




Lothrop H. Anatomy and surgery of the frontal sinus and anterior ethmoidal cells, 1898

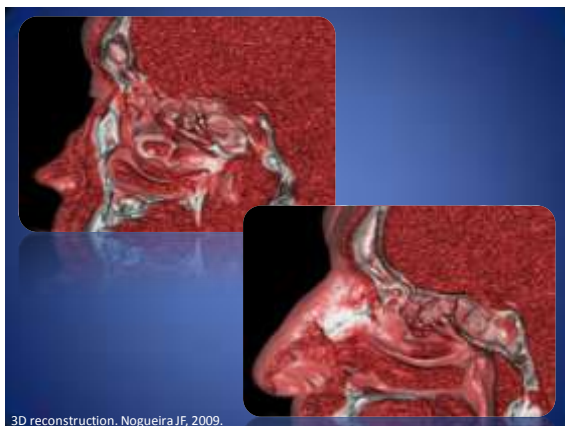
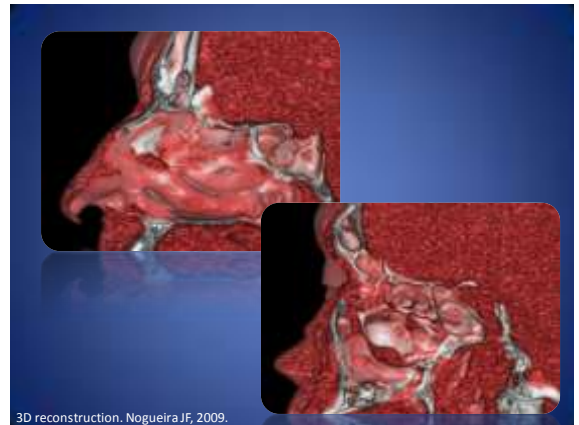


INTRODUCTION

- Endoscopic frontal sinus surgery
- Last frontier
 - Difficult
 - Risky
- Complications



Indiana Jones is a trademark of Universal Studios, USA



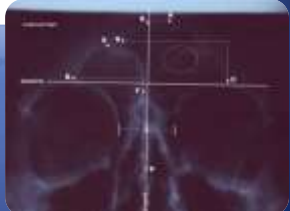
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PAPER
PHYSICAL ANTHROPOLOGY

Aranna L. Bezerra,^{1,2} M.Sc., and Tracy L. Rogers,³ Ph.D.

Personal Identification Using the Frontal Sinus*

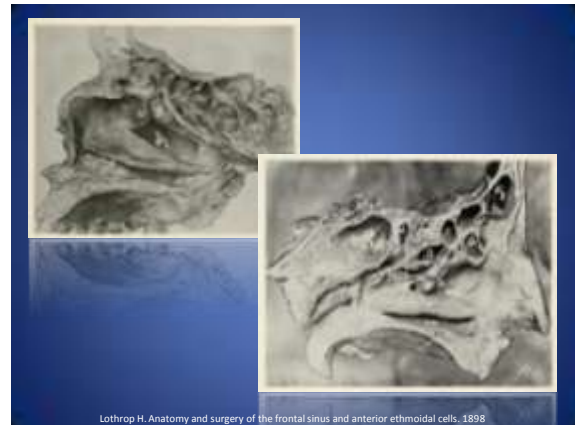




INTRODUCTION

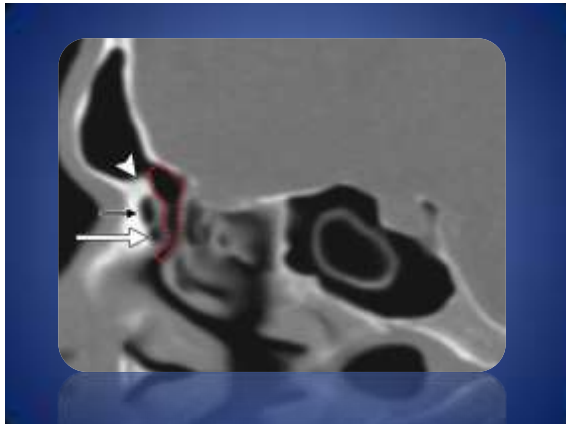
- Uncapping the egg – H. Stammberger
- Building the blocks – P.J. Wormald
- Open – R. Meyers
- Draf concept – W. Draf
- **VERTICAL BAR**

INSTRUMENTS

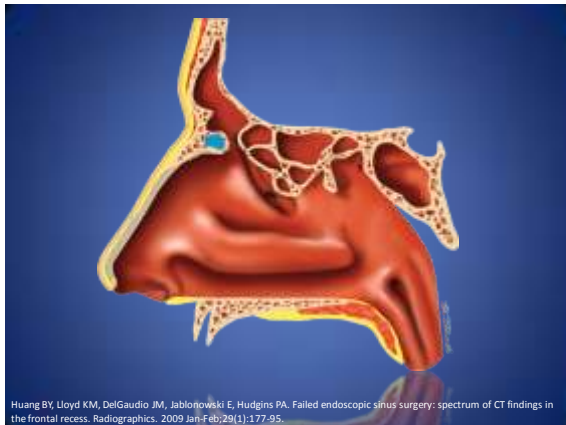


DRAINAGE - CT

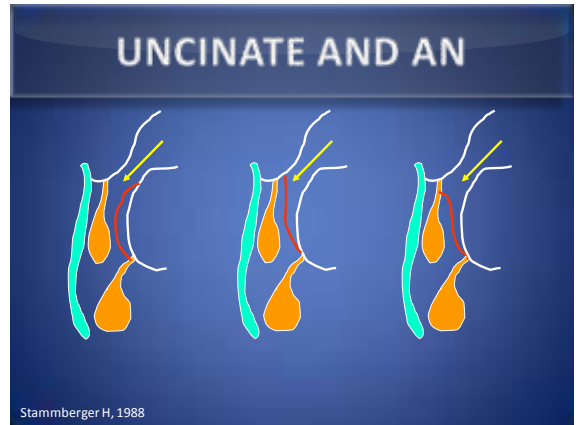




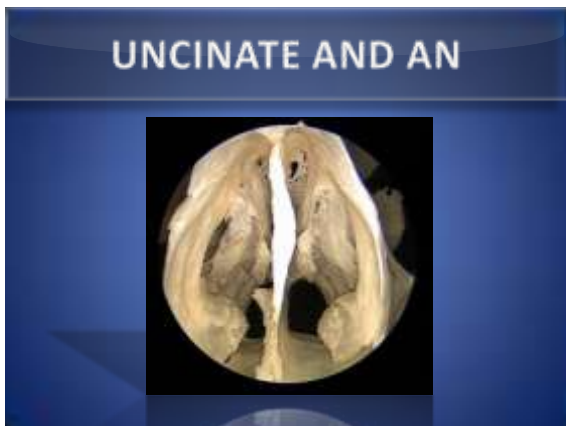
Huang BY, Lloyd KM, DelGaudio JM, Jablonowski E, Hudgins PA. Failed endoscopic sinus surgery: spectrum of CT findings in the frontal recess. Radiographics. 2009 Jan-Feb;29(1):177-95.

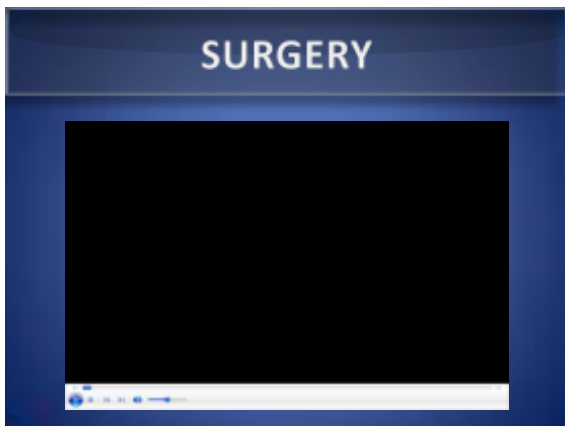
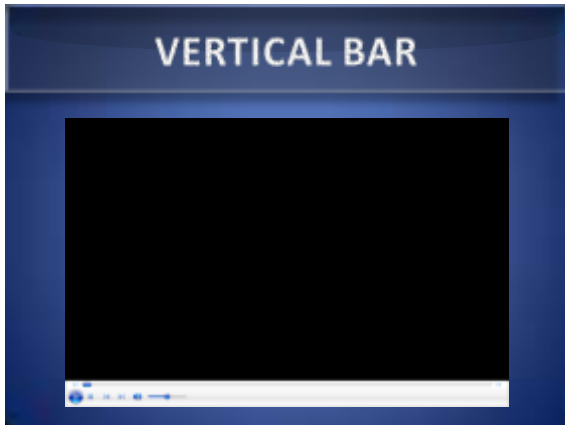
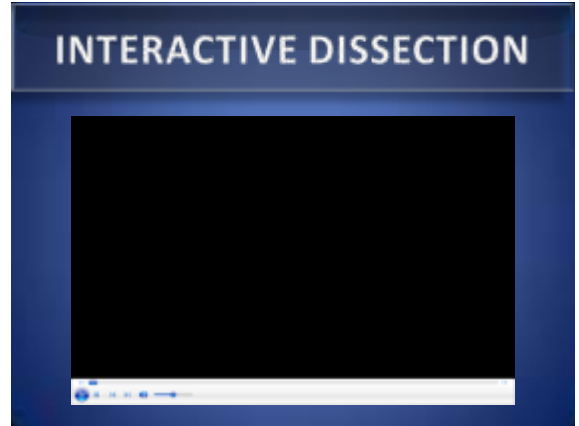
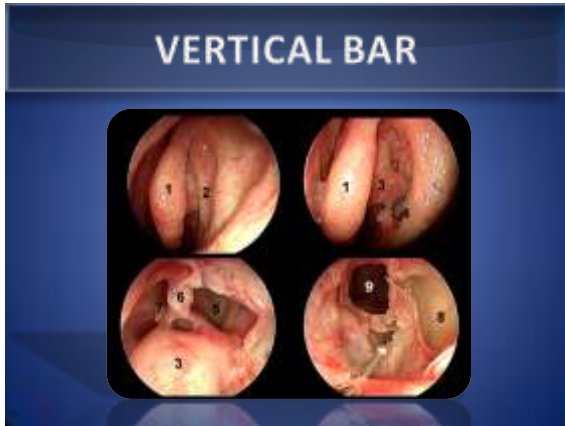


Huang BY, Lloyd KM, DelGaudio JM, Jablonowski E, Hudgins PA. Failed endoscopic sinus surgery: spectrum of CT findings in the frontal recess. Radiographics. 2009 Jan-Feb;29(1):177-95.



Stammberger H, 1988





Frontal sinus approach: the 'vertical bar' concept

Stamm A, Nogueira JF, Americo RR, et al. Frontal sinus approach: the 'vertical bar' concept. Clin Otolaryngol 2009; 34(4): 407-8.

Introduction
The frontal sinus approach is considered difficult not only in the patient's head position (change on the head position and frontal sinus anatomy) but also because of the anatomical complexity of the frontal sinus and its drainage system.

Objective
To describe the vertical bar concept and its clinical application. It is a simple surgical approach to the frontal sinus that has a wide-angle view of the frontal sinus, allowing for a minimally invasive approach.

Methods
The study was a retrospective analysis of 10 patients who underwent a frontal sinus approach for the treatment of frontal sinusitis. The study was approved by the local ethics committee.

Results
The study included 10 patients with frontal sinusitis. All patients underwent a frontal sinus approach. The study included 10 patients with frontal sinusitis. All patients underwent a frontal sinus approach. The study included 10 patients with frontal sinusitis. All patients underwent a frontal sinus approach.

Conclusion
The frontal sinus approach is a simple and effective surgical approach to the frontal sinus. It allows for a wide-angle view of the frontal sinus, allowing for a minimally invasive approach.

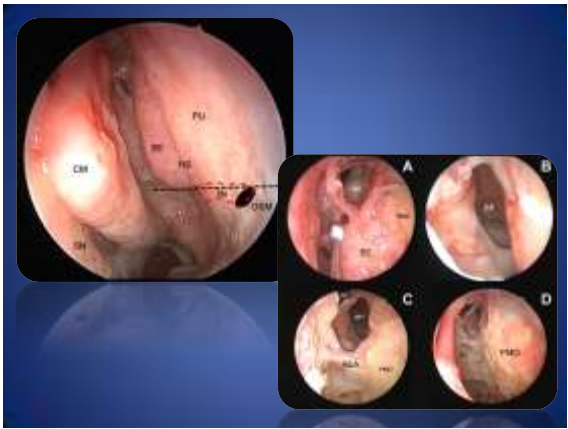
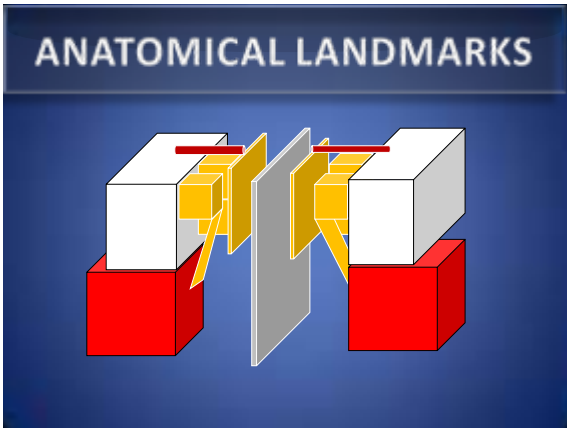
Keywords
Frontal sinus approach, vertical bar concept, frontal sinusitis.

Stamm A, Nogueira JF, Americo RR, et al.
Frontal sinus approach: the 'vertical bar' concept. Clin Otolaryngol 2009; 34(4): 407-8.

Email: jnogueira@ufrr.br

ANATOMICAL LANDMARKS

- Middle turbinate
- **Uncinate process**
- **Agger nasi**
- **Ethmoid bulla**
- Orbit
- Anterior ethmoidal artery

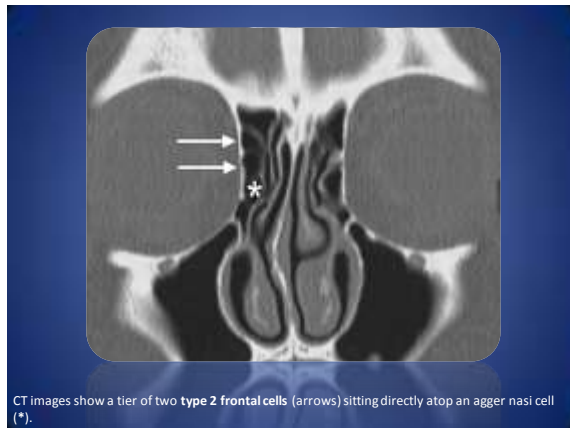
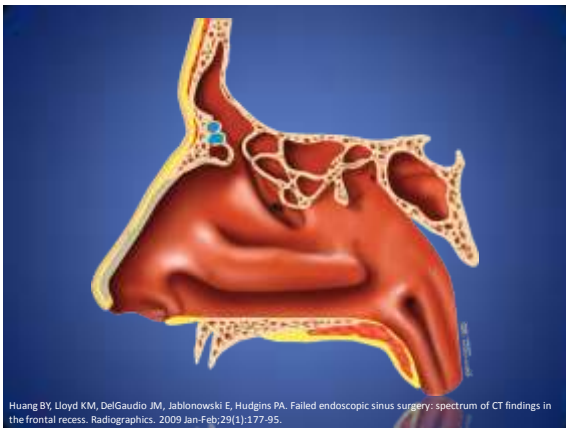
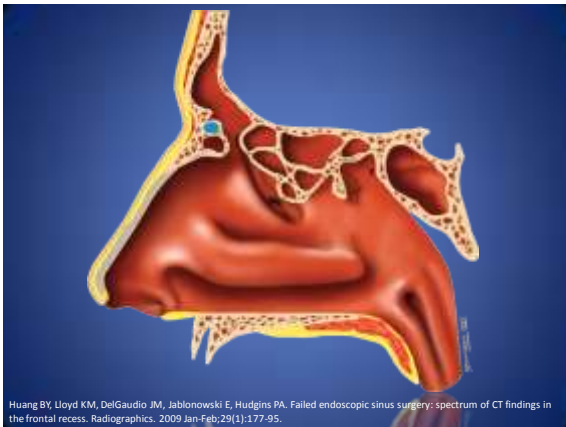


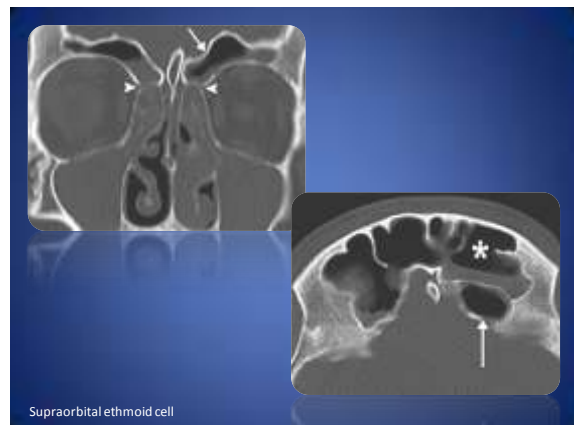
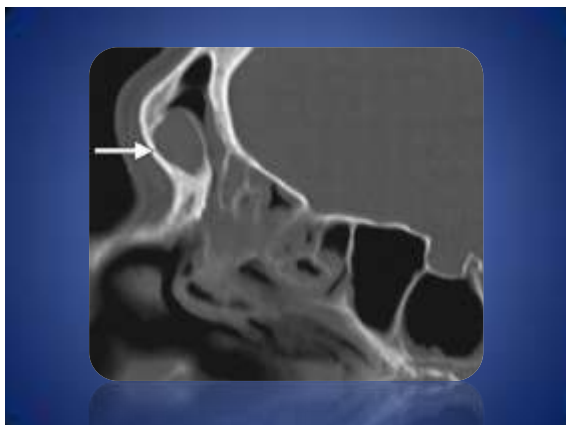
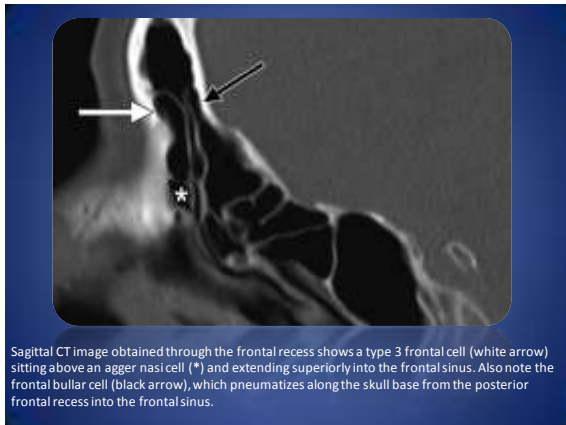
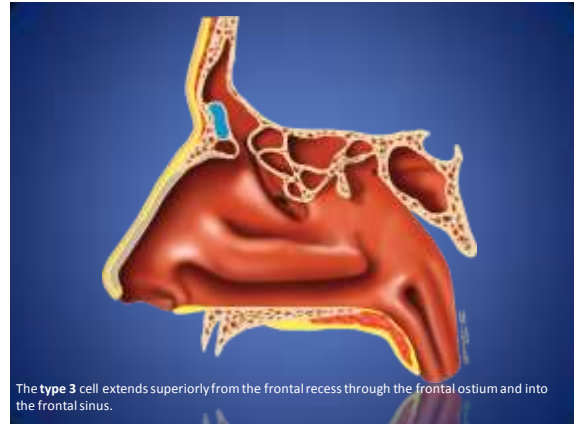
AGGER NASI FLAP

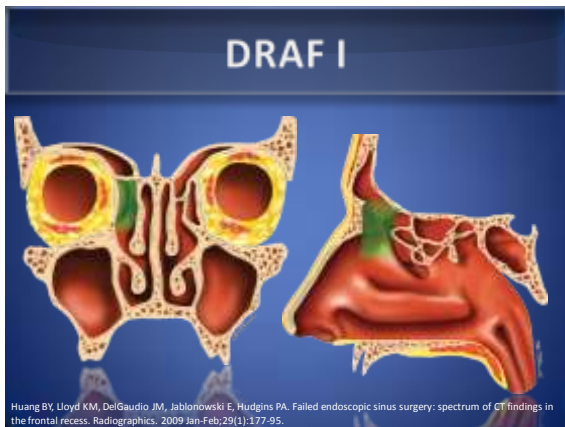
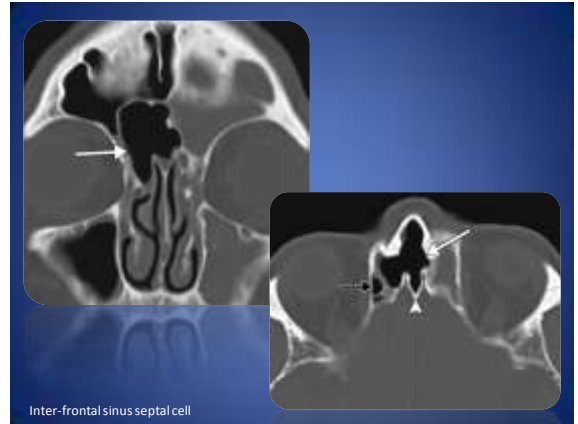
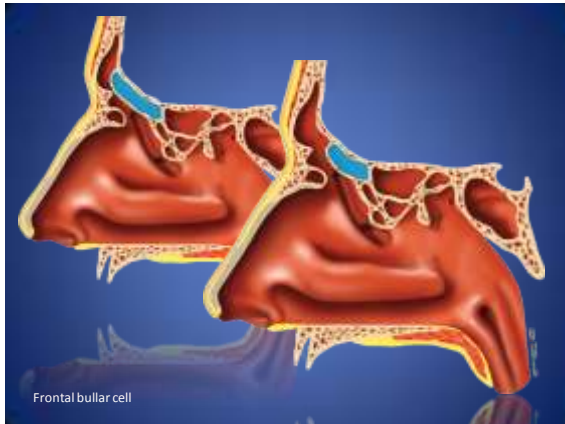
Dissection

AGGER NASI FLAP

VARIATIONS...







Arch Otolaryngol. 2010 Jan;Feb;24(1):103-8.

Fracture of bony lamellae within the frontal recess after balloon catheter dilatation.

Khalid AH, Smith TL, Anderson JC, Haza J, Sautter HG.
 Division of Otolaryngology, Department of Otolaryngology-Head and Neck Surgery, Oregon Health and Science University, Portland, Oregon, USA.

The purpose of this investigation was to determine whether BCD within the frontal recess is associated with reproducible patterns of fracture in bony lamellae, to characterize changes between pre- and postintervention measurements of the frontal sinus outflow tract, and to compare the degree of change seen with endoscopic Draf I dissection.

METHODS: Eight cadaver heads underwent pre- and postintervention endoscopic visualization and computed tomography (CT) of the frontal recess and frontal sinus outflow tract. Frontal recesses were assigned for either BCD or Draf I dissection.

RESULTS: Inter-rater reliability was strong for all measures ($r > 0.77$; $p < 0.001$). The sagittal and coronal dimensions of the frontal sinus outflow tract increased significantly after BCD and Draf I dissection ($p < 0.028$). Mean change in the sagittal dimension was significantly less after BCD compared with Draf I dissection (1.0 +/- 0.8 mm versus 4.0 +/- 1.2 mm; $p < 0.018$). The anterior face of the ethmoid bulla was the most frequently fractured lamella after BCD (56%).

CONCLUSION: The sagittal and coronal dimensions of the frontal sinus outflow tract increased significantly after BCD and Draf I dissection. A significantly greater change in dimensions of the frontal sinus outflow tract is observed after Draf I dissection compared with BCD. No orbital or skull base injury was noted with either technique.

Arch Otolaryngol. 2010 Jan;Feb;24(1):103-8.

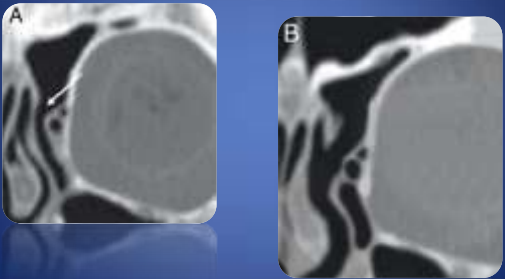
Fracture of bony lamellae within the frontal recess after balloon catheter dilatation.

Khalid AH, Smith TL, Anderson JC, Haza J, Sautter HG.
 Division of Otolaryngology, Department of Otolaryngology-Head and Neck Surgery, Oregon Health and Science University, Portland, Oregon, USA.

Am J Rhinol Allergy. 2010 Jun;24(1):139-41.
doi:10.1097/00006123-201006000-00010

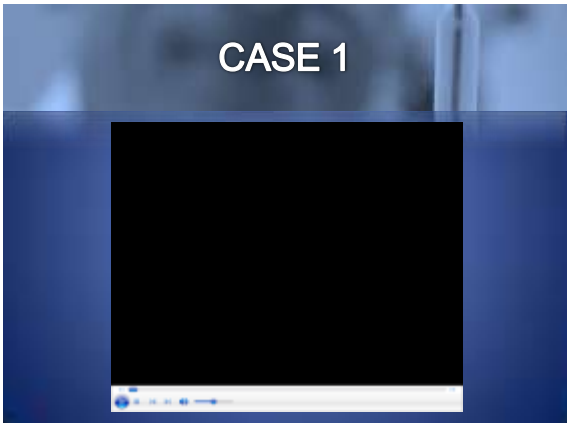
Fracture of bony lamellae within the frontal recess after balloon catheter dilatation.

Wibold AH, Grimm TL, Anderson JC, Rosen J, Sautter HB
Division of Otolaryngology, Department of Otolaryngology-Head and Neck Surgery, Oregon Health and Science University, Portland, Oregon, USA



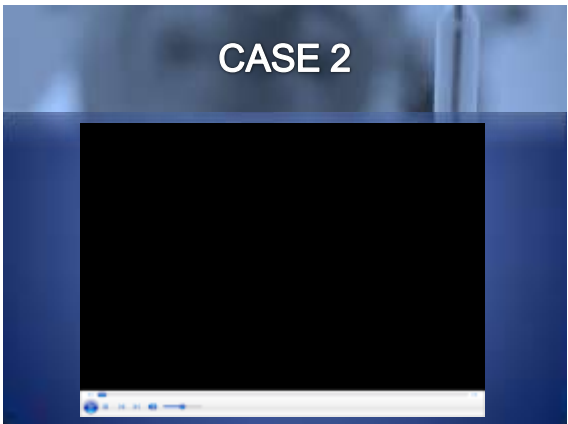
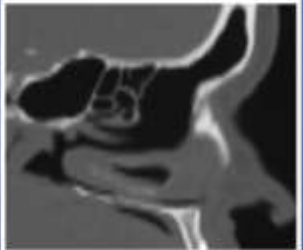
CASE 1

Fem, 27 y/o

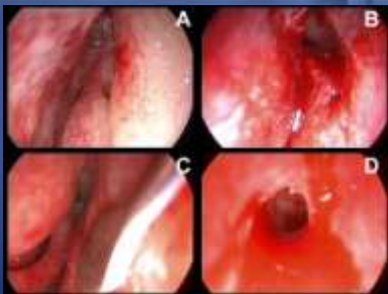


CASE 1

3 months post-operative

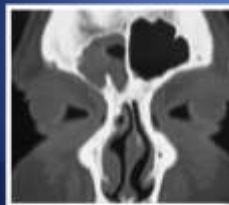


CASE 2

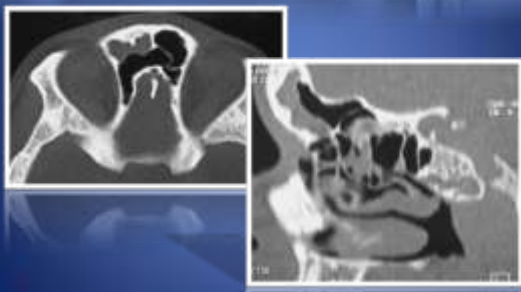


CASE 3

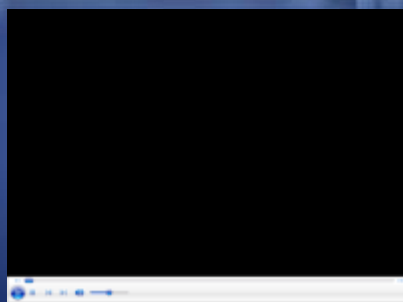
Male, 18 y/o – cerebral palsy



CASE 3

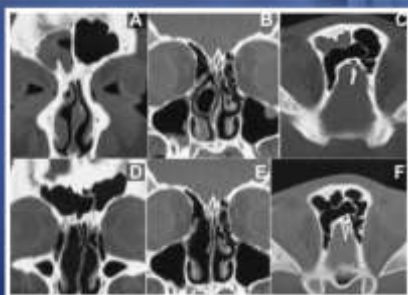


CASE 3

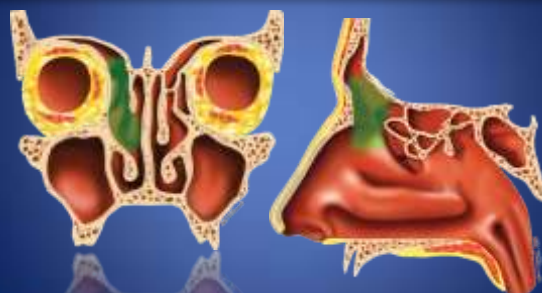


CASE 3

2 months post-operative

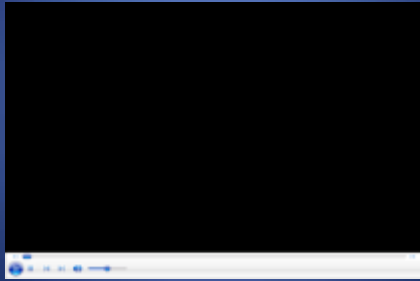


DRAF II



Huang BY, Lloyd KM, DelGaudio JM, Jablonowski E, Hudgins PA. Failed endoscopic sinus surgery: spectrum of CT findings in the frontal recess. Radiographics. 2009 Jan-Feb;29(1):177-95.

DRAF II

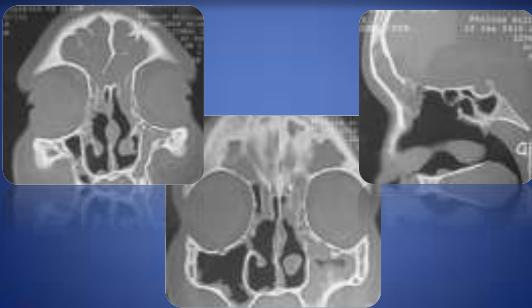


DRAF III

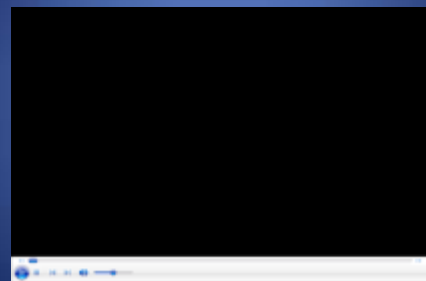


Huang BY, Lloyd KM, DeGaudio JM, Jablonowski E, Hudgins PA. Failed endoscopic sinus surgery: spectrum of CT findings in the frontal recess. *Radiographics*. 2009 Jan-Feb;29(1):177-95.

DRAF III



DRAF III



Female, 38 years old

SUMMARY

- Frontal sinus surgery
- T.E.S.S.
- Anatomical landmarks
 - Uncinate process
 - Agger nasi
 - Ethmoid bulla
 - Anterior ethmoidal artery
- N.O.T.E.S. - Flexible

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