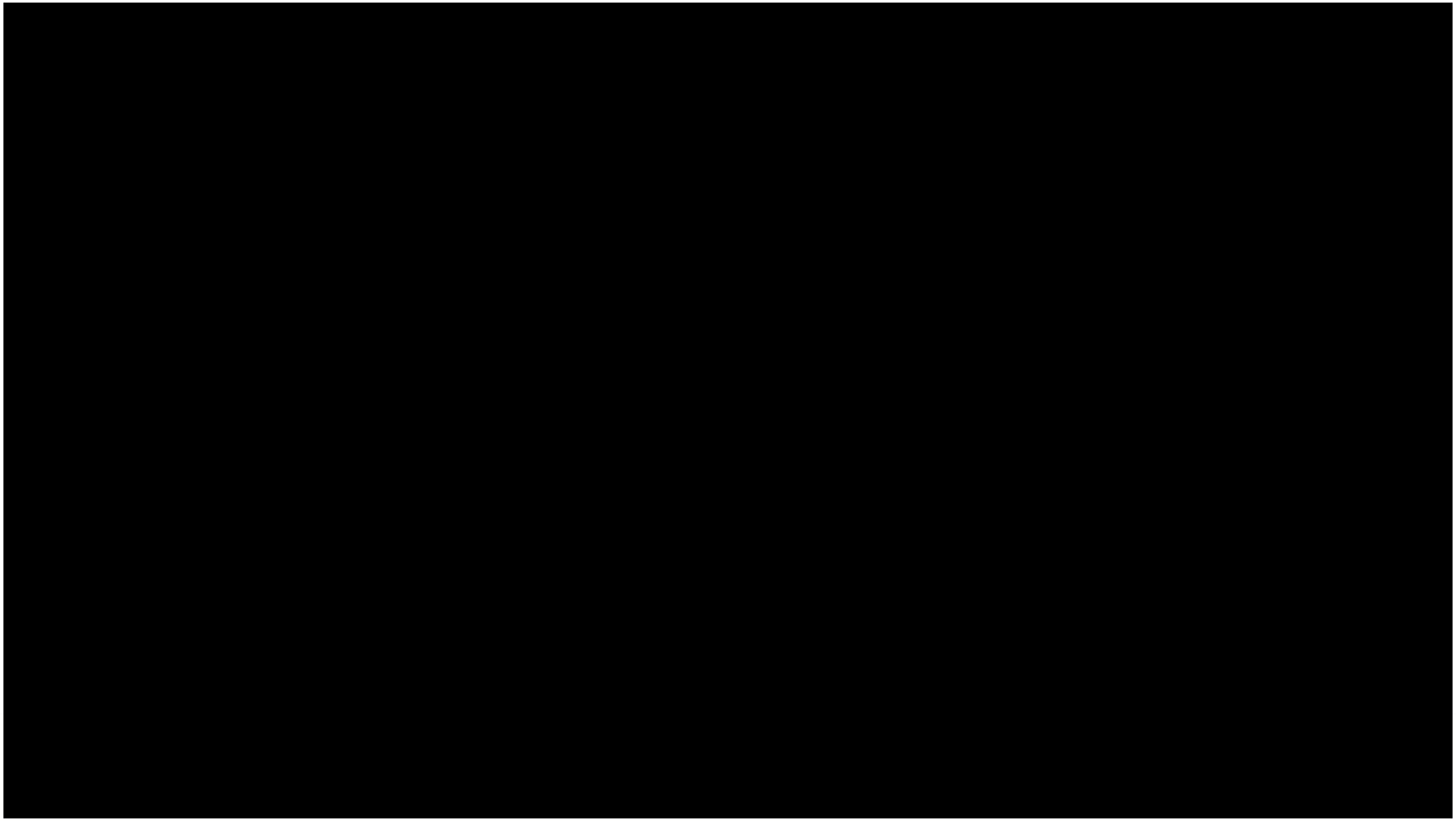


Recirculation

- Symptoms
  - Sometimes asymptomatic
  - Mucus
  - Recurrent sinusitis
- Treatment options



Treatment re-circulation



MEDIAL MAXILLECTOMY

Endoscopic Medial Maxillectomy

- **Adaptation of the open maxillectomy**
  - Removal of portion of the medial maxillary wall to gain wide access to the maxillary sinus
- **Indications**
  - Removal of benign tumors
  - Treatment of refractory chronic maxillary sinusitis
  - Select malignancy
- Varies in extent of resection given nature of disease
  - Nasolacrimal duct
  - Inferior pyriform aperture (Denker's approach)

Evidence in CRS

- **Use in recalcitrant CRS due to:**
  - Impairment in mucociliary clearance
    - Primary ciliary dyskinesia
    - Cystic fibrosis
  - Biofilm-mediated disease
    - S. Auerus, Pseudmonas
  - Fungal disease
  - Immunologic impairment
  - Prior Surgery
- **Facilitates sinus hygiene (irrigation, in-office debridement), enhance delivery of topical medication, enabling gravity-dependent drainage[1-3]**

1. Konstantinidis I, Constantinidis J. Medial maxillectomy in recalcitrant sinusitis: when, why and how? *Curr Opin Otolaryngol Head Neck Surg*. 2014;**22**:68–74.
2. Wang EW, Gullung JL, Schlosser RJ. Modified endoscopic medial maxillectomy for recalcitrant chronic maxillary sinusitis. *Int Forum Allergy Rhinol*. 2011;**1**:493–497.
3. Woodworth BA, Parker RO, Schlosser RJ. Modified endoscopic medial maxillectomy for chronic maxillary sinusitis. *Am J Rhinol*. 2006;**20**:317–319

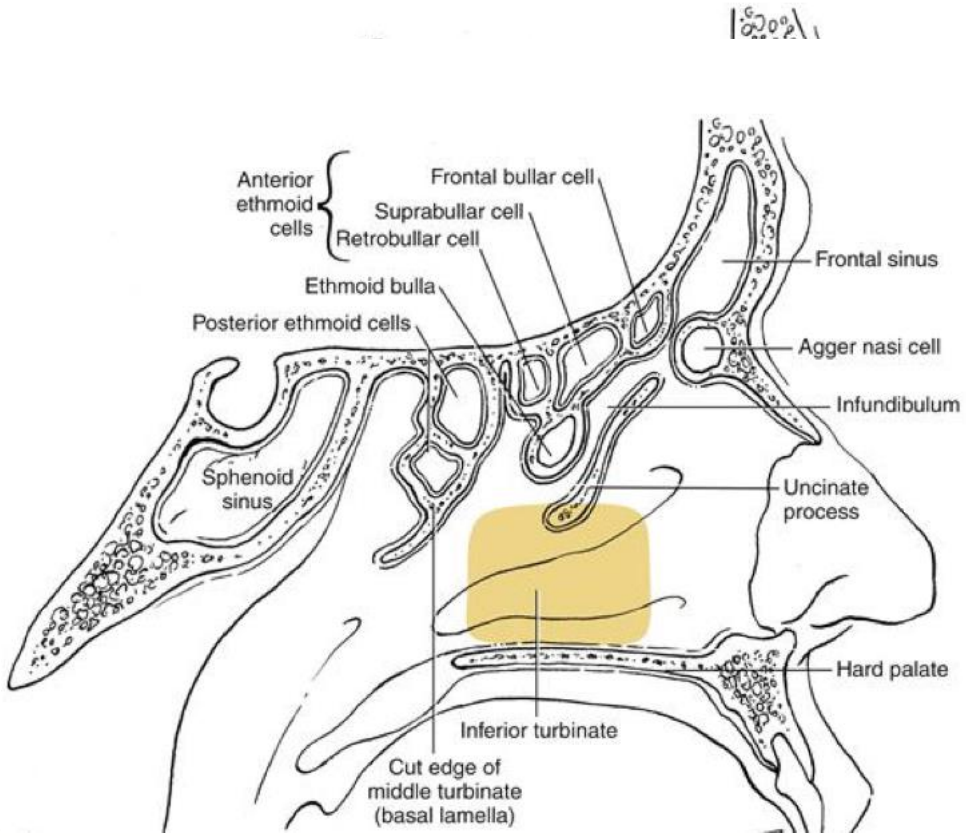
Evidence in CRS

- **Review of 122 patients[1]**
  - **Most common comorbidity cystic fibrosis**
  - **Improvement in SNOT-22 ($p < 0.001$)**
  - **Improvement in endoscore ($p < 0.001$)**
  - **No complications**
  - **In patients with mean 6.9yr follow up (n = 28)**
    - **74% complete or significant resolution**
    - **26% partial improvement**
    - **0% worse off**
    - **No complications, none required revision surgery**

1. Costa ML, Psaltis AJ, Nayak JV, Hwang PH. Long-term outcomes of endoscopic maxillary mega-antrostomy for refractory chronic maxillary sinusitis. Int Forum Allergy Rhinol. 2015 Jan;5(1):60-5

Anatomical Considerations

- Inferior turbinate
- Uncinate process
- Natural maxillary os
- Posterior maxillary wall (perpendicular plate of the palatine bone)
- Nasal floor
- Lacrimal bone
- Pyriform aperture



Preoperative Considerations

- **Patient factors**
  - Minimize bleeding
    - Herbals, Vitamin E
  - Optimize asthma and BP
  - Tobacco use and other drugs
- **Disease factors**
  - Optimize mucosal disease
  - Aggressive medical therapy
  - Steroids
    - Improve visibility and OR time
    - Enhance postop healing?

Instrumentation

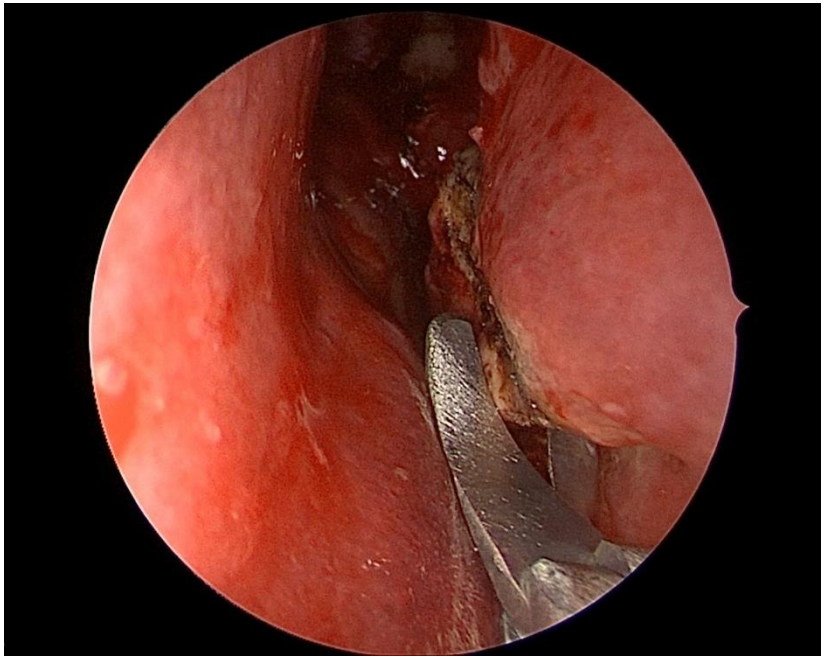
- Telescopes (0° , 30° , 70°)
- Curved and straight Beaver blades
- Turbinate scissors
- Through-cut instruments
  - Straight, backbiting, downbiting
- Angled Drills (15, 70)
- Microdebrider
- Suction bovie, Dessi bipolar
- Hemostat

Surgical Procedure

- **Step 1. Perform maxillary antrostomy with complete removal of uncinate**
  - Natural os connected to surgical os (70 deg scope)

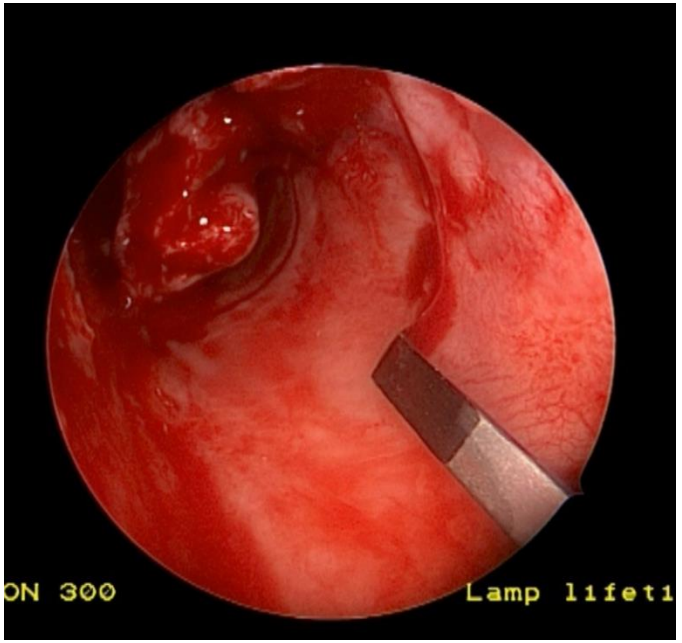
Surgical Procedure

- **Step 2. Resect inferior turbinate with preservation of the posterior and anterior 1/3**
  - Crush inferior turbinate with curved hemostat (decrease blood supply)
    - Or use bipolar
  - Use endoscopic turbinate scissors to cut along path
  - Leave posterior stump
    - Prevents significant potential bleed



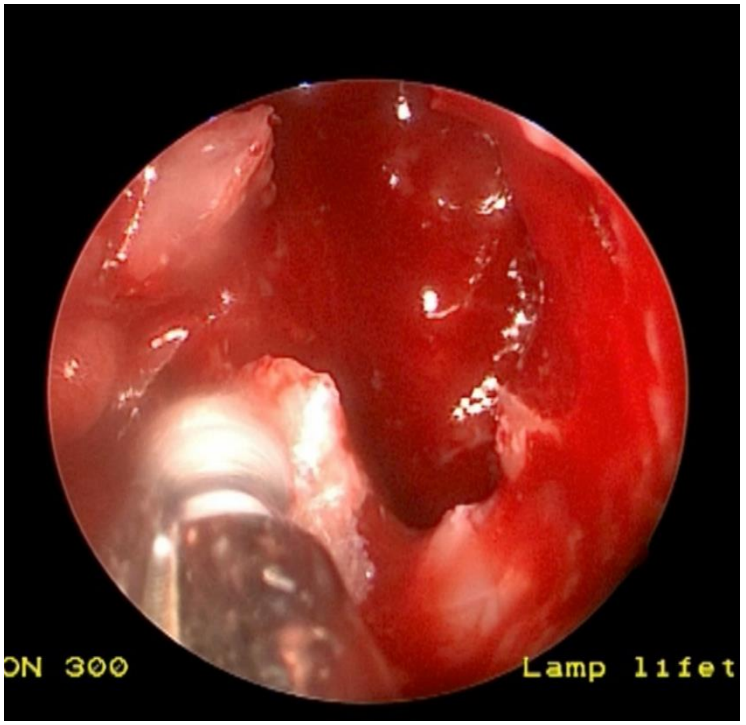
Surgical Procedure

- **Step 3. Create nasal floor mucosal flap (optional)**
  - Curved beaver blade to make anterior vertical incision just posterior to Hasner's valve
  - Posterior vertical incision at vertical portion of palatine bone
  - Connect incisions with straight blade and elevate flap extending onto nasal floor, ending at base of septum
  - Floor flap generally only used if exposed bone is present after drilling

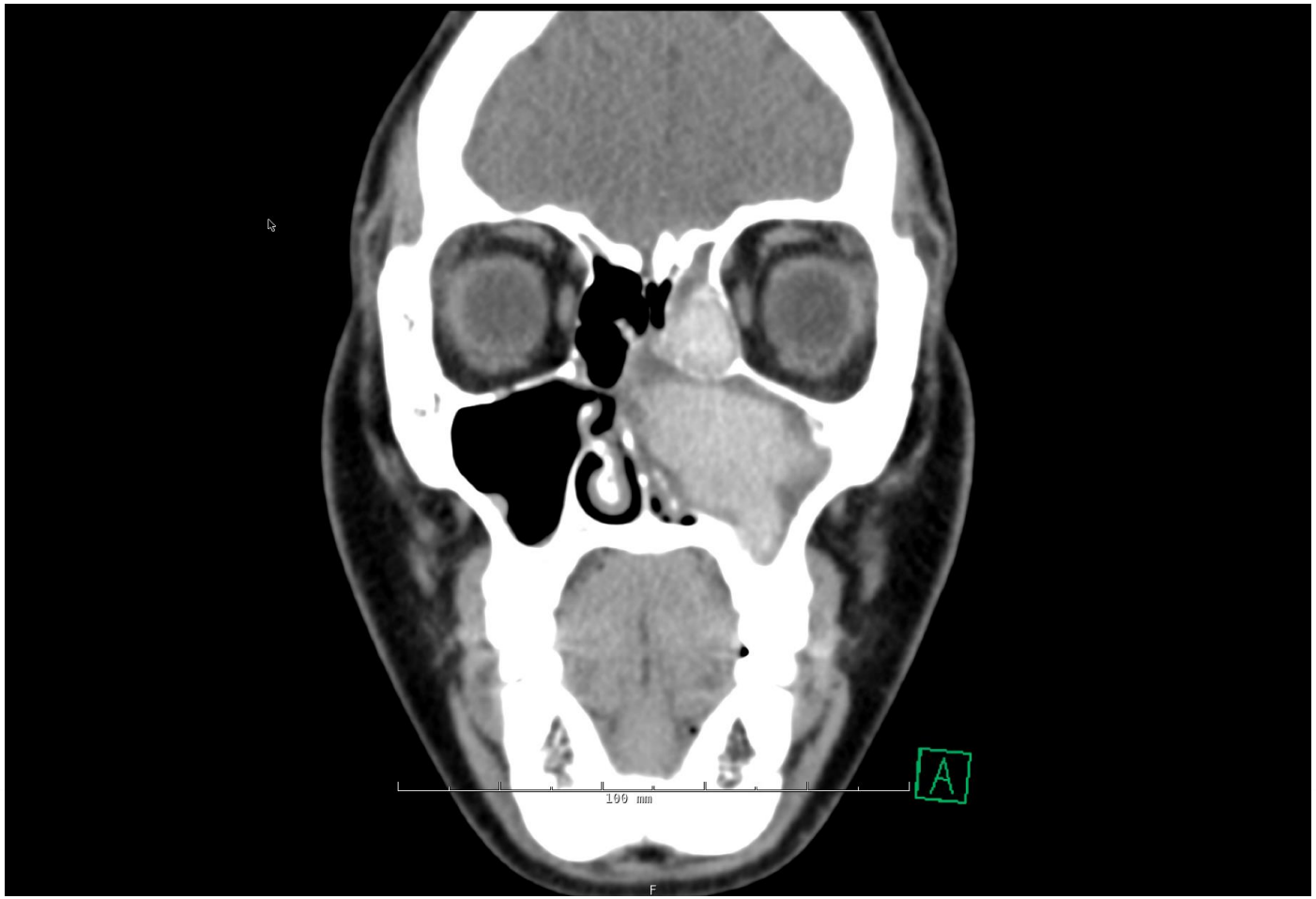


Surgical Procedure

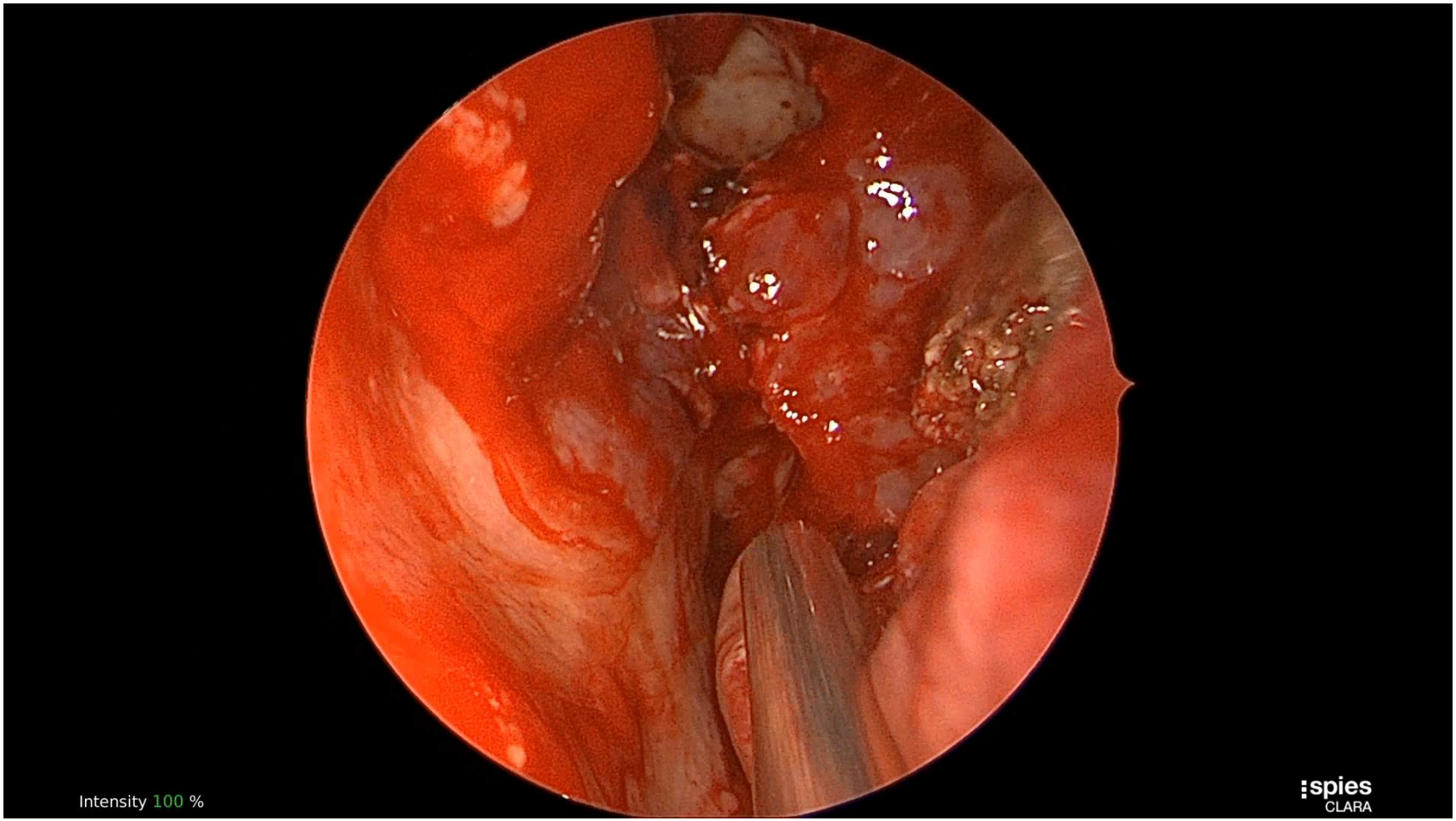
- **Step 4. Resect medial maxillary wall**
  - Hand instrumentation (downbiter, backbiter, straight through cut) initially followed by high speed drills
  - Additional anterior exposure with resection of medial maxillary wall below Hasner's valve
  - For additional wide anterior exposure
    - Resect nasolacrimal duct
    - Resect inferior piriform aperture (Denker's)



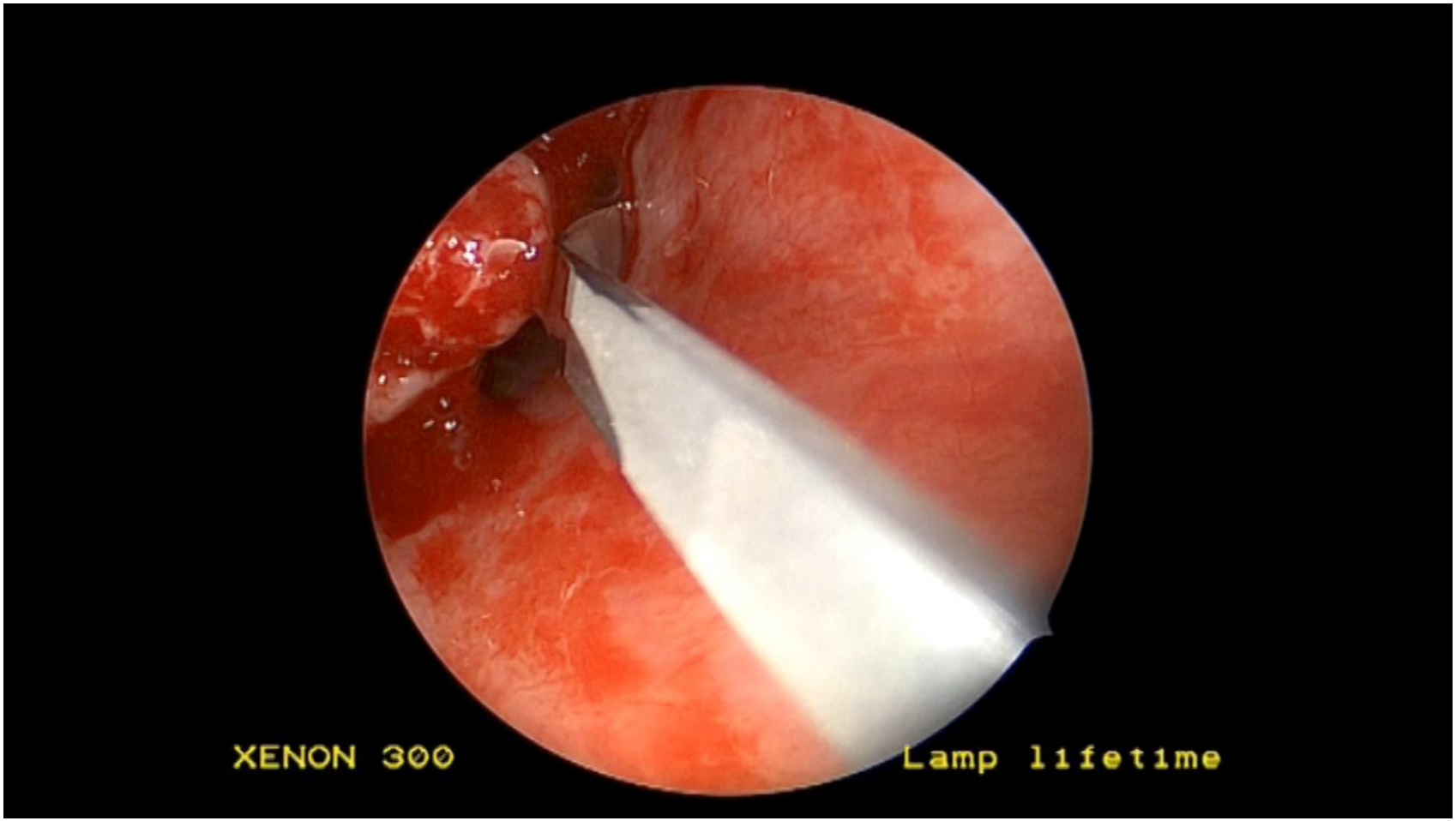
Case Example



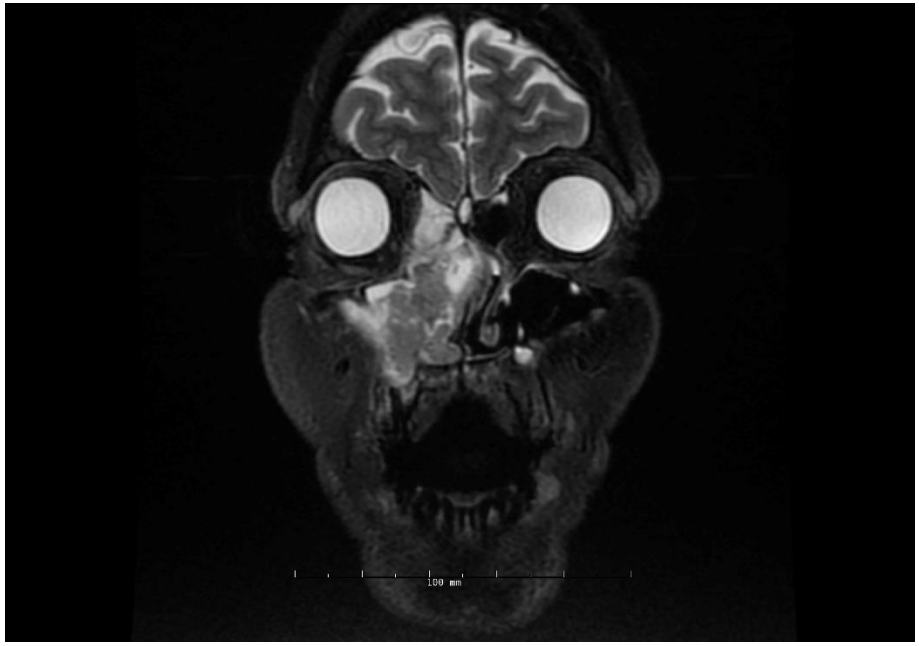
Full Length Surgery

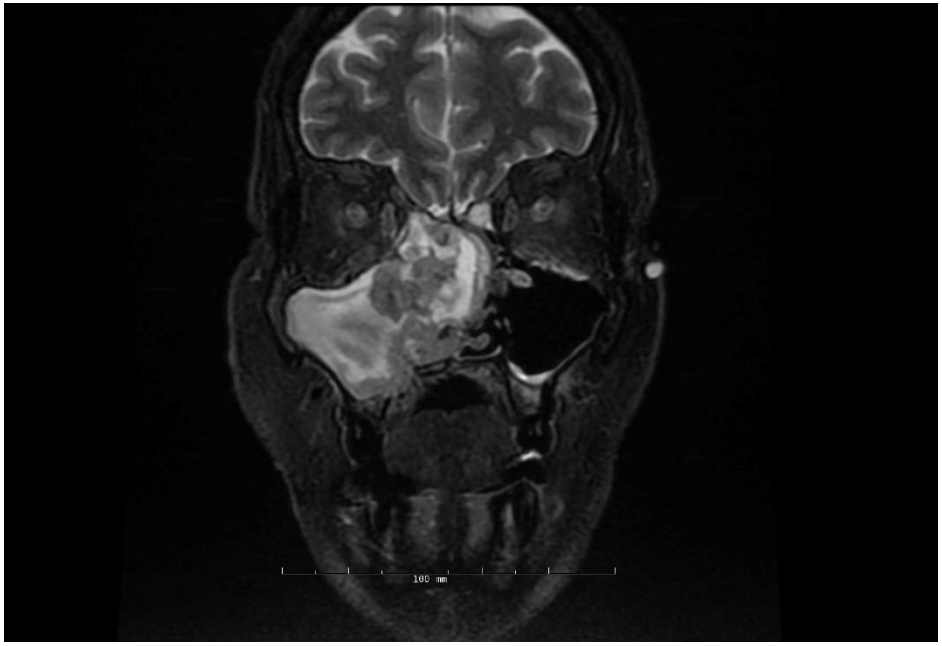


Nasal floor flap

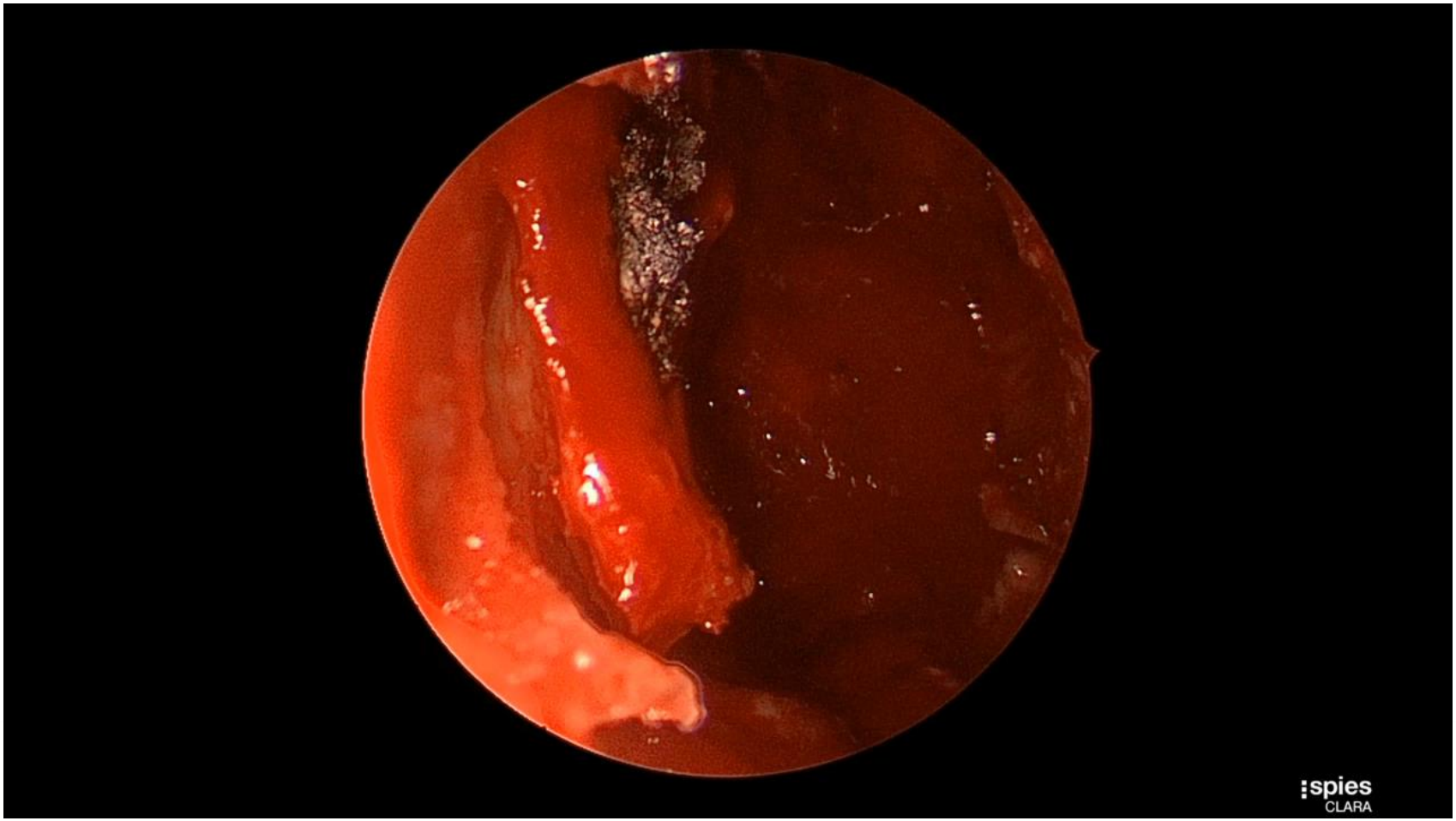


Anterior exposure (Denker's)





Denker's

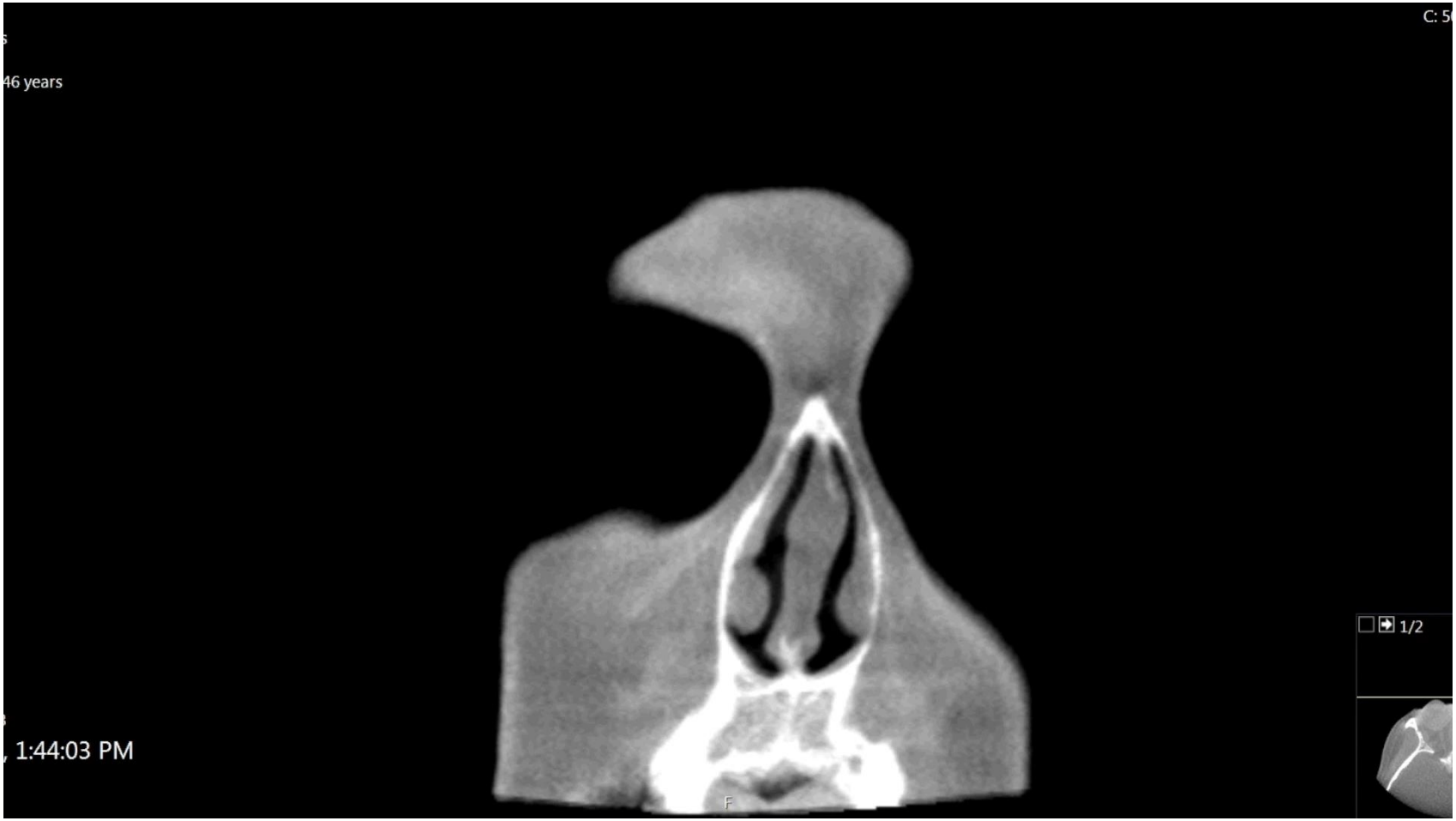


Potential Complications

- **Bleeding**
  - Posterior turbinate stump
- **Epiphora**
  - Transection of lacrimal system usually uneventful
  - Consider formal DCR if undergoing radiation
- **Crusting**
- **Numbness**
- **Malar flattening (Denker's)**
  - Resect too much piriform aperture

RECALCITRANT FRONTAL DISEASE

- DRAF 3 (modified lothrup)
- Use rotational flaps off the septum to promote faster healing and prevent stenosis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Thank You!

Questions?