

Frontal Sinus approaches

Shawkat Abdulrahman

**Consultant Otolaryngologist
Rhinologist, Endoscopic Skull Base Surgeon
FRCSI, FACS**



Skallebasis og bihulekirurgi – tilganger og komplikasjonshåndtering

4th -6th May 2026 OUS - Rikshospitalet



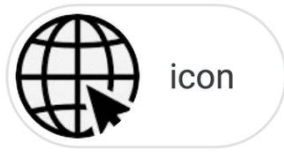
**Tallaght
University
Hospital**

An Academic Partner of Trinity College Dublin

Ospidéal
Ollscoile
Thamhlachta



www.TheEarNoseThroatDoctor.com



<https://www.TheEarNoseThroatDoctor.com>



Mr.Shawkat Abdulrahman, The Ear Nose Throat Doctor



Instagram

TheEarNoseThroatDoctor



Tallaght
University
Hospital

Ospidéal
Ollscoile
Thamhlachta

An Academic Partner of Trinity College Dublin

<https://www.tuh.ie/Consultants/Mr-Shawkat-Andulrahman.html>



Beacon Hospital

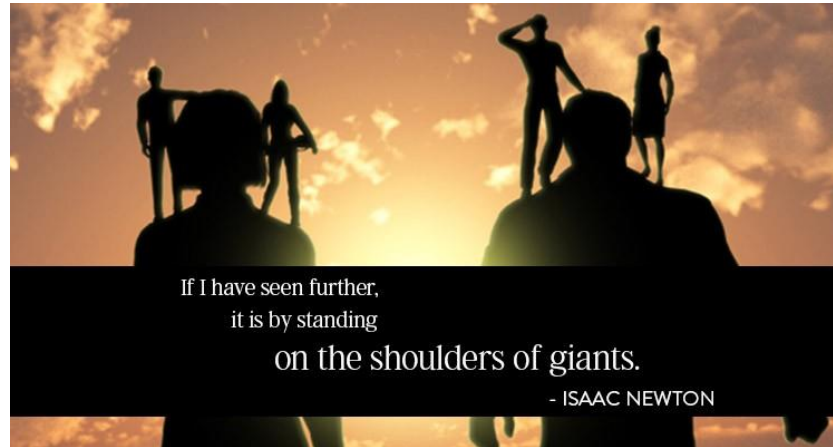
<https://www.beaconhospital.ie/consultants/shawkat-abdulrahman/>



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



If I have seen further,
it is by standing
on the shoulders of giants.

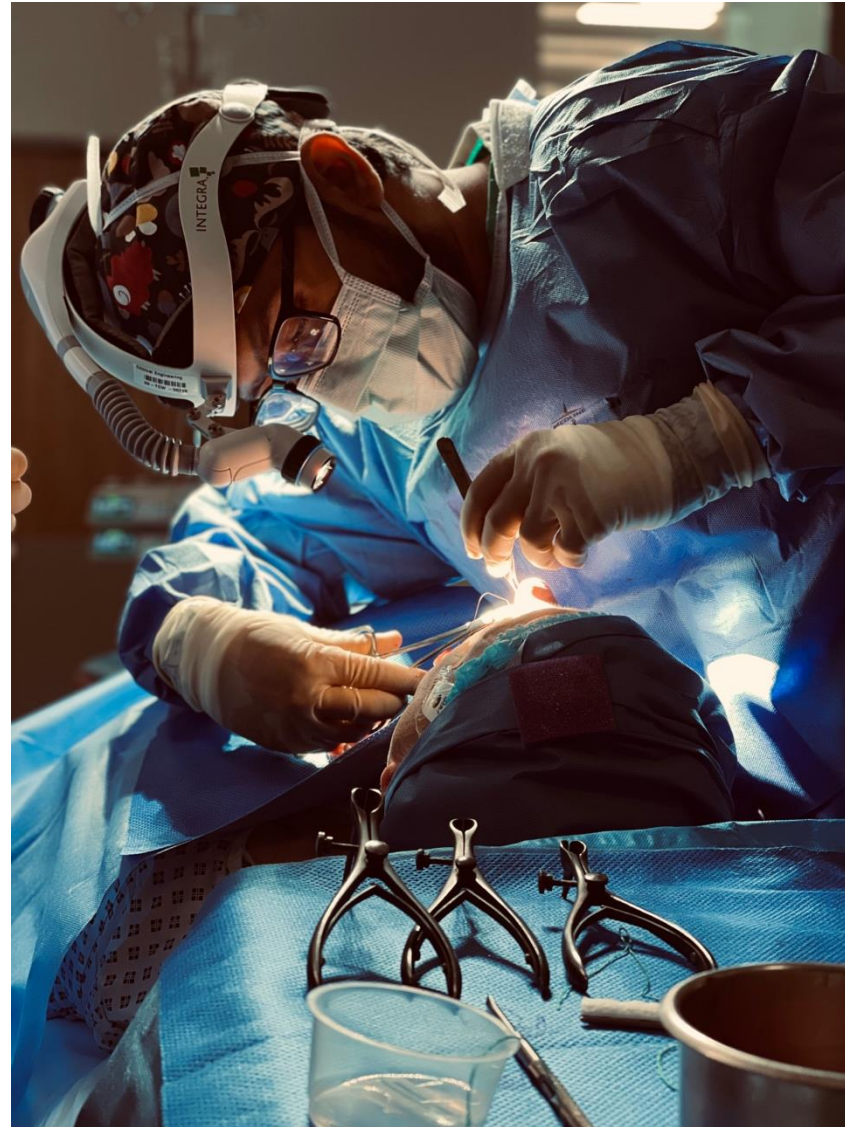
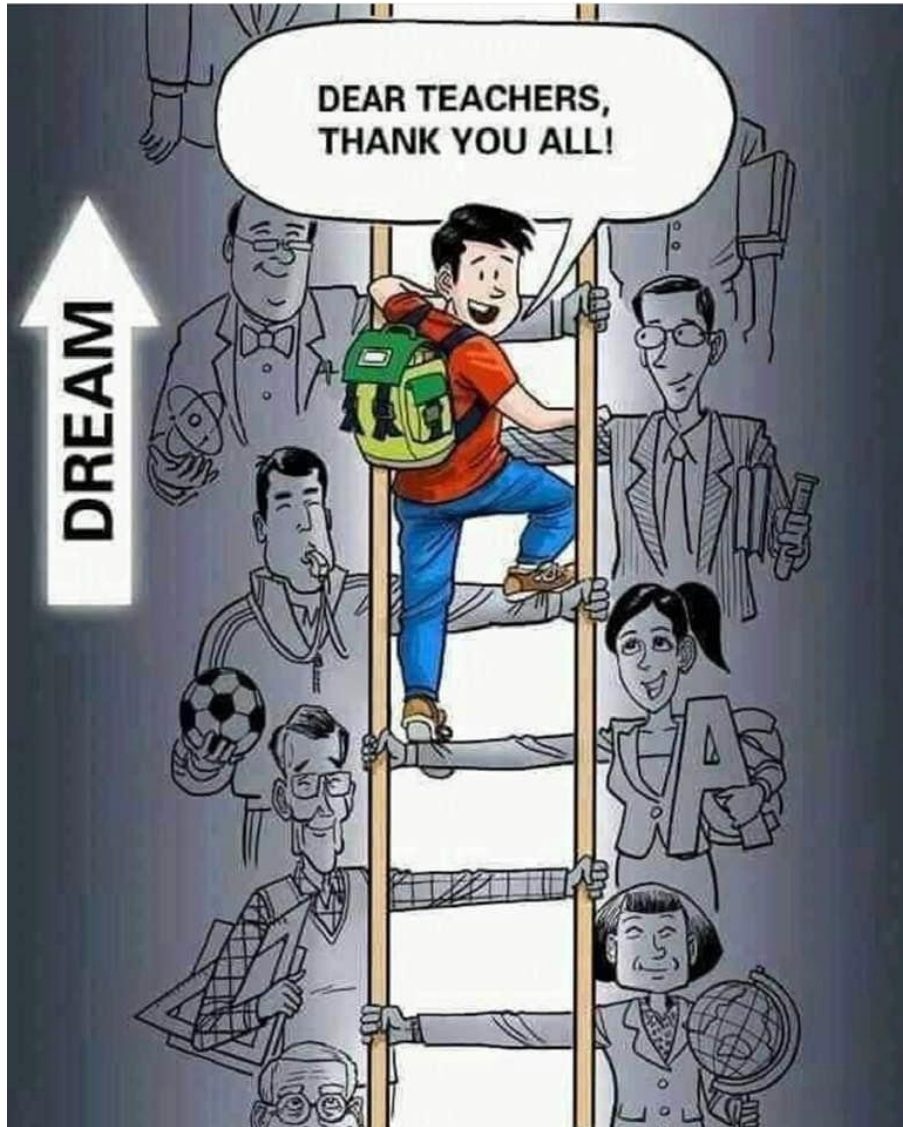
- ISAAC NEWTON



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



International
Surgical
fellowship
program
RCSI

Dr.Dhaidan ALShimmary
KSA

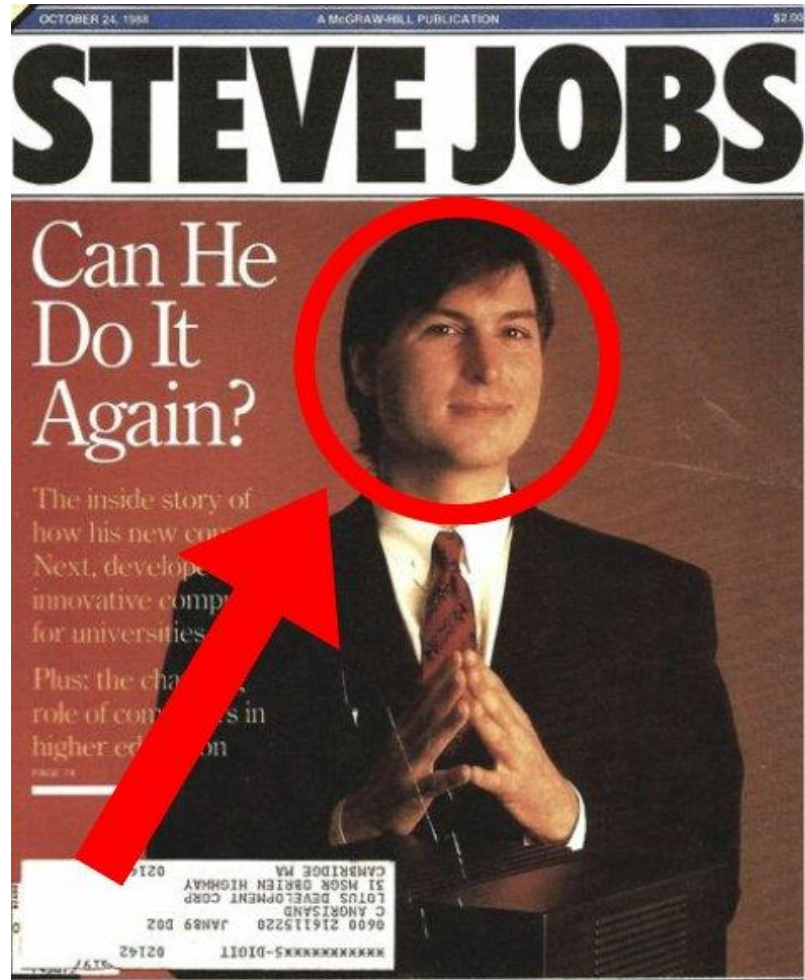
Dr.Ebrahim Almulla
Bahrain



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



“Simplicity is the ultimate sophistication. It takes a lot of hard work to make something simple, to truly understand the underlying challenges and come up with elegant solutions. [...] It’s not just minimalism or the absence of clutter. It involves digging through the depth of complexity. To be truly simple, you have to go really deep. [...] You have to deeply understand the essence of a product in order to be able to get rid of the parts that are not essential.”

~ STEVE JOBS



www.TheEarNoseThroatDoctor.com



**Tallaght
University
Hospital**

7th Master Dissection course in Rhinology

Hybrid Endoscopic Sinus Skull Base Surgery Workshop



MMC
شماره پزشکی مدیترانه
Mercy Medical City

STORZ
KARL STORZ - ENDOSKOPE

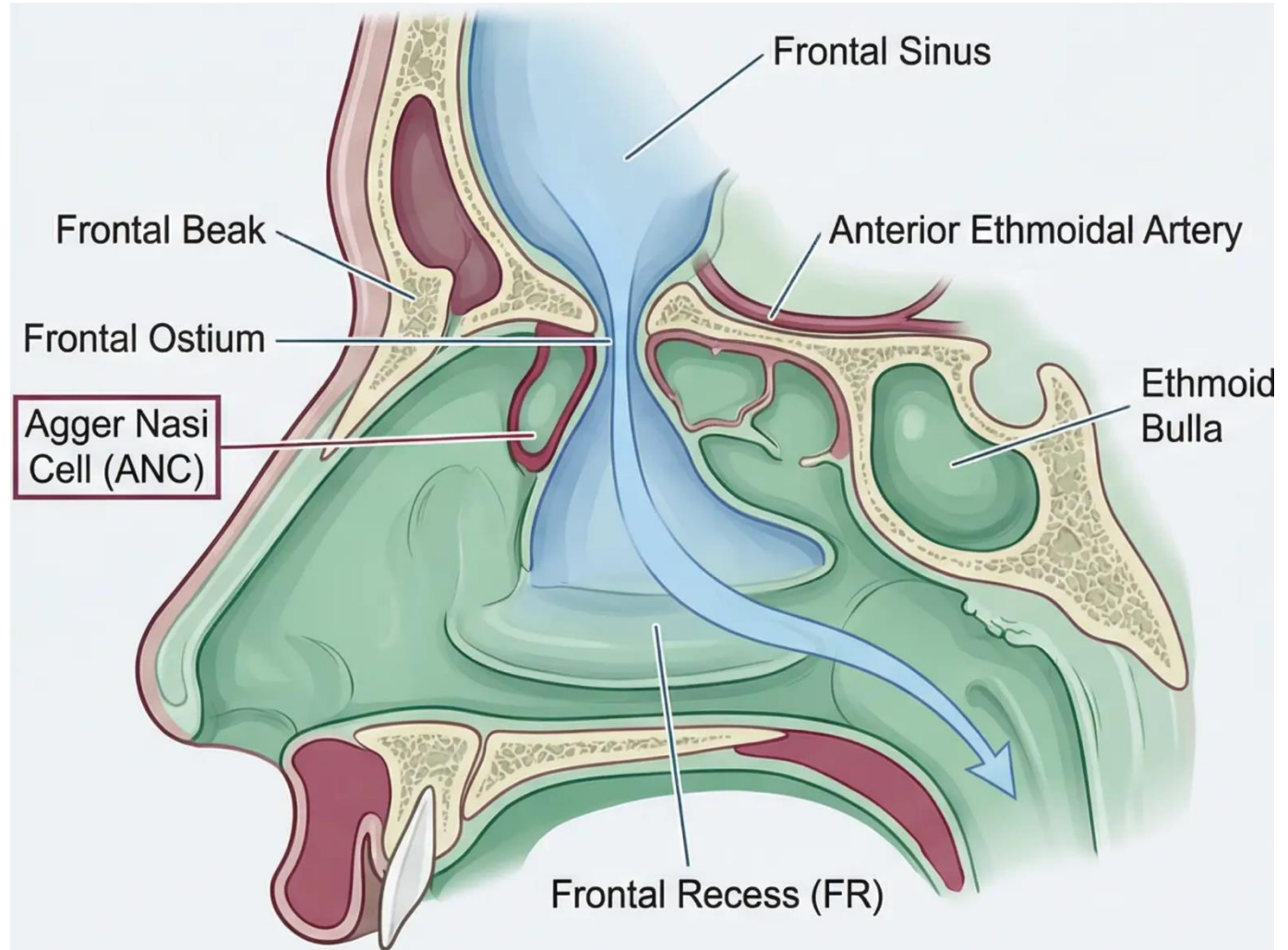


www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

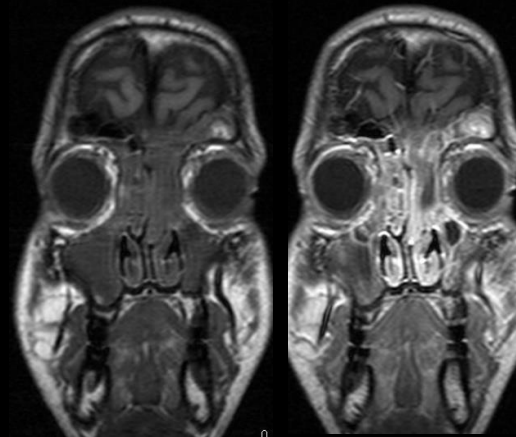
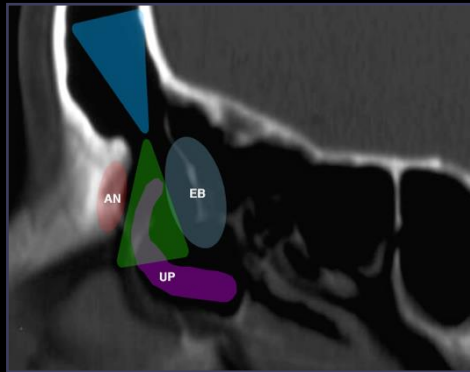
AI ?!



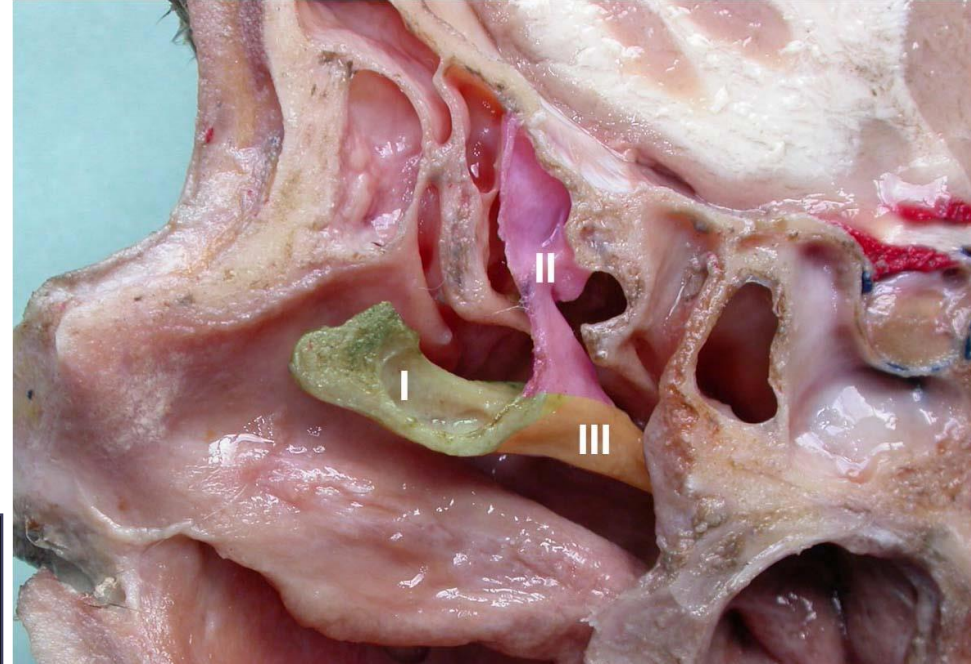
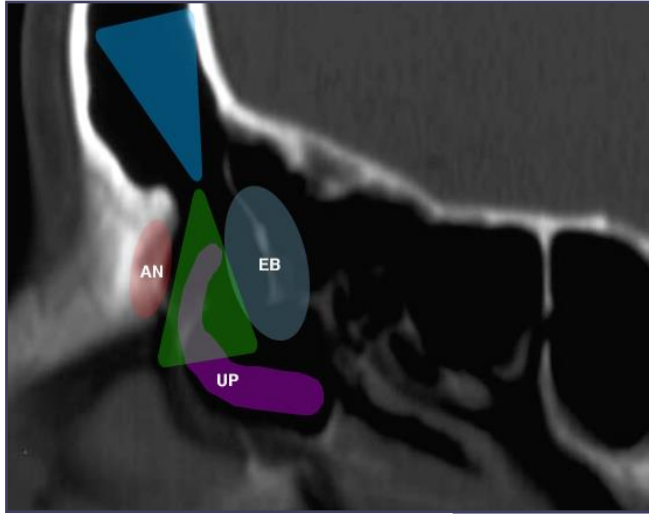
What is mandatory to match with frontal sinus problems?

Adequate knowledge of frontal recess, frontal ostium and infundibulum anatomy

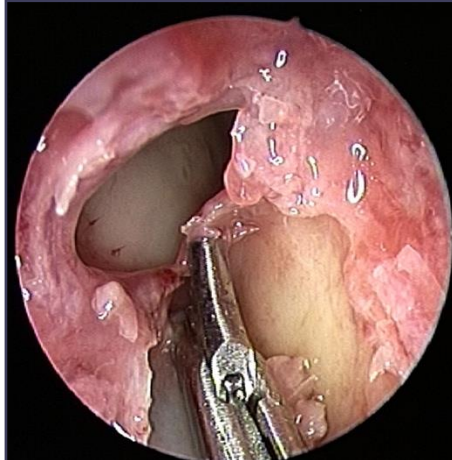
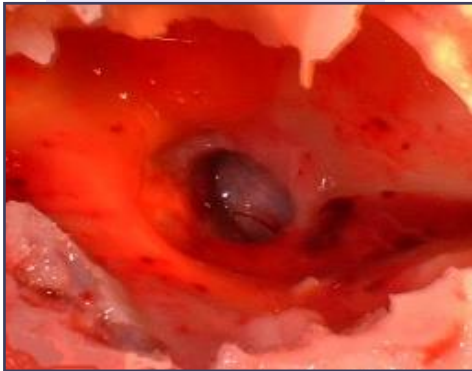
Taking into account the pathologic base of the disease and comorbidity conditions



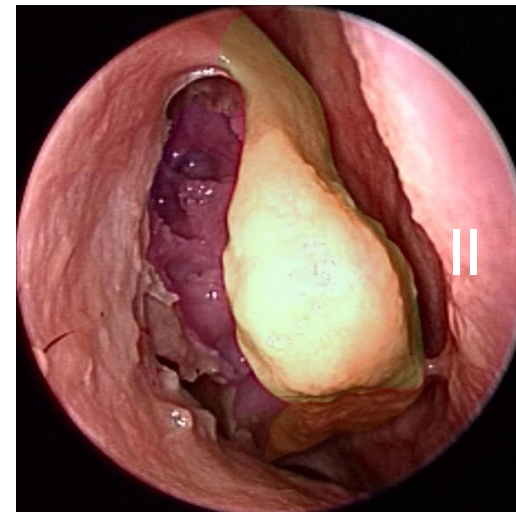
The transition from frontal sinus down to frontal recess is the key point for successful surgery



Above



Below



SURGICAL RISK AREAS

• LATERAL LAMELLA OF THE CRIBRIFORM PLATE

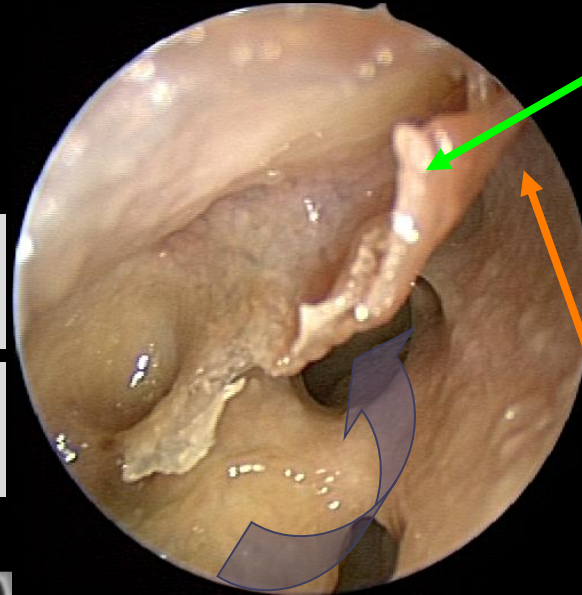
SAFETY POINT: CRANIAL PORTION OF THE UNCINATE PROCESS



Terminal recess

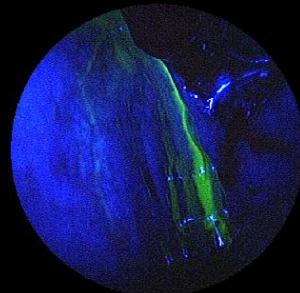
Lamina papiracea

Ethmoidal bulla



Cranial portion of the uncinete process

Lateral lamella of the cribriform plate



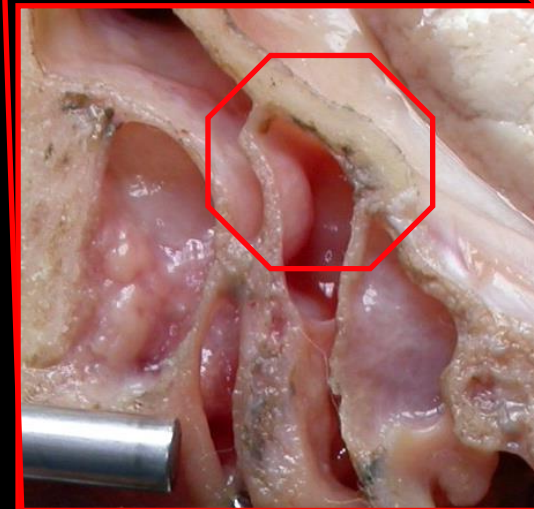
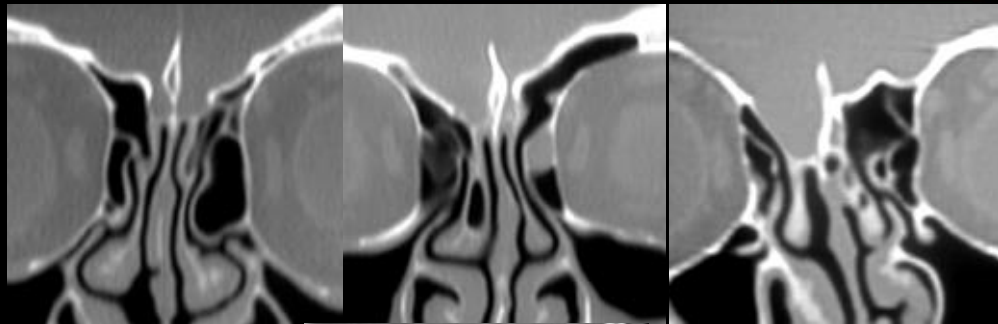
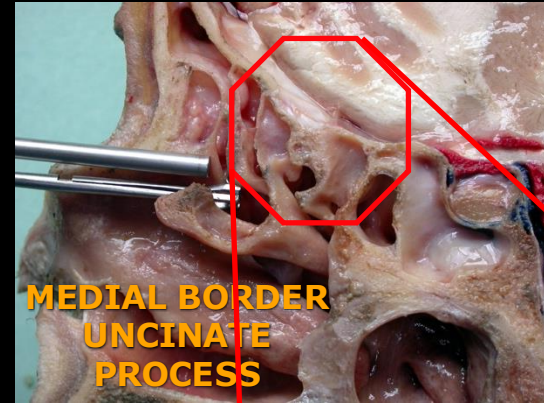
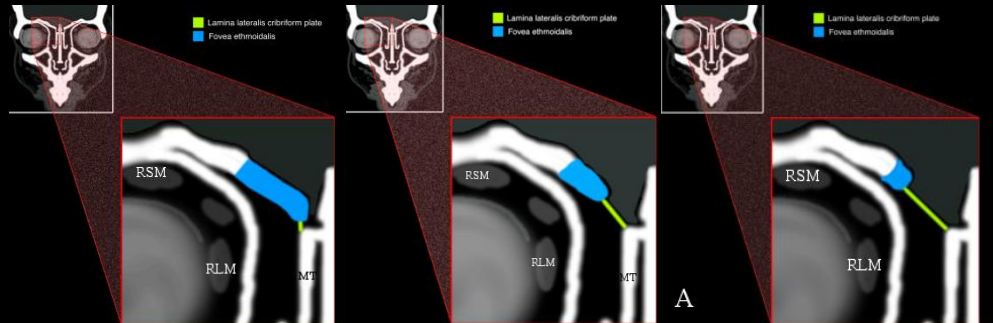
CSF-L

PNEUMOENCEPHALUS

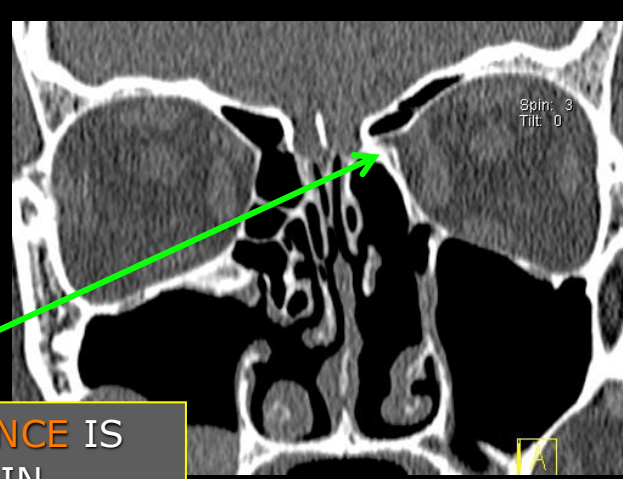
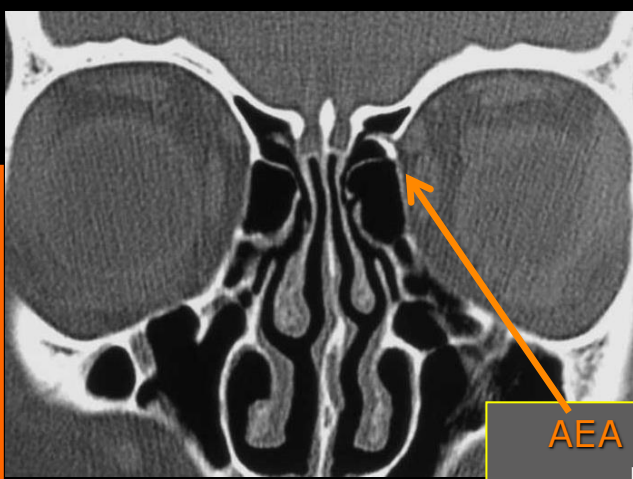


SURGICAL RISK AREAS

LATERAL LAMELLA OF THE CRIBRIFORM PLATE



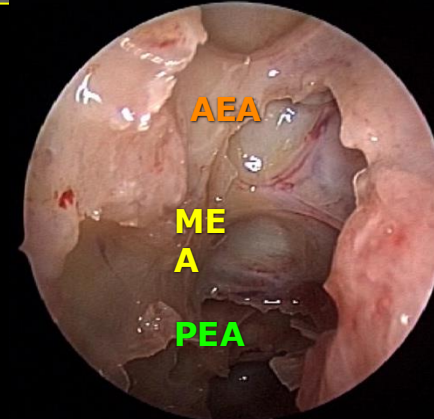
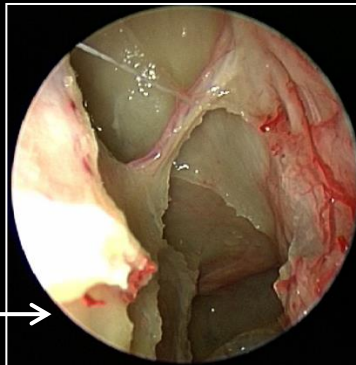
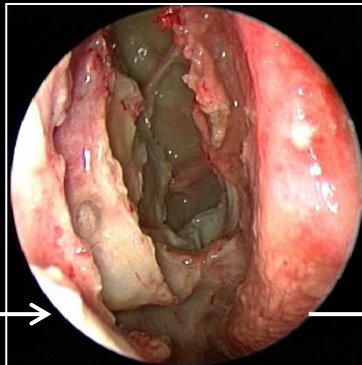
ANTERIOR EA



AEA & PEA DEHISCENCE IS MORE COMMON IN ASSOCIATION WITH HYPERPNEUMATIZED SINUSES



POSTERIOR EA



How to deal with frontal sinus problems?



...Contemporary surgical treatment of patients with frontal sinusitis is based on a graduated approach determined by the patient's history...

Metson R, Sindwani R. 2004



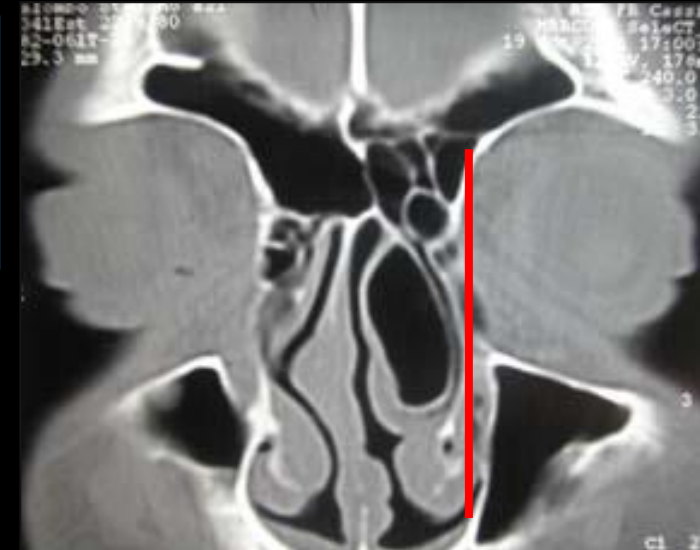
FRONTAL SINUS SURGICAL APPROACH

Factors influencing the Choice

Configuration of the frontal recess



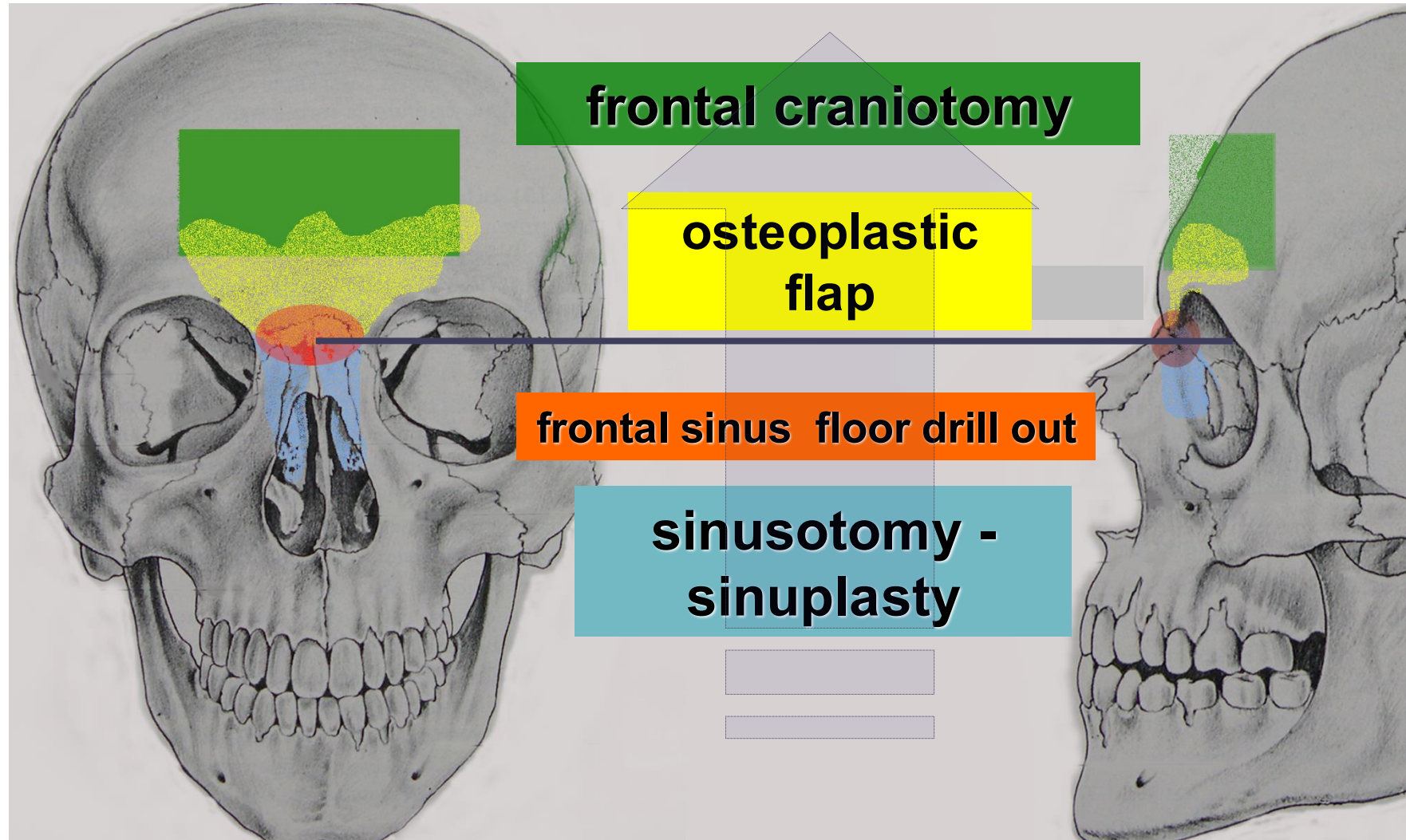
Size of the frontal sinus



Type, site and extent of disease



Frontal Sinus Approach



Frontal Sinus Approach

FSA Type1	Clearance of the frontal recess <i>(sinusplasty - anterior ethmoidotomy)</i>
FSA Type2	Frontal sinusotomy: removal of frontal sinus floor <i>(Draf II a – Draf II b – Draf III)</i>
FSA Type3	Frontal osteoplastic sinusotomy <i>(with or without fat obliteration)</i>
FSA Type4	Frontal craniotomy with sinus cranialization or reconstruction



Frontal Sinus Approach

FSA Type1	Clearance of the frontal recess <i>(sinusplasty - anterior ethmoidotomy)</i>
FSA Type2	Frontal sinusotomy: removal of frontal sinus floor <i>(Draf II a – Draf II b – Draf III)</i>
FSA Type3	Frontal osteoplastic sinusotomy <i>(with or without fat obliteration)</i>
FSA Type4	Frontal craniotomy with sinus cranialization or reconstruction



**FSA
Type 1**

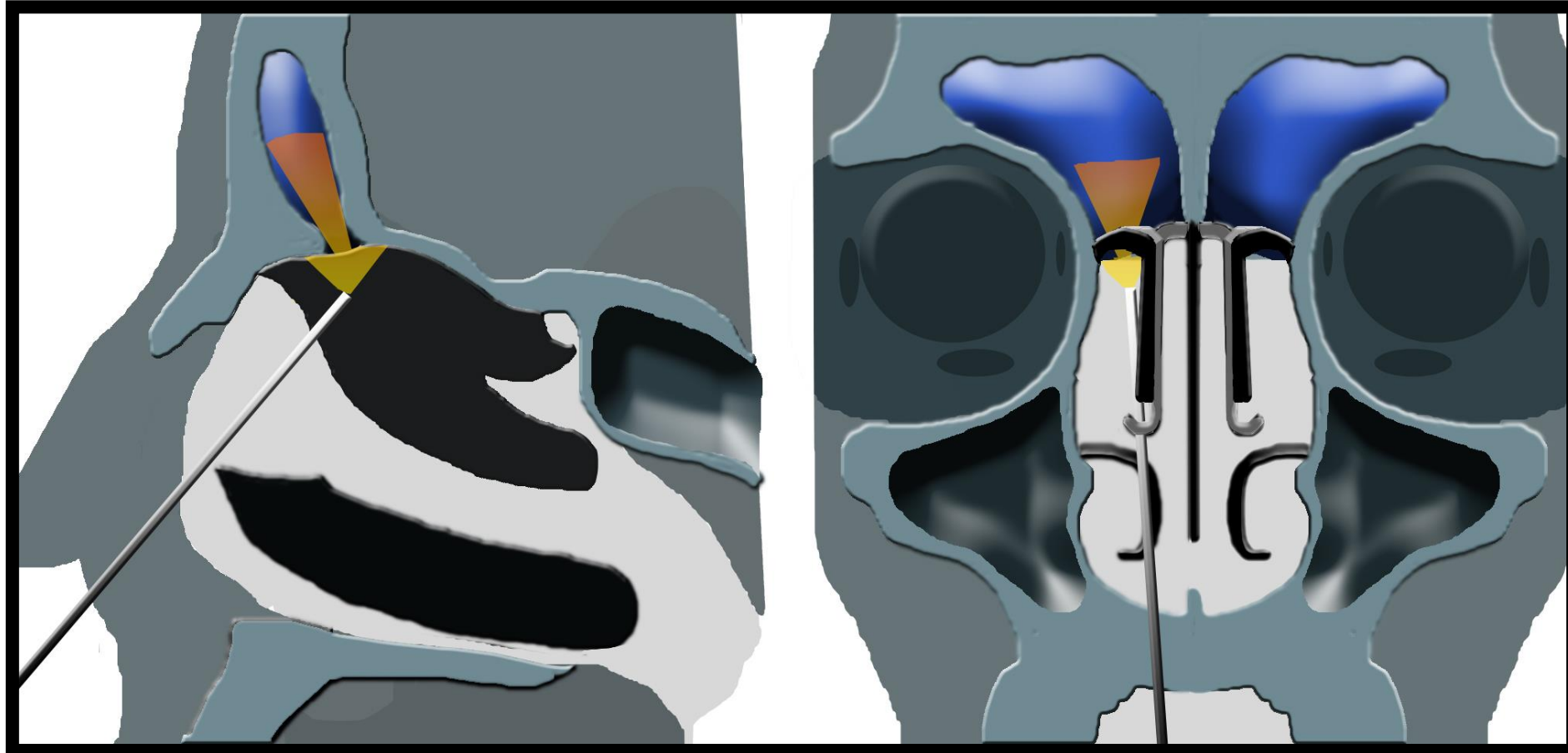
***Clearance of the frontal recess
(sinusplasty - anterior ethmoidotomy)***

Draf I

Indications

- **Ventilatory sinus Diseases**
- **RSAR (Acute Recurrent Rhinosinusitis)**
- **RSAC (Acute Complicated Rhinosinusitis)**
- **RSC (Chronic Rhinosinusitis)**
- **Mucocele**
- **Pneumosinus Dilatans**

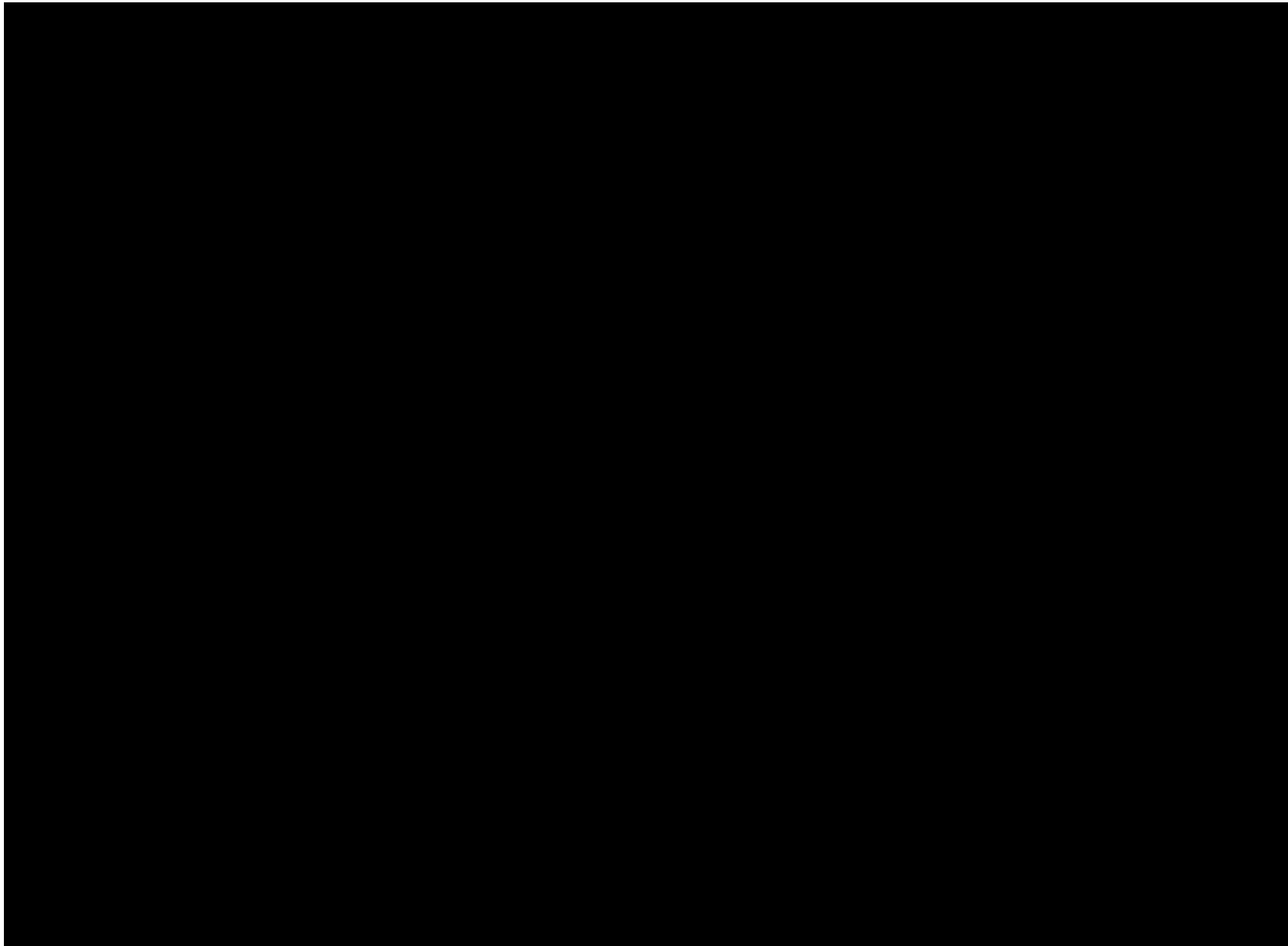




www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

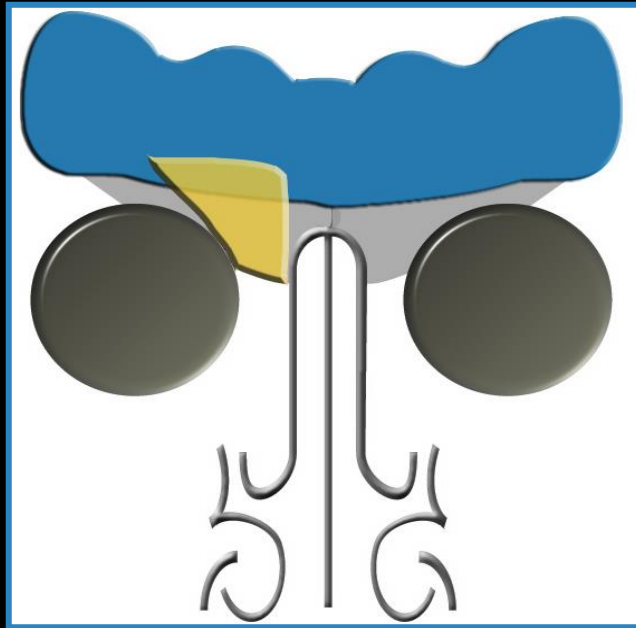
Frontal Sinus Approach

<i>FSA Type1</i>	<i>Clearance of the frontal recess (sinusplasty - anterior ethmoidotomy)</i>
FSA Type2	Frontal sinusotomy: removal of frontal sinus floor (Draf II a – Draf II b – Draf III)
<i>FSA Type3</i>	<i>Frontal osteoplastic sinusotomy (with or without fat obliteration)</i>
<i>FSA Type4</i>	<i>Frontal craniotomy with sinus cranialization or reconstruction</i>

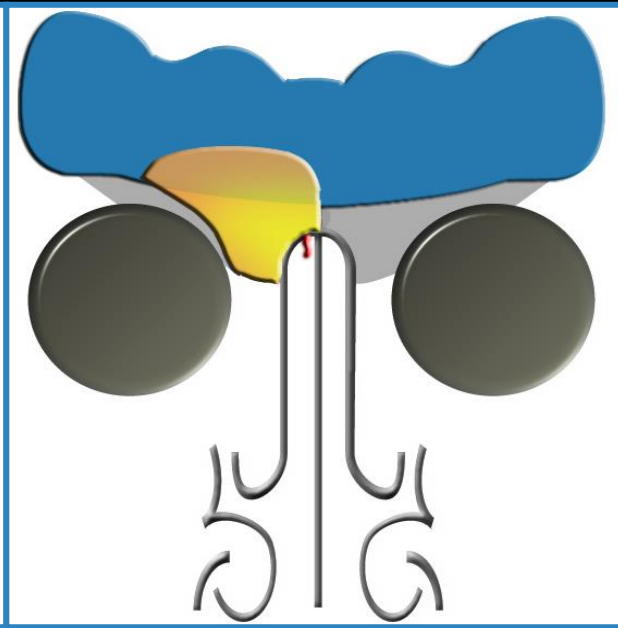


**FSA
Type2**

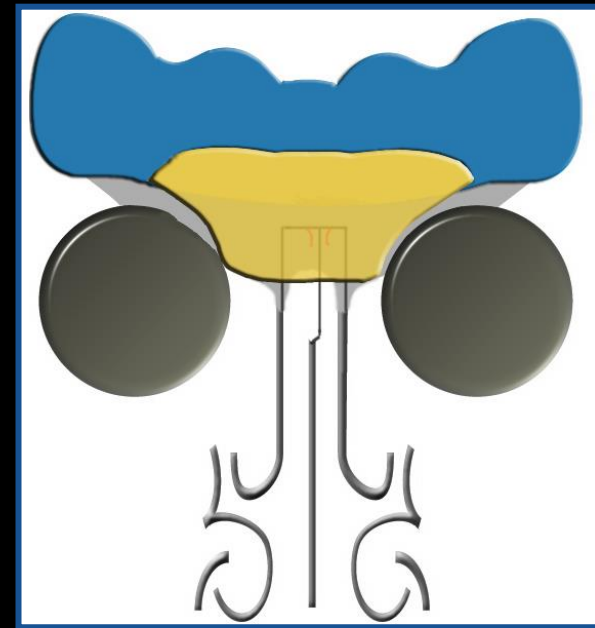
Frontal sinusotomy: removal of
frontal sinus floor
(*Draf IIa – Draf IIb – Draf III*)



Draf II a



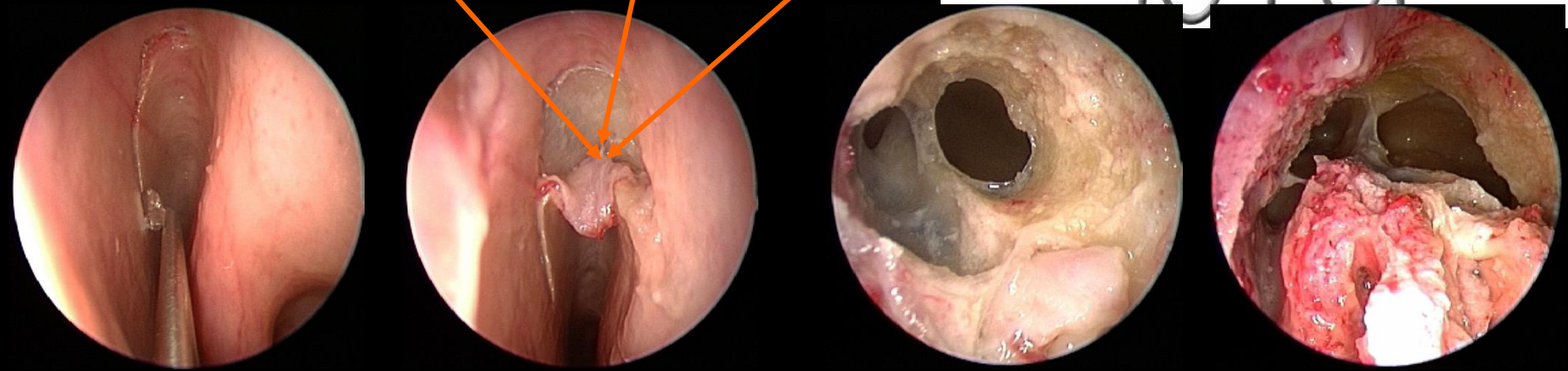
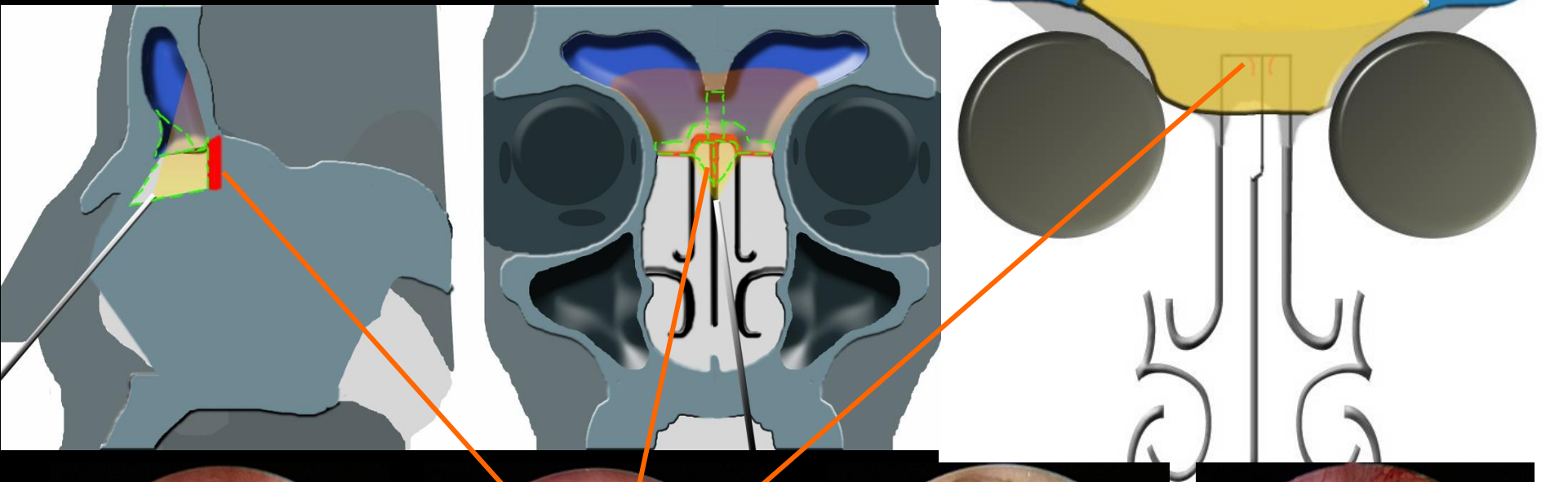
Draf II b

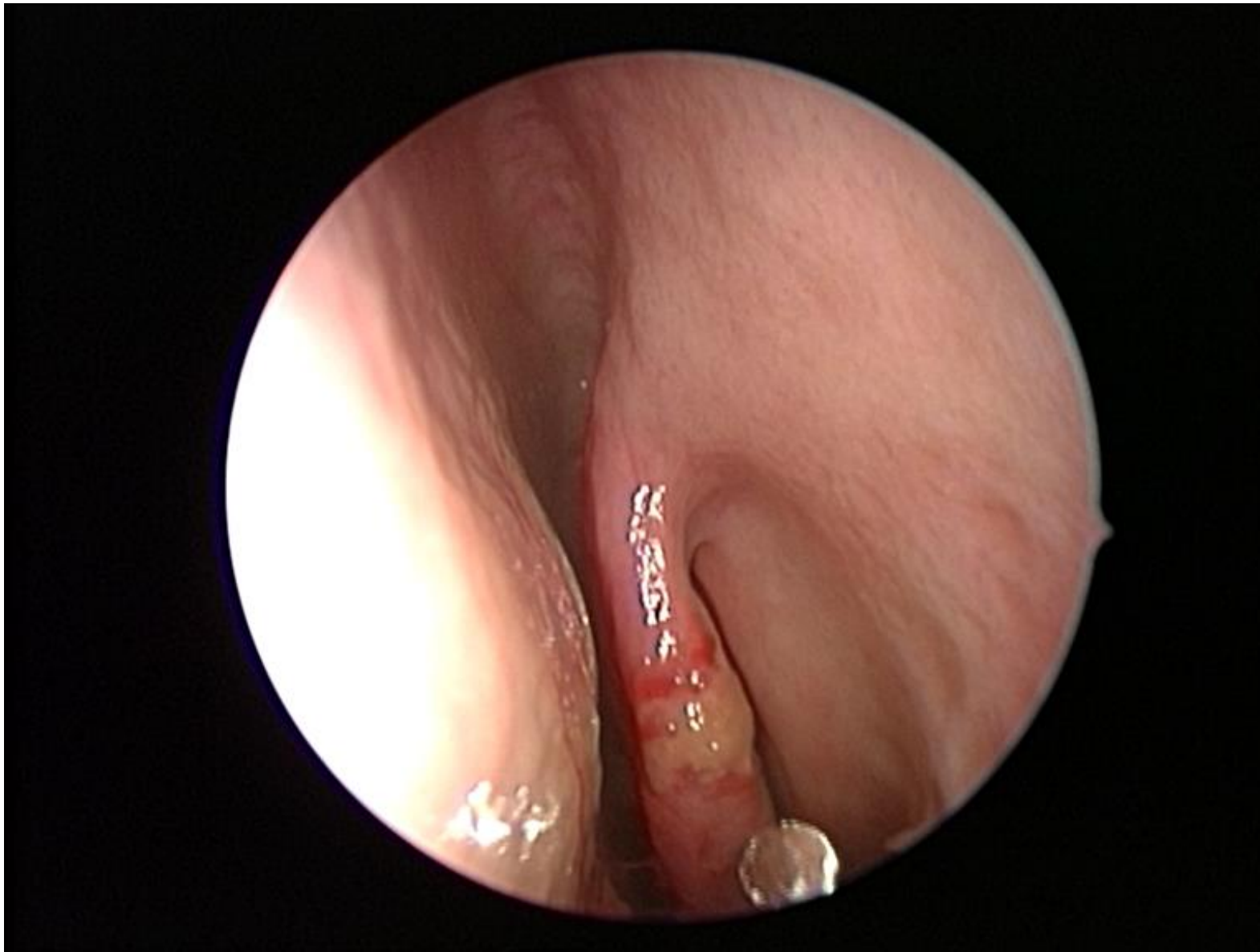


Draf III



Safety point: first olfactory fiber





www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

**FSA
Type 2**

Frontal sinusotomy: removal of
frontal sinus floor
(*Draf IIa – Draf IIb – Draf III*)

Indications

- **Revision Surgery**
- **RSC (Chronic Rhinosinusitis):**
Asa Syndrome, Eosinophilic Rhinosinusitis, Massive Polypsis
- **Mucocele**
- **Inverted Papilloma** (limited to the infundibulum)
- **Osteoma** (limited to the infundibulum)
- **CSF-L** (postero-inferior wall, with or without ethmoidal roof involvement)



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



1 YEAR
AFTER SURGERY



www.TheEarNoseThroatDoctor.com

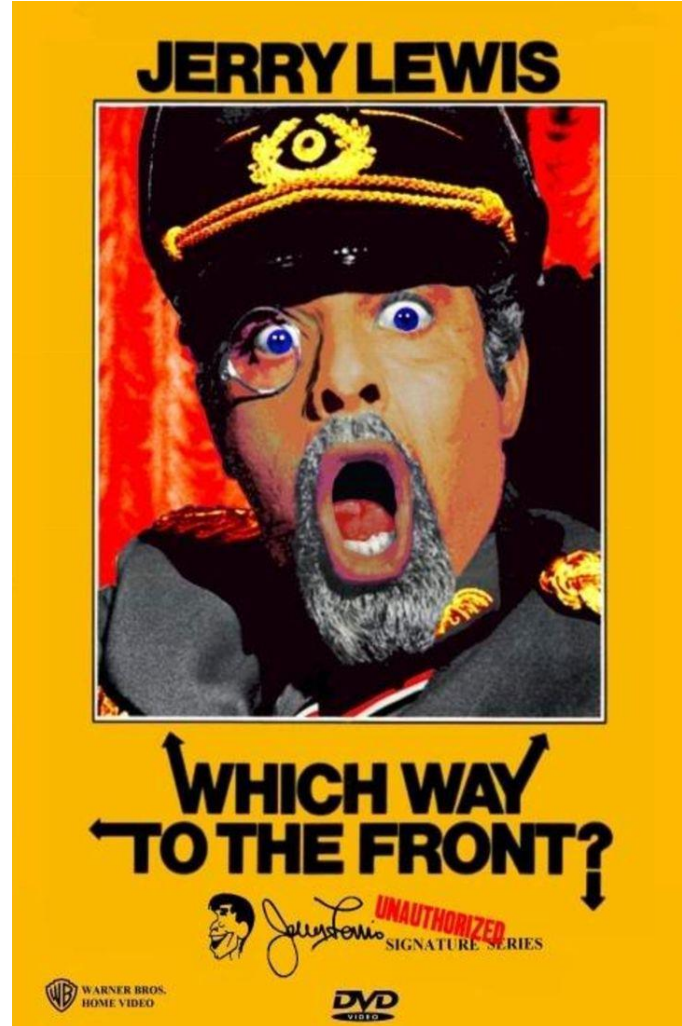
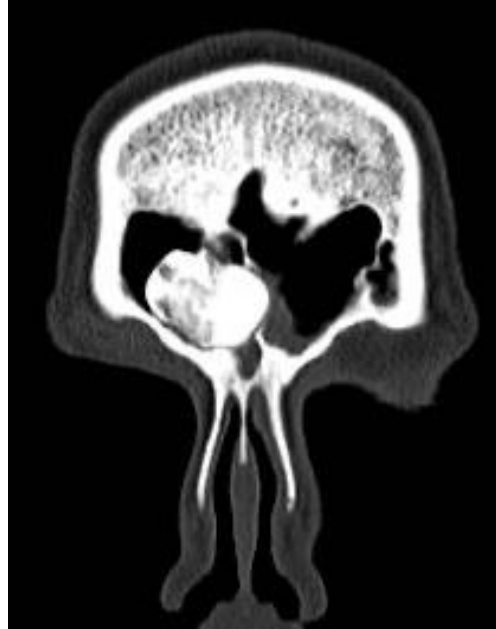
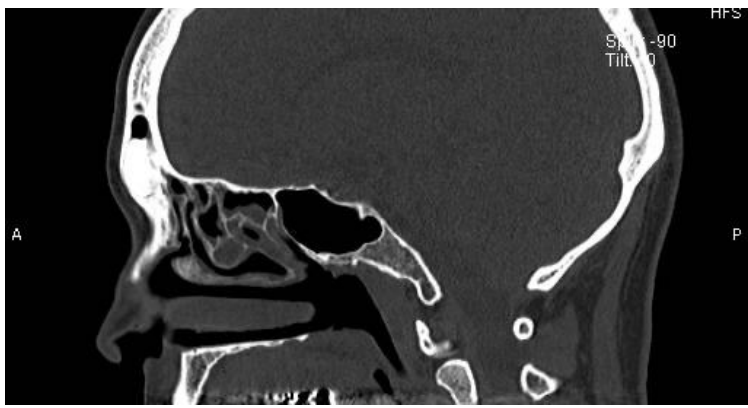
FOLS - DRAF IIB



6/16 Post OP



Which approach?

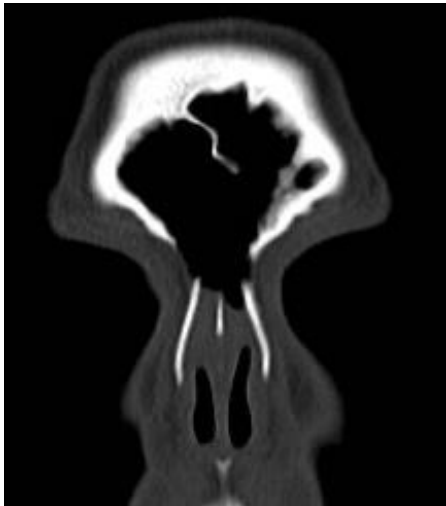
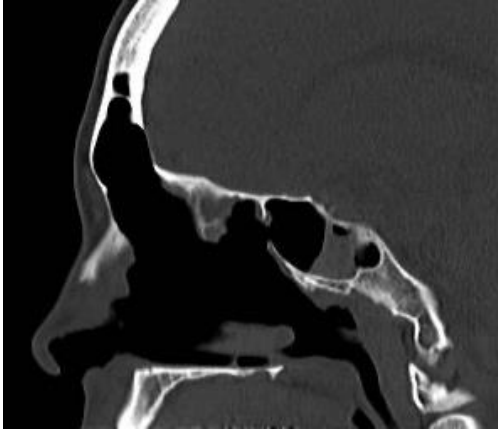


www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

CT SCAN AFTER SURGERY



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

FSA
Type 2

Frontal sinusotomy: removal of
frontal sinus floor
(*Draf IIa – Draf IIb – Draf III*)

Indications

- **Revision Surgery**
- **RSC (Chronic Rhinosinusitis):**
Asa Syndrome, Eosinophilic Rhinosinusitis, Massive Polypsis
- **Mucocele**
- **Inverted Papilloma** (limited to the infundibulum)
- **Osteoma** (limited to the infundibulum)
- **CSF-L** (postero-inferior wall, with or without ethmoidal roof involvement)



**FSA
Type2**

**Frontal sinusotomy: removal of
frontal sinus floor
(*Draf IIa – Draf IIb – DrafIII*)**

Indications

ORIGINAL ARTICLE

Frontoethmoidal and Intraorbital Osteomas

Exploring the Limits of the Endoscopic Approach

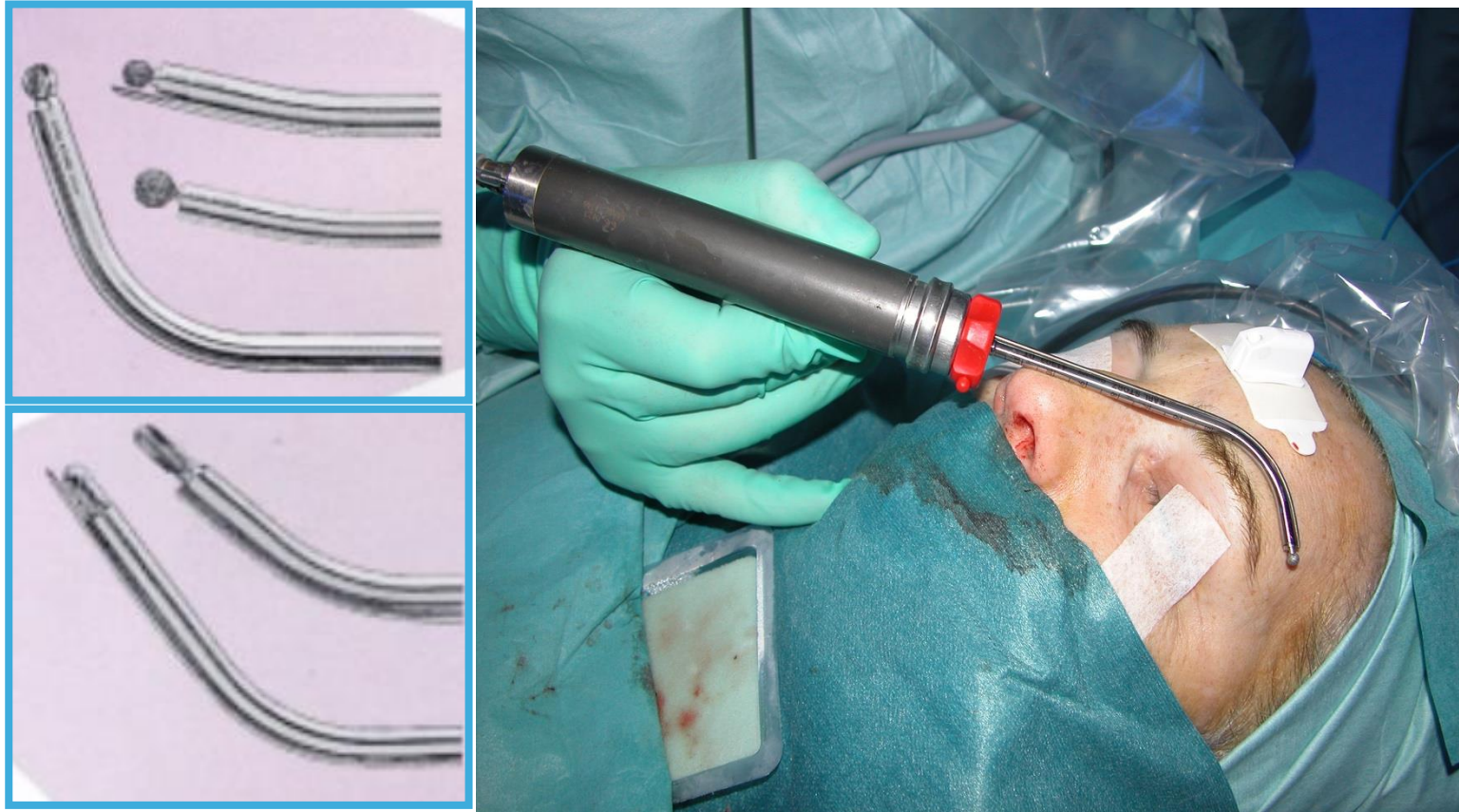
*Mario Turri-Zanoni, MD; Iacopo Dallan, MD; Paola Terranova, MD; Paolo Battaglia, MD; Apostolos Karligkiotis, MD;
Maurizio Bignami, MD; Paolo Castelnuovo, MD*

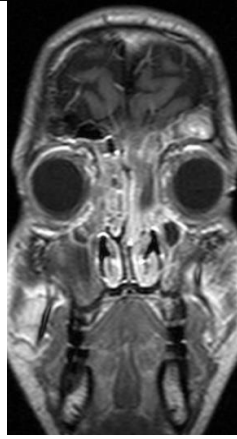
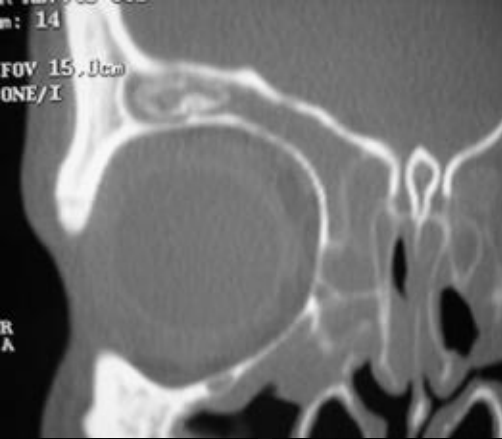
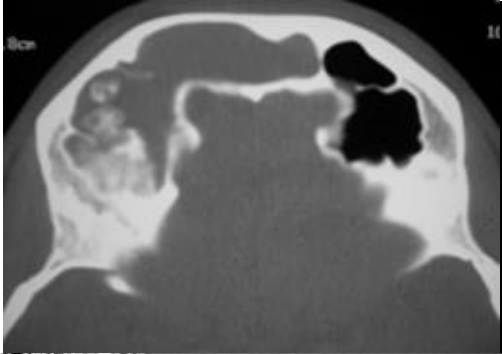
Arch Otolaryngol Head Neck Surg. 2012;138(5):498-504



Now we can endoscopically remove far lateral lesions thanks to:

1. NEW CURVED INSTRUMENTS
2. BETTER SURGICAL TECHNIQUES





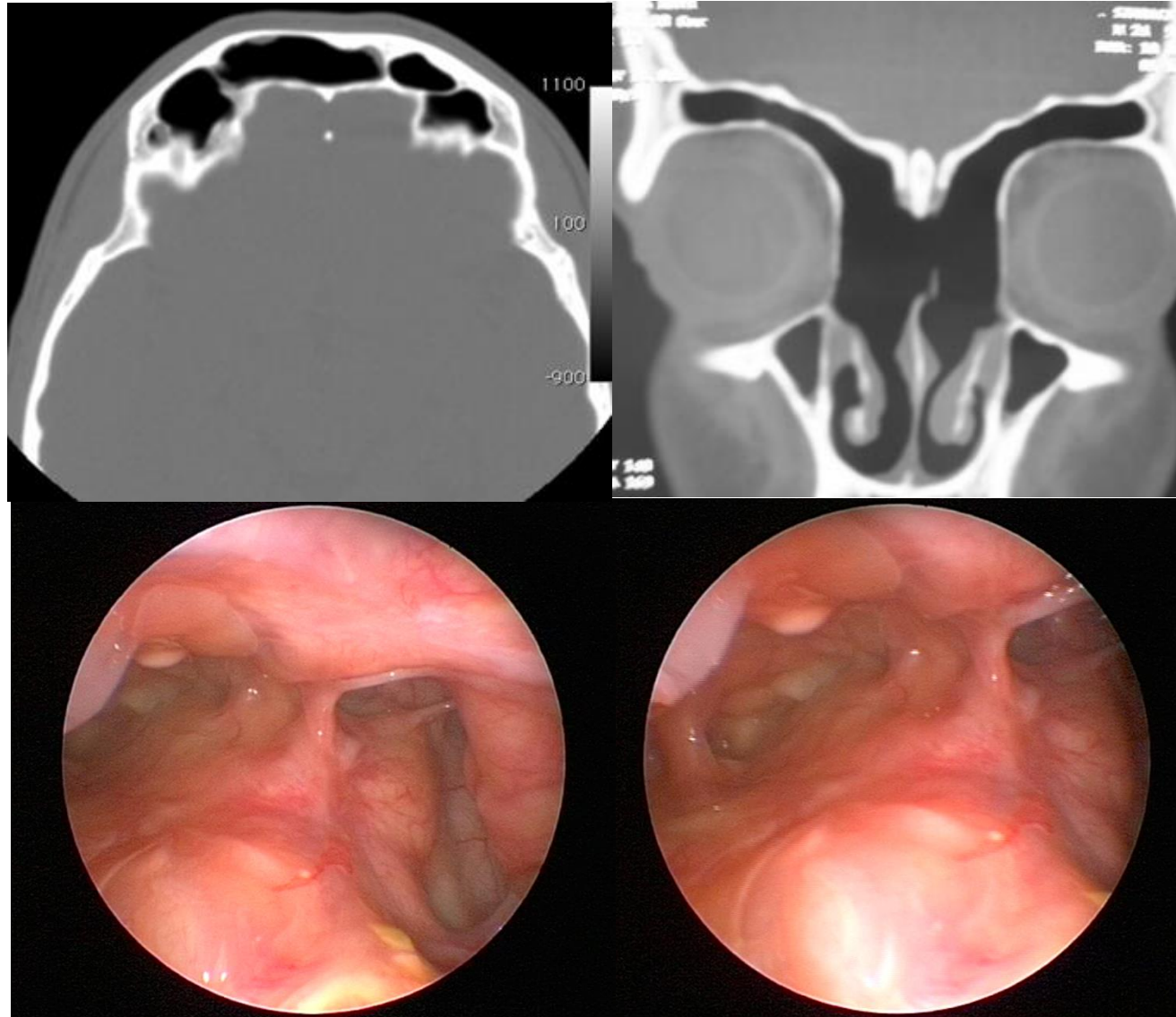
FOLS - FAR LATERAL APPROACH

www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

CT SCAN AFTER 1 YEARS

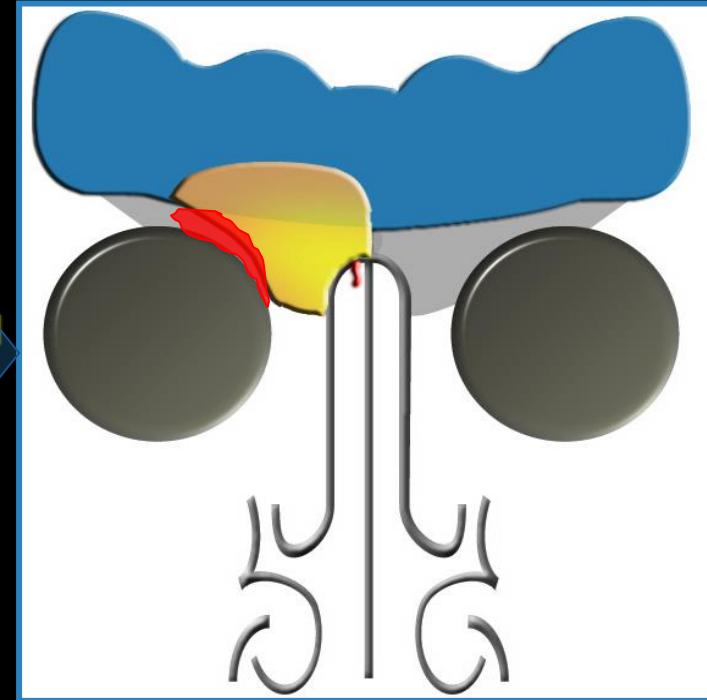
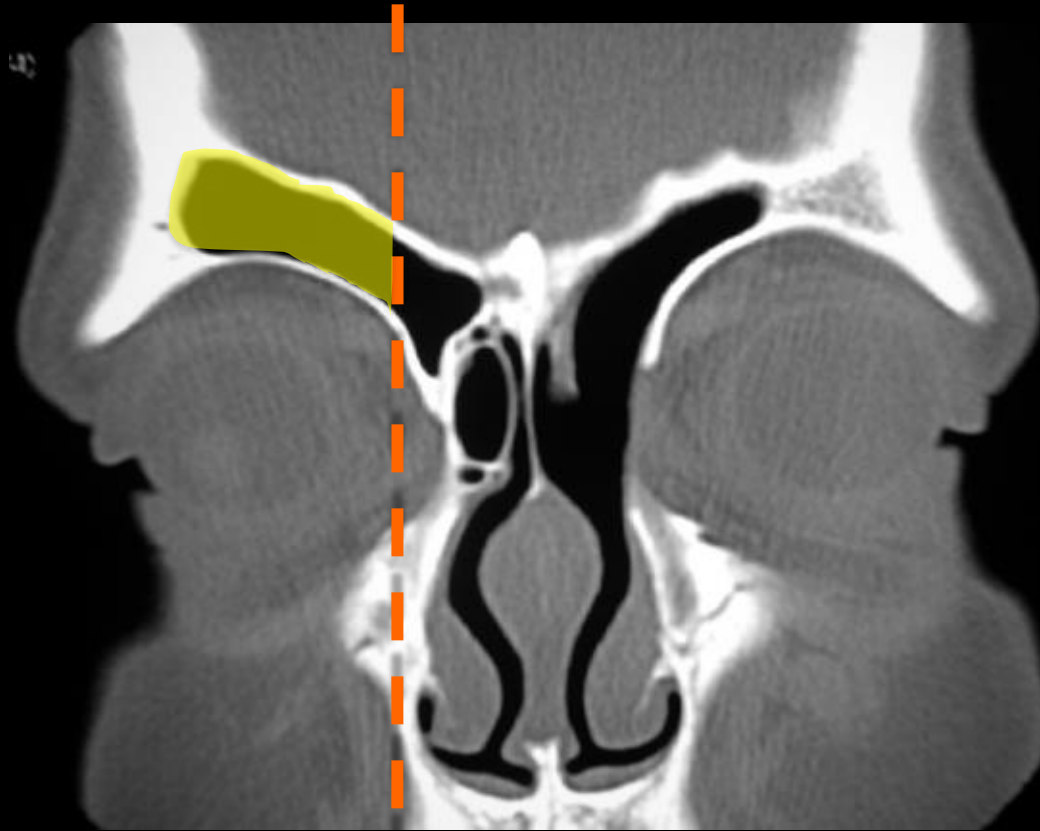


www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

...and how to further expand the approach?

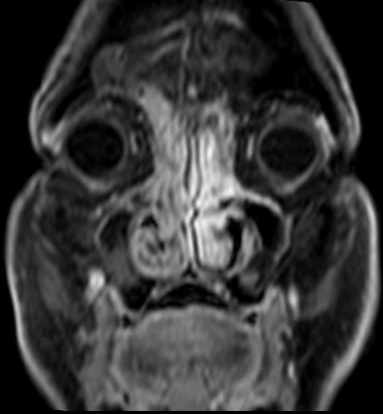


**“Extreme Draf?”
“Extended draf?”
“Draf IIX?”**





INVERTED PAPILLOMA - FAR LATERAL APPROACH
with
ORBITAL TRANSPOSITION



Frontal Sinus Approach

<i>FSA Type1</i>	<i>Clearance of the frontal recess (sinusplasty - anterior ethmoidotomy)</i>
<i>FSA Type2</i>	<i>Frontal sinusotomy: removal of frontal sinus floor (Draf II a – Draf II b – Draf III)</i>
FSA Type3	Frontal osteoplastic sinusotomy (with or without fat obliteration)
<i>FSA Type4</i>	<i>Frontal craniotomy with sinus cranialization or reconstruction</i>



FSA
Type 3

Frontal craniotomy with sinus Frontal osteoplastic sinusotomy (with or without fat obliteration)

Indications

- **Revision Surgery** (failure of the endoscopic treatment)
- **RSC** (Asa Syndrome, Eosinophilic rhinosinusitis, massive polyposis)
- **Mucocele** (especially if located in the supraorbital recess)
- **Benign Tumors** (giant osteoma, inverted papilloma)
- **CSFL - Meningoencephalocele**

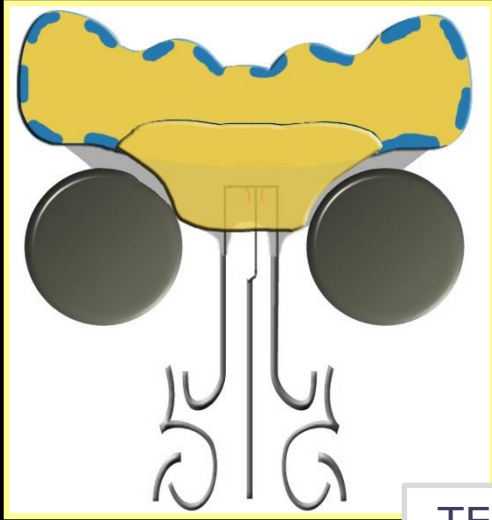


FSA Type 3

Frontal craniotomy with sinus Frontal osteoplastic sinusotomy (with or without fat obliteration)

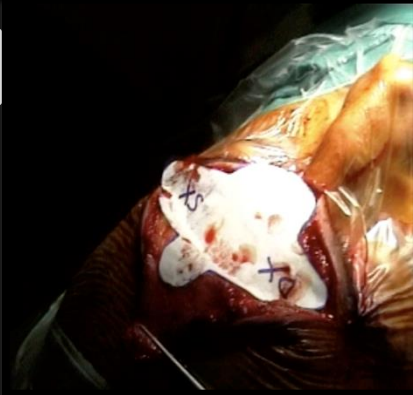
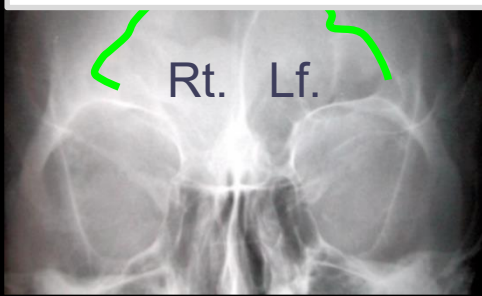
TODAY'S INDICATIONS:

Small antero-posterior diameter of the sinus
Wide lesion's base of attachment

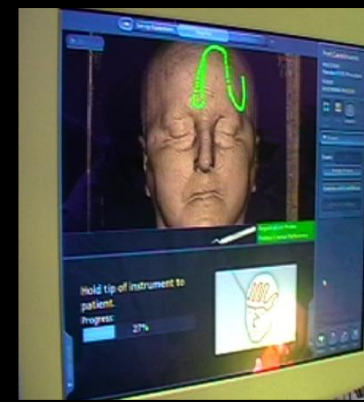


TEMPLATE

BEFORE: TEMPLATE



Neuronavigation





www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital

Frontal Sinus Approach

FSA Type1	Clearance of the frontal recess <i>(sinusplasty - anterior ethmoidotomy)</i>
FSA Type2	Frontal sinusotomy: removal of frontal sinus floor <i>(Draf II a – Draf II b – Draf III)</i>
FSA Type3	Frontal osteoplastic sinusotomy <i>(with or without fat obliteration)</i>
FSA Type4	Frontal craniotomy with sinus cranialization or reconstruction



**FSA
Type 4**

***Frontal craniotomy with sinus
cranialization or reconstruction***

Indications

- **Revision Surgery
(failure of osteoplastic flap)**
- **Chronic Rhinosinusitis
(with massive posterior wall erosion)**
- **Mucocele (with intracranial extension)**
- **Benign tumor (with intracranial extension)**
- **CSFL - meningoencephalocele**





CONCLUSIONS

Frontal sinus surgery is the most difficult step to face in the sinonasal surgery's learning curve

It is mandatory to have a deep anatomical knowledge of this district before starting to deal with it

There are precise anatomical safety landmarks that have to be recognized and followed

The choice of the surgical approach have to consider the particular patient's anatomy (dimensions and shape of the frontal sinus) and the pathology that has to be treated, with the aim to grant the better late result

In recent years new surgical equipment together with surgical technique refinements have allowed further expansion of surgical indications



2010



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital



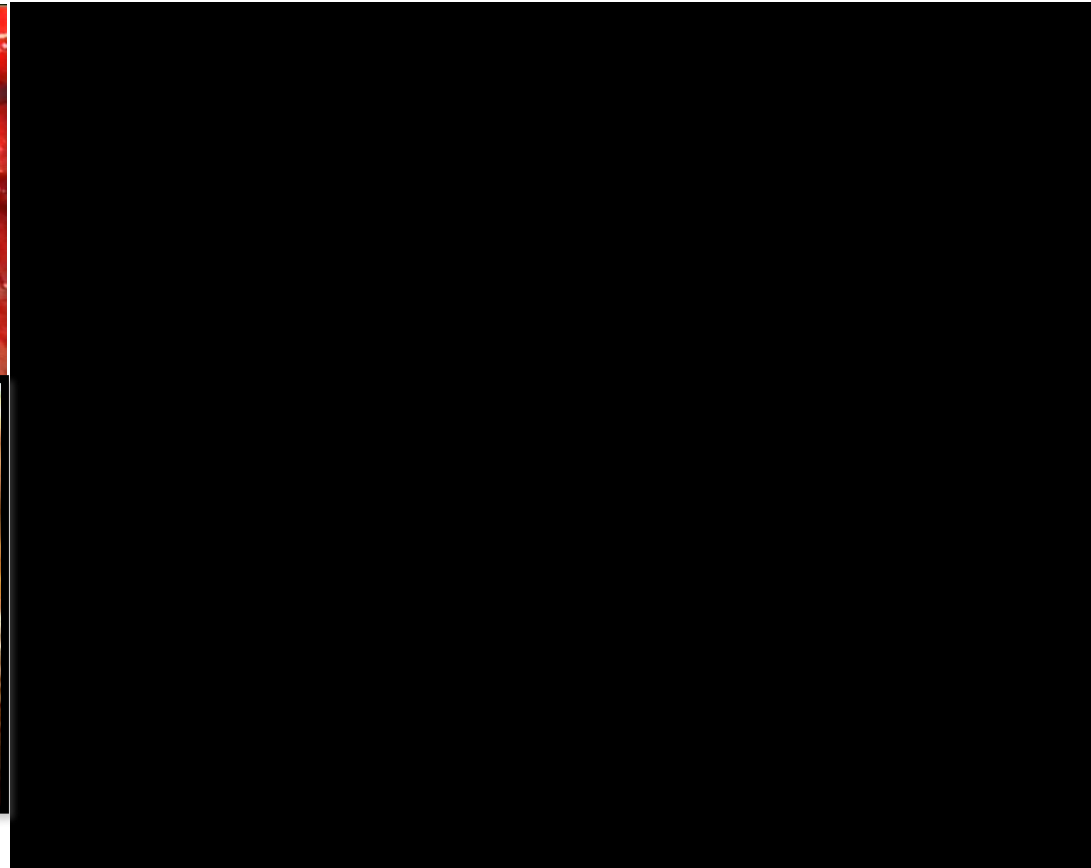
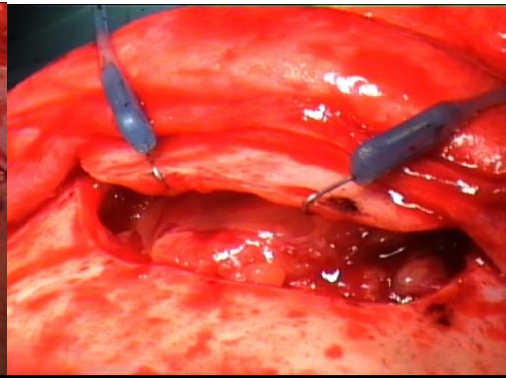
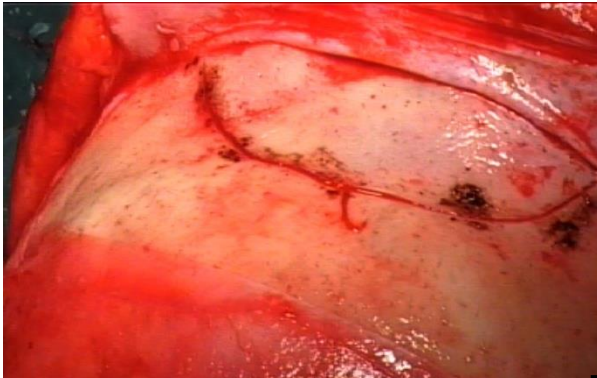
www.TheEarNoseThroatDoctor.com



**Tallaght
University
Hospital**

**FSA
Type 3**

**Frontal craniotomy with sinus Frontal
osteoplastic sinusotomy (with or without fat
obliteration)**





www.TheEarNoseThroatDoctor.com



**Tallaght
University
Hospital**

CONCLUSIONS

Frontal sinus surgery is the most difficult step to face in the sinonasal surgery's learning curve

It is mandatory to have a deep anatomical knowledge of this district before starting to deal with it

There are precise anatomical safety landmarks that have to be recognized and followed

The choice of the surgical approach have to consider the particular patient's anatomy (dimensions and shape of the frontal sinus) and the pathology that has to be treated, with the aim to grant the better late result

In recent years new surgical equipment together with surgical technique refinements have allowed further expansion of surgical indications



2010



www.TheEarNoseThroatDoctor.com



Tallaght
University
Hospital