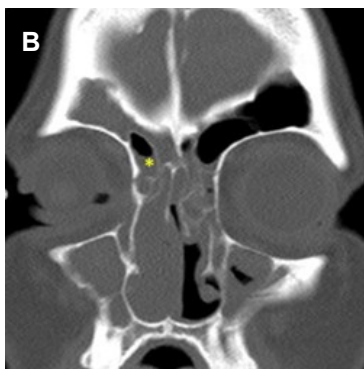
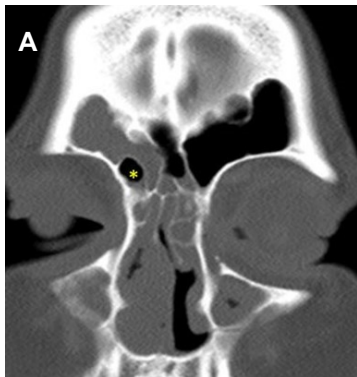


## TYPE III FRONTAL CELLS AND FRONTAL SINUS SURGERY

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Endoscopic sinus surgery is safe with low risk for complications in the hands of trained surgeons. Many publications have focused on the complexity of the frontal recess and specifically, Bent JP et al (1) described the 4 different types of frontal cells that are found in 25% of the patients and add to the complexity of the frontal recess. Of these, Type III describes an air cell that originates within the frontal recess but extends into the frontal sinus itself (Figure 1A and B).



Figures 1A and 1B

In preparation for surgery, it is important to identify these cells in the frontal recess and determine how many cell walls the surgeon has to remove in order to reach the frontal sinus. In addition, a plan is devised to approach the frontal cells methodically, without getting lost, minimizing the risk of injury to the skull base and the orbit. The surgeon should avoid pushing instruments like a curved frontal suction through a cell wall but rather, carefully mobilize and remove bony fragments and mucosa away from the frontal sinus and recess, toward the nasal cavity. Pushing instruments cephalad through a cell wall to enter the frontal sinus is not a safe technique and may inadvertently deposit bony and mucosa fragments into the frontal sinus, resulting in postoperative inflammation due to the entrapped debris.

Even though I did not include all CT cuts in Figure 1(A&B), one can see that the best approach is to follow the medial wall of the Type III Frontal Cell cephalad, mobilize it laterally and remove it using a variety of curved instruments such as a microdebrider, Giraffe and mushroom punch forceps. [Video 1](#) shows the surgical technique. Please note again that I avoid pushing instruments cephalad through cell walls.

The best approach for the Type III Frontal Cell present in Figure 2 is to follow the anterior wall of the cell, in the space between the cell and

the nasofrontal beak, in a cephalad direction until the frontal sinus is reached. Notice that the cephalad extension of the frontal cell can be to a degree that reaching and removing its cephalad wall is challenging due to the limitation of the length of the curved frontal instruments. In extreme circumstances the above and below techniques are necessary to reach remote anatomy.

[Video 2](#) shows the surgical technique. Please note again that I avoid pushing instruments cephalad through a cell wall.

In summary, the presence of Type III frontal cells increases the anatomic complexity of the frontal recess. When they are present, effective frontal recess surgery requires review of the sinus CT and careful planning in order to remove them, while avoiding complications and postoperative recidivism. I recommend never using an instrument to push through a cell wall in the frontal recess.

### References

Bent JP, Cuiltly-Siller C, Kuhn FA. The frontal cell as a cause of frontal sinus obstruction. *Am J Rhinol*, 1994; 8: 185-191.

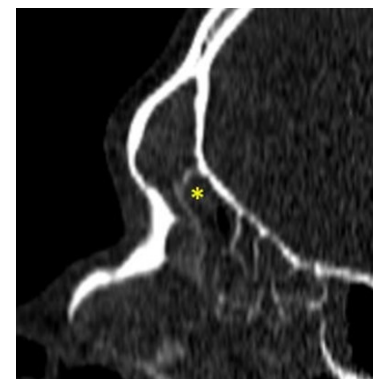


Figure 2