Complication in endoscopic sinus and skull base surgery

Shawkat Abdulrahman

Consultant Otolaryngologist

Rhinologist,Endoscopic Skull Base Surgeon

FRCSI,FACS

Skallebasis og bihulekirurgi – tilganger og komplikasjonshåndtering

4th -6th May 2026 OUS - Rikshospitalet

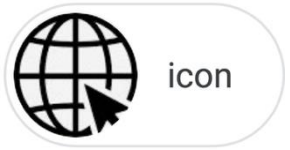
Tallaght University Hospital | Ospidéal Ollscoile Thamhlachta

An Academic Partner of Trinity College Dublin

DEN NORSKE LEGEFORENING

www.TheEarNoseThroatDoctor.com

No Disclosure



https://www.TheEarNoseThroatDoctor.com

Mr.Shawkat Abdulrahman, The Ear Nose Throat Doctor

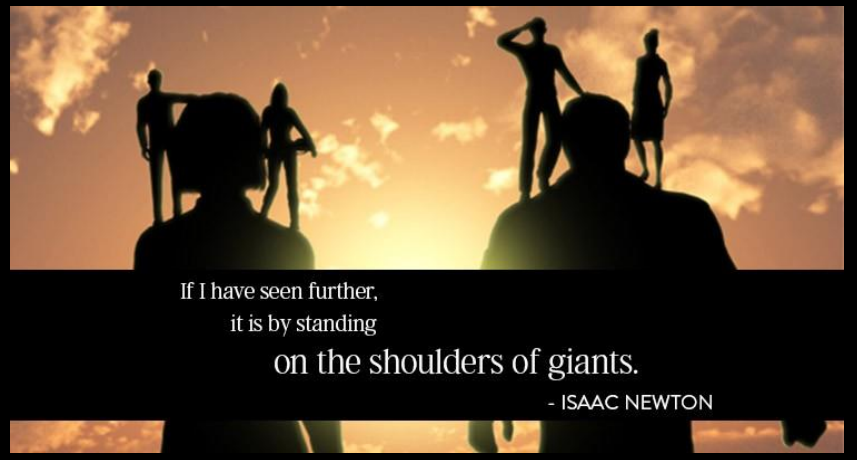
TheEarNoseThroatDoctor

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

Iraq 2024

Iraq 2022

Italy 2011



www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

2 years Surgical fellowship program RCSI

RCSI

Dr.Dhaidan AlShamari-KSA

Dr.Ebrahim Almulla -Bahrain

Fellow Rhinoplasty ,Facial reconstructive surgery

Fellow Rhinology and Endoscopic sinus and skull base surgery

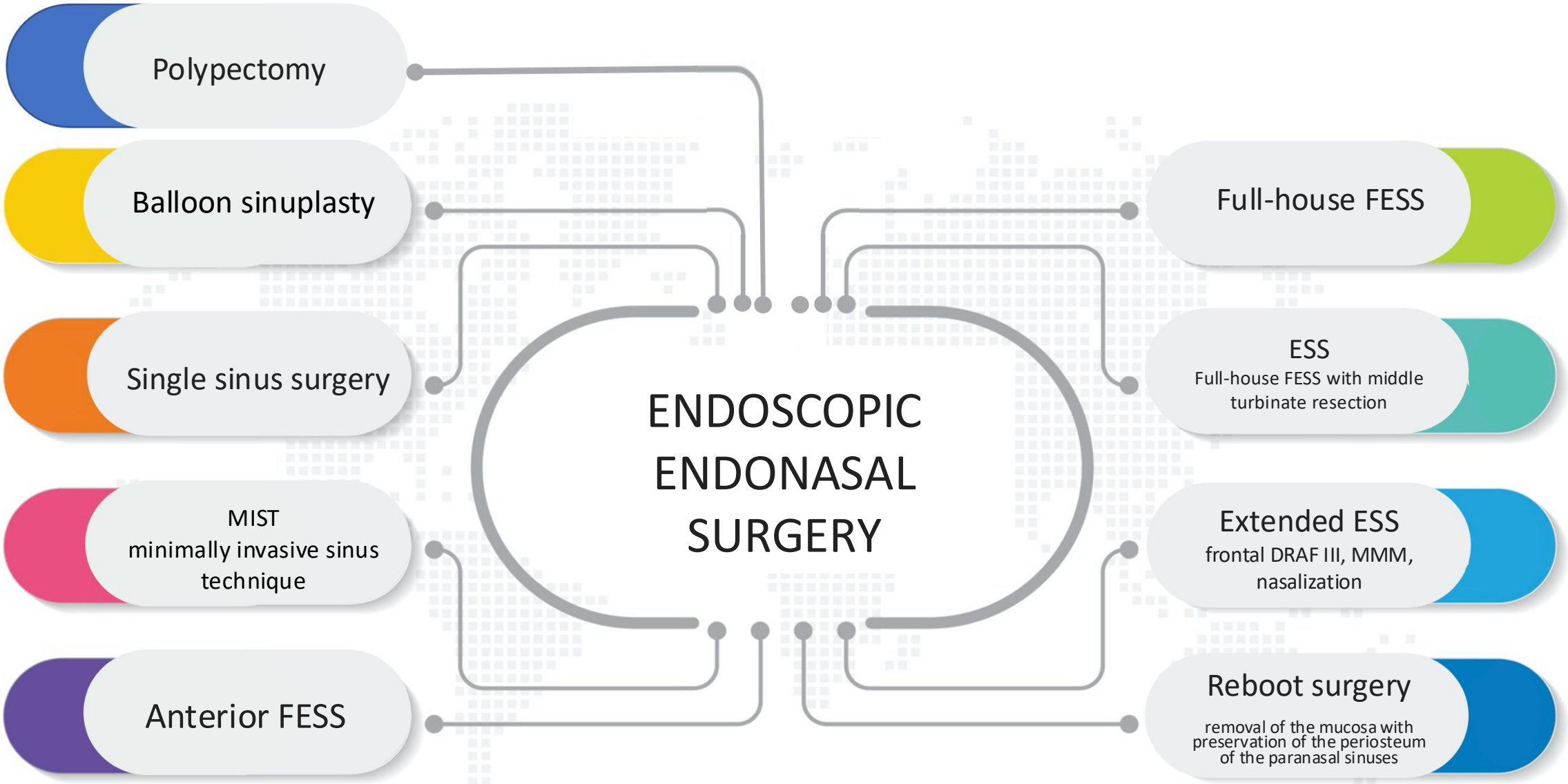
img@rcsi.com

https://www.rcsi.com/surgery/education/surgical-fellowship-programme

www.TheEarNoseThroatDoctor.com

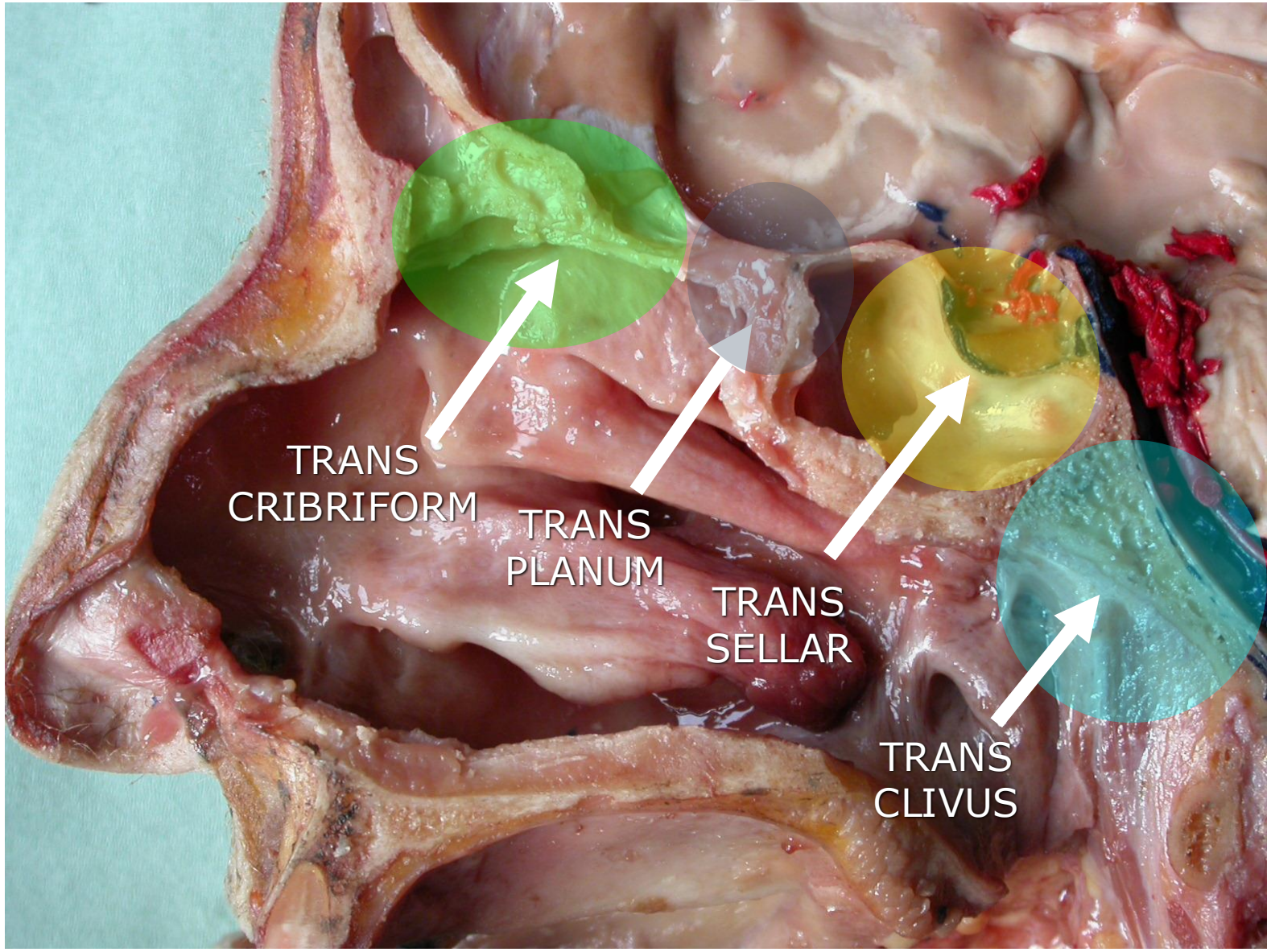
Tallaght University Hospital

Adeguate surgery: #**extent**



Weber RK et al. Comprehensive review on endonasal endoscopic sinus surgery. GMS Curr Top Otorhinolaryngol Head Neck Surg. 2015

Skull base: surgical risks




complications

COMPLICATIONS: Risk Factor

THE COMPLICATION WAS INCREASED WITH:

- **Pre-op SNOT22**
- **Lund-Mackay Score**
- **Extent of Polyposis**

No differences was found between consultant and trainees

I.D.:_____ **SINO-NASAL OUTCOME TEST (SNOT-22)** DATE:_____

Below you will find a list of symptoms and social/emotional consequences of your rhinosinusitis. We would like to know more about these problems and would appreciate your answering the following questions to the best of your ability. There are no right or wrong answers, and only you can provide us with this information. Please rate your problems as they have been over the past two weeks. Thank you for your participation. Do not hesitate to ask for assistance if necessary.

1. Considering how severe the problem is when you experience it and how often it happens, please rate each item below on how "bad" it is by circling the number that corresponds with how you feel using this scale: →	No Problem	Very Mild Problem	Mild or slight Problem	Moderate Problem	Severe Problem	Problem as bad as it can be		5 Most Important Items
1. Need to blow nose	0	1	2	3	4	5		○
2. Nasal Blockage	0	1	2	3	4	5		○
3. Sneezing	0	1	2	3	4	5		○
4. Runny nose	0	1	2	3	4	5		○
5. Cough	0	1	2	3	4	5		○
6. Post-nasal discharge	0	1	2	3	4	5		○
7. Thick nasal discharge	0	1	2	3	4	5		○
8. Ear fullness	0	1	2	3	4	5		○
9. Dizziness	0	1	2	3	4	5		○
10. Ear pain	0	1	2	3	4	5		○
11. Facial pain/pressure	0	1	2	3	4	5		○
12. Decreased Sense of Smell/Taste	0	1	2	3	4	5		○
13. Difficulty falling asleep	0	1	2	3	4	5		○
14. Wake up at night	0	1	2	3	4	5		○
15. Lack of a good night's sleep	0	1	2	3	4	5		○
16. Wake up tired	0	1	2	3	4	5		○
17. Fatigue	0	1	2	3	4	5		○
18. Reduced productivity	0	1	2	3	4	5		○
19. Reduced concentration	0	1	2	3	4	5		○
20. Frustrated/restless/irritable	0	1	2	3	4	5		○
21. Sad	0	1	2	3	4	5		○
22. Embarrassed	0	1	2	3	4	5		○

2. Please mark the most important items affecting your health (maximum of 5 items)_____ ↑

SNOT-22 Developed from modification of SNOT-20 by National Comparative Audit of Surgery for Nasal Polyposis and Rhinosinusitis Royal College of Surgeons of England.

Table 1 - Lund-McKay staging system.

Paranasal sinuses	Right	Left
Maxillary0, 1, 2		
Anterior Ethmoid0, 1, 2		
Posterior Ethmoid0, 1, 2		
Sphenoid0, 1, 2		
Frontal0, 1, 2		
Ostiomeatal complex0* or 2*		
Total points to each side		

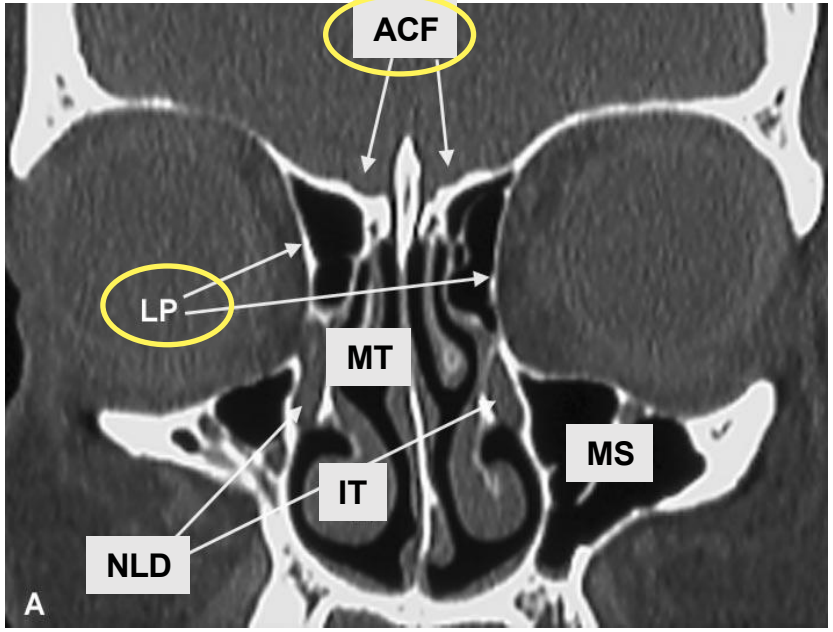
0 = no abnormalities; 1 = partial opacification; 2 = total opacification
0* = not occluded and 2* = occluded

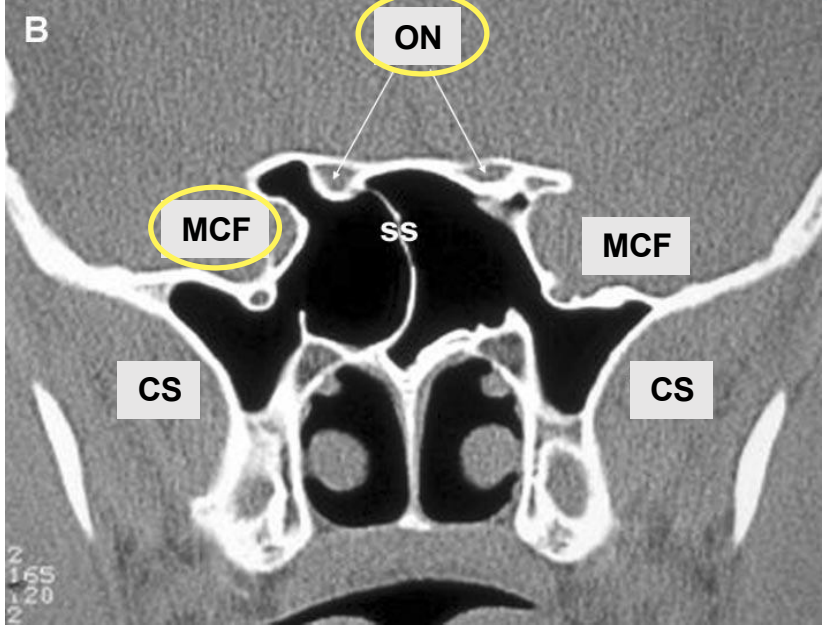
*Hopkins et al. Complication of surgery for Nasal Polyposis andL Chronic Rhinosinusisti: The resultis of a National Audit in England and Wales. Laryngoscope 2006
*Montague et al. Audit derived guidelines for training in endoscopic sinonasal surgery (FESS) – protecting patients during learning curve. Clin Otolaryngol 2003

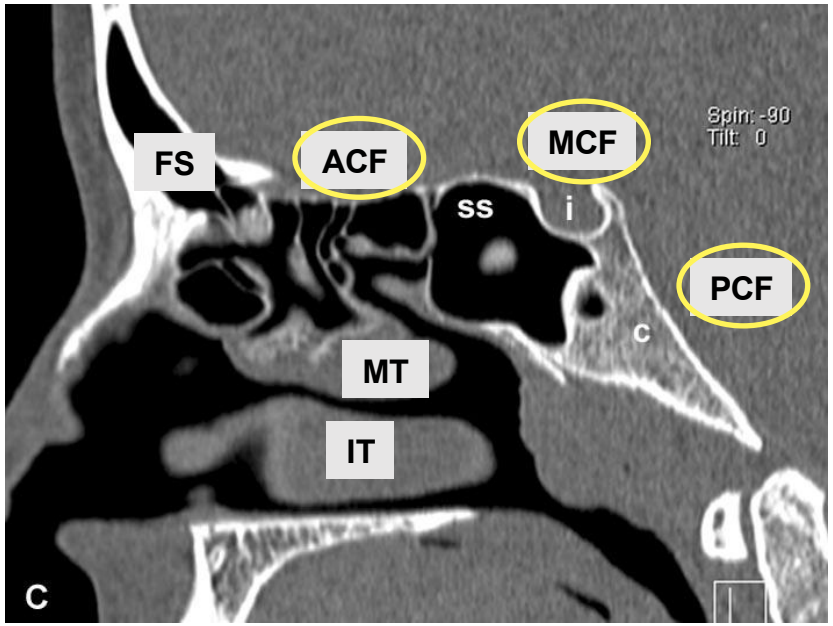
Table 6.2.1.1. Grading system for complications of ESS [599]

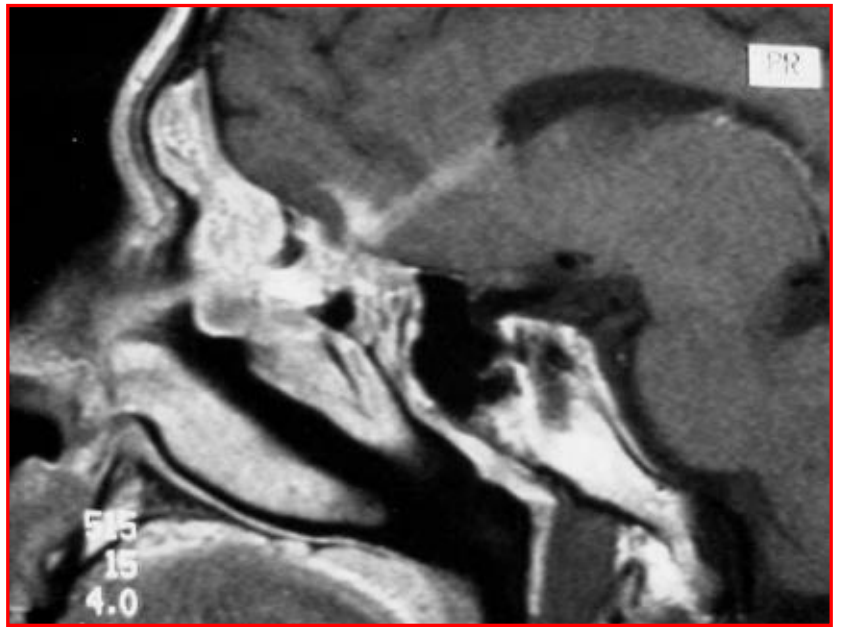
Grade	Complication	Frequency
Grade-I: minor complication (intraoperative management, no persistent harm)	Diffuse or arterial bleeding <1,000 ml Injury of the lamina papyracea Emphysema and periorbital ecchymosis Intranasal and soft tissue infection	3.1%
Grade-II: major complication (intraoperative management or revision, no persistent harm)	Diffuse or arterial bleeding >1,000 ml Bleeding requiring selective cauterising/clipping of sphenopalatine artery or anterior ethmoidal artery Bleeding requiring revision CSF leak Injury of the lacrimal duct	0.9%
Grade-III: serious complication (high risk of persistent deficit)	Meningitis with or without proven leak Intracerebral haemorrhage Intracerebral abscess Temporary or persistent neurologic deficit Retro-orbital haemorrhage Injury of optic nerve Injury of orbital muscles with diplopia Any reduction of vision and blindness Injury of the internal carotid artery Toxic shock syndrome Sepsis Death	0.04%

Siedek V, Pilzweger E, Betz C, Berghaus A, Leunig A. Complications in endonasal sinus surgery: a 5-year retrospective study of 2,596 patients. Eur Arch Otorhinolaryngol. 2013;270:141-8.



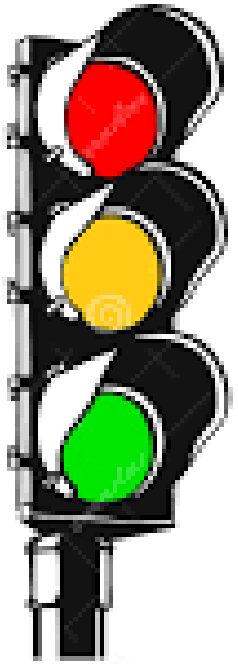






www.TheEarNoseThroatDoctor.com

Tallaght University Hospital



STOP!

WAIT!

GO!

- How to avoid
- How to recognize
- How to repair

Instruments

Surgeon

Patient

Complication

www.TheEarNoseThroatDoctor.com

Tallaght
University
Hospital

Instruments

Surgeon

Patient

- Comorbidity
- History
- Anatomy
- Disease

Complication

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

PATIENT-RISKS

HOW TO AVOID IT

CLINICAL CONDITIONS:

- altered coagulation
- uncontrolled hypertension

BLEEDING DURING SURGERY

- accurate History
- suspension of anticoagulant and replacement with LMWE
- hypertension control (pre and intraoperatory)-Mean artirial pressue 60-75.
- preoperative steroids

ANATOMICAL VARIABLES

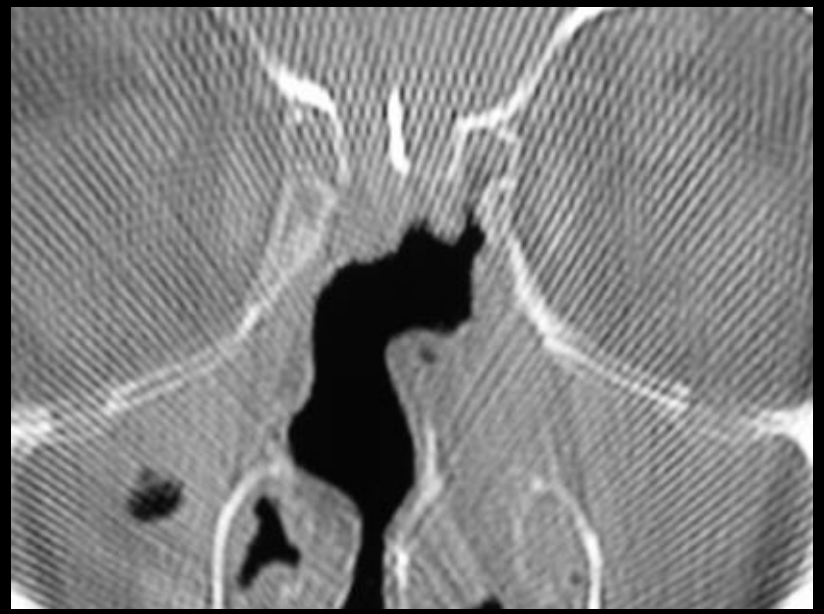
- frontal recess
- lateral lamina of cribra
- papyracea variations
- Onodi cell

- CT scans (2mm thick, bone algorithms, parallel and perpendicular to the hard palate)
- MR (selected cases)
- Safety anatomical landmarks

PREVIOUS SURGERY

- CT or/and MR must be repeated

Tallaght University Hospital

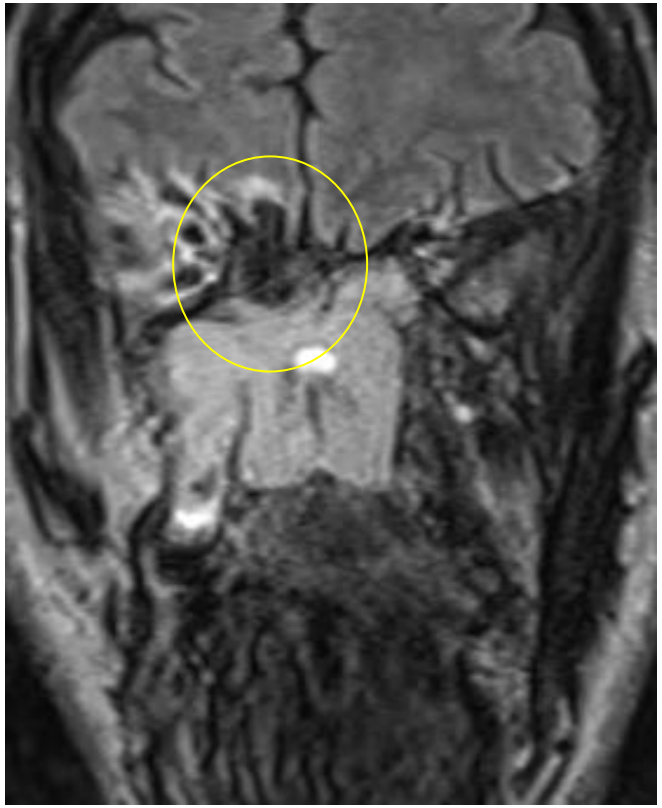


www.TheEarNoseThroatDoctor.com

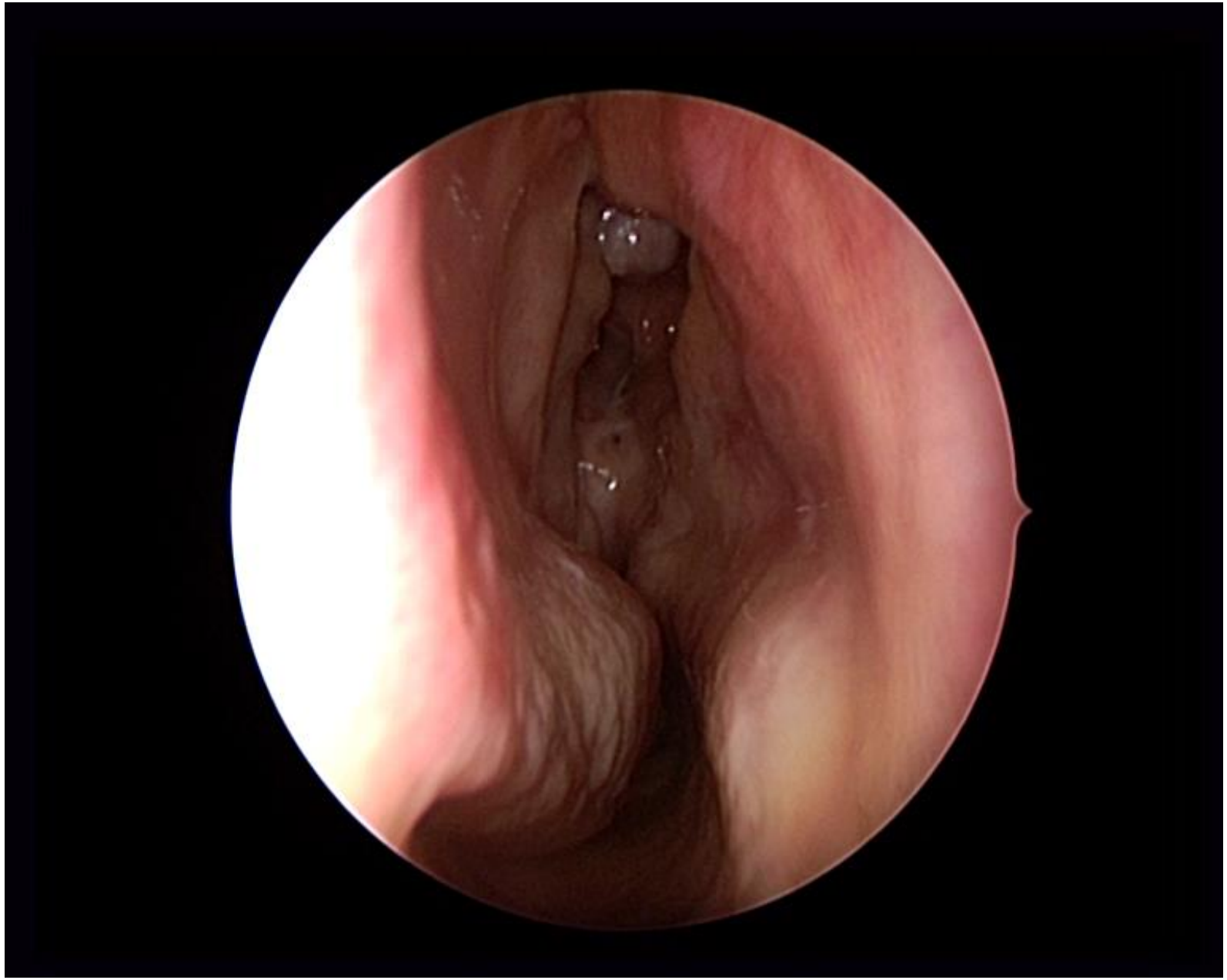
Tallaght University Hospital

RM study before revision surgery for nasal polyposis can exclude the presence of unknown defects of the skull base

T2



FLAIR



Instruments

Surgeon

Patient

- Comorbidity
- History
- Anatomy
- Disease

Complication

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

Instruments

- **Bipolar forceps**
- **Cutting instruments**
- **Powered instruments**
- **“ENT navigation”**
- **3D Surgery**

Patient

- Comorbidity
- History
- Anatomy
- Disease

Surgeon

- Training
  (Imaging, laboratory)
- Self evaluation

Complication

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

INSTRUMENTS-RISK

BLUNT INSTRUMENTS

- cicatricial sequelae
- turbinates destabilization

NOT-ANGLED INSTRUMENTS

- less control of surgical movements

NOT-CUTTING INSTRUMENTS

- vascoular injury (a.e.a.)
- sinusal osti stenosis

MONOPOLAR CURRENT

- nerve injury
- vascoular injury

HOW TO AVOID IT

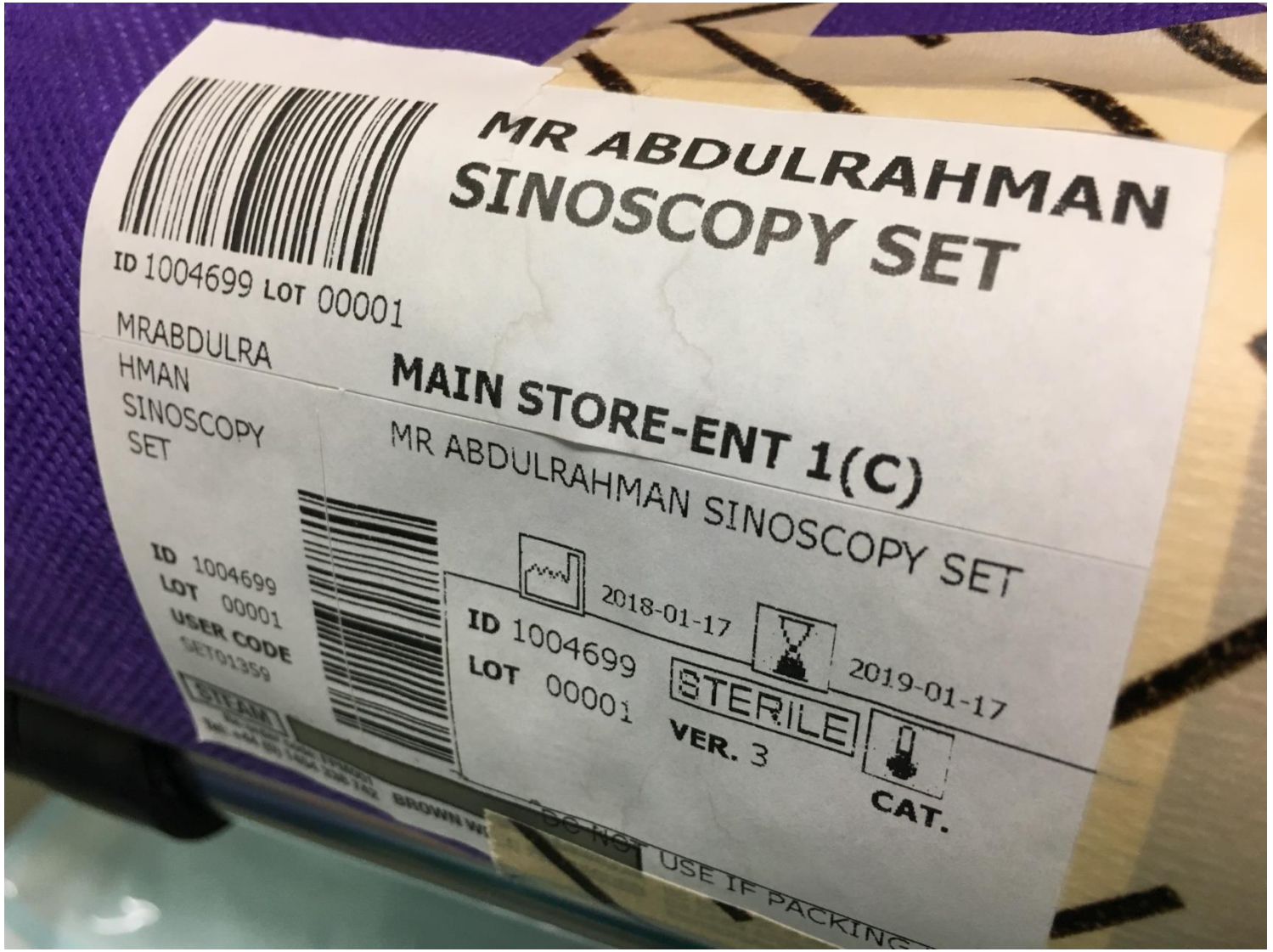
- small size instruments (dedicate instruments in pediaric surgery)

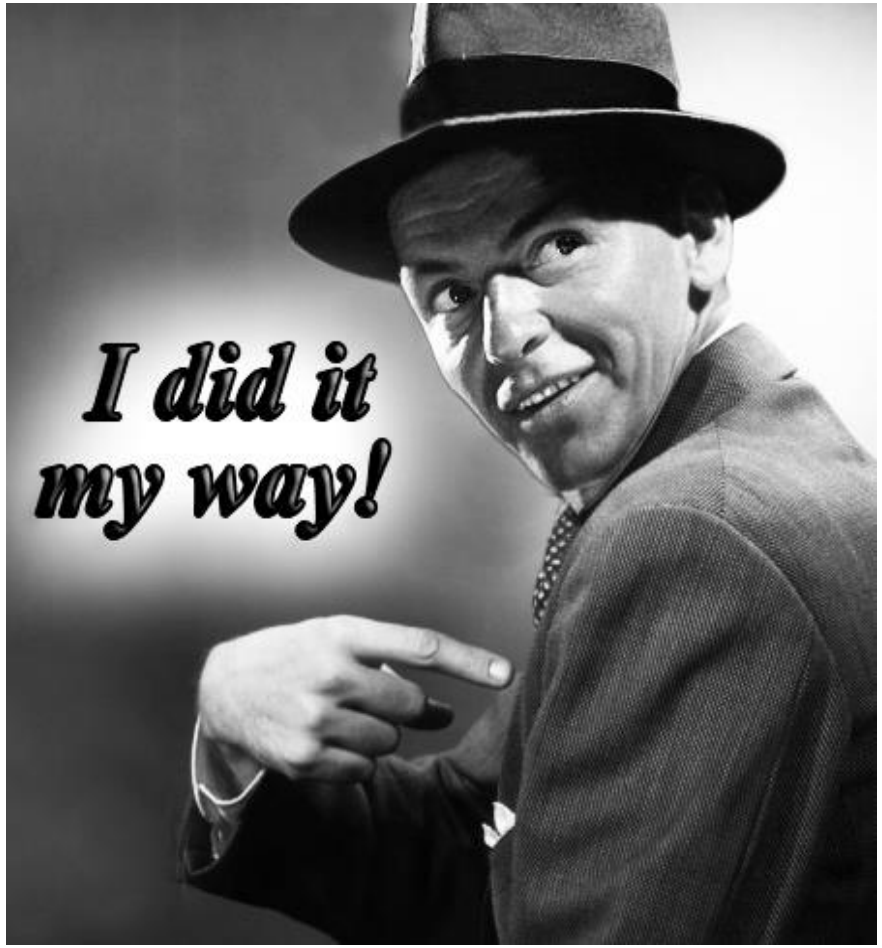
- single and double angled instruments (drill,shaver, cutting)

- cutting instruments
- microdebrider (soft tissue, slow speed)

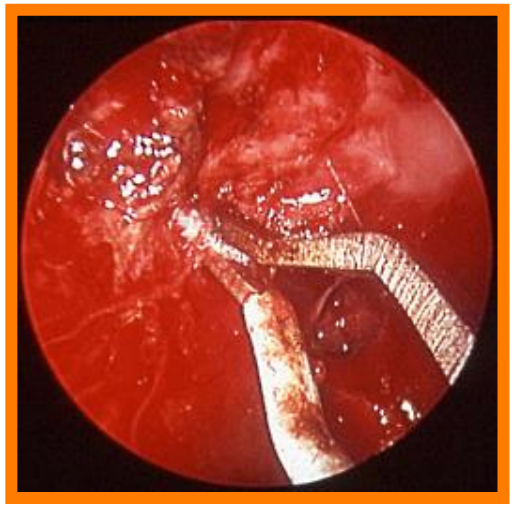
- bipolar current
- Take-apart ®

Tallaght University Hospital

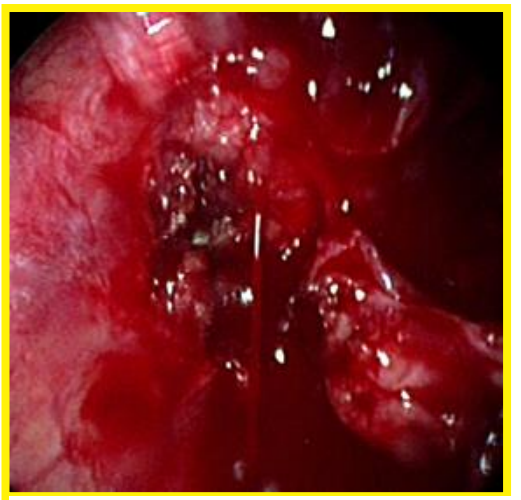

MR ABDULRAHMAN
SINOSCOPY SET
ID 1004699 LOT 00001
MRABDULRA
HMAN
SINOSCOPY
SET
MAIN STORE-ENT 1(C)
MR ABDULRAHMAN SINOSCOPY SET
ID 1004699
LOT 00001
USER CODE
2018-01-17
2019-01-17
ID 1004699
LOT 00001
STERILE
VER. 3
CAT.
USE IF PACKING

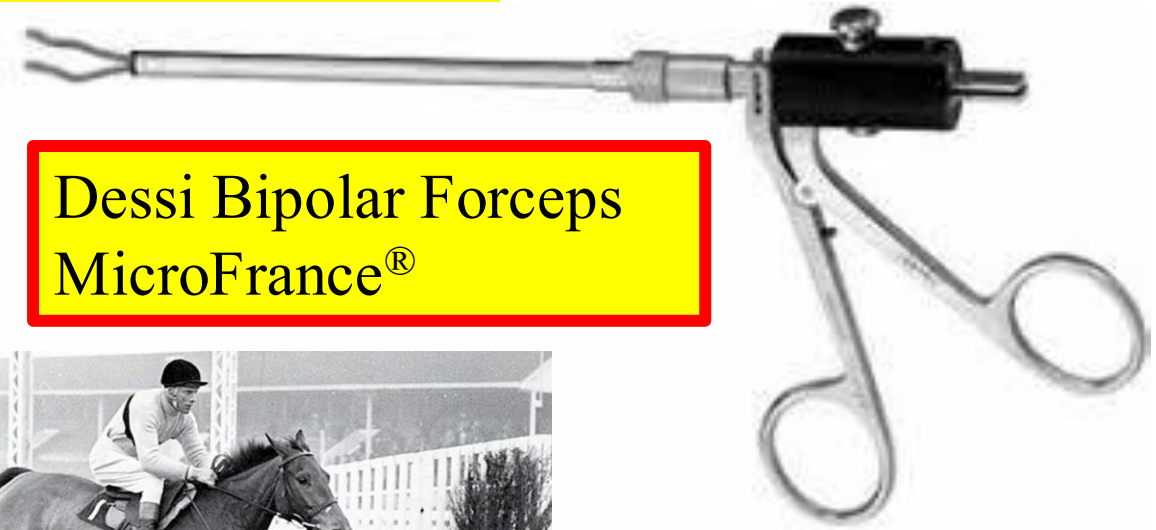

I did it
my way!

AEA bleeding



SPA bleeding



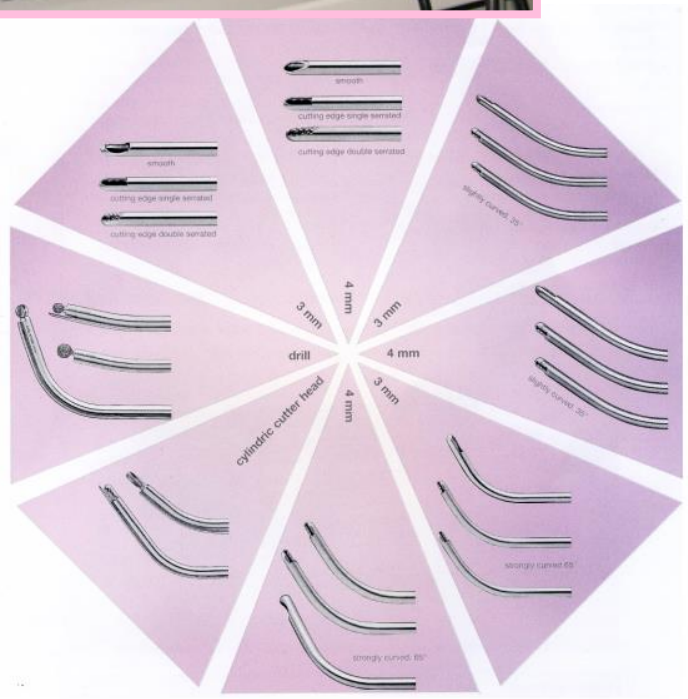


Dessi Bipolar Forceps
MicroFrance®

DOUBLE ANGLED BIPOLAR

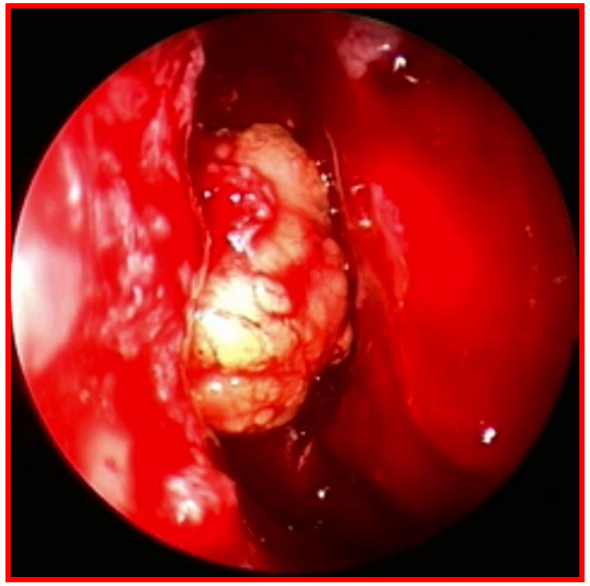
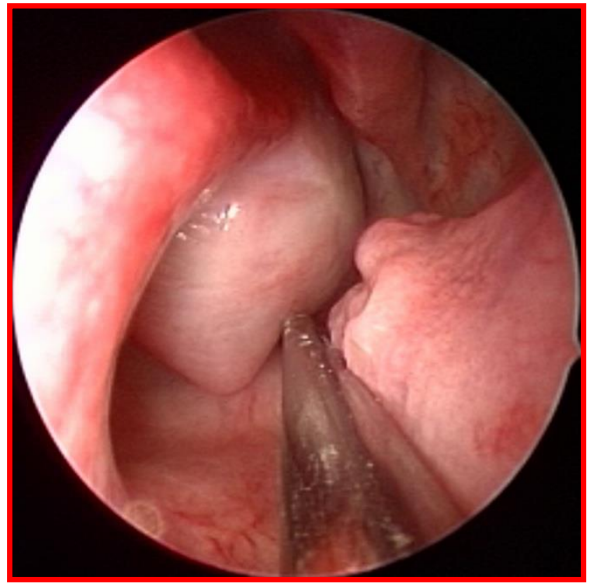
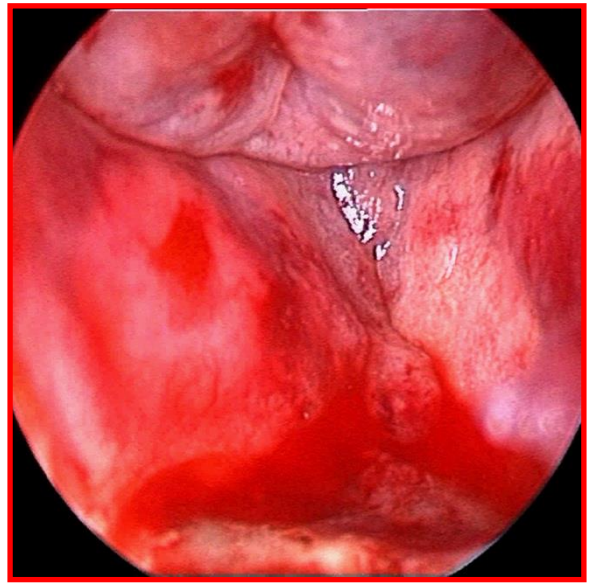
www.TheEarNoseThroatDoctor.com

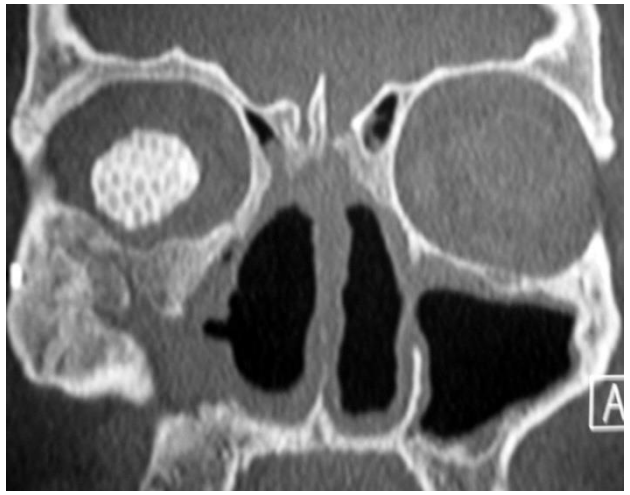
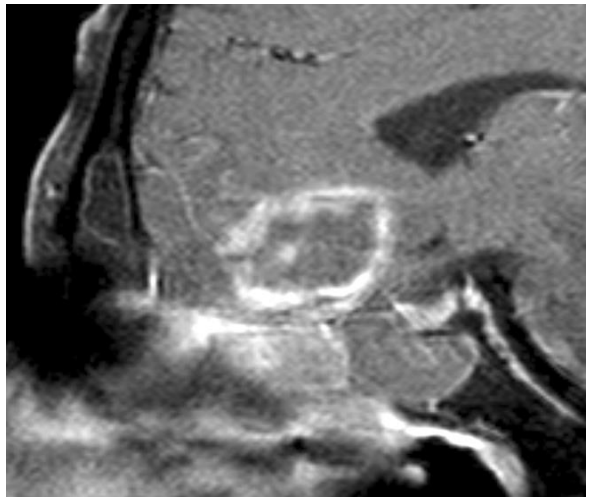
Tallaght University Hospital

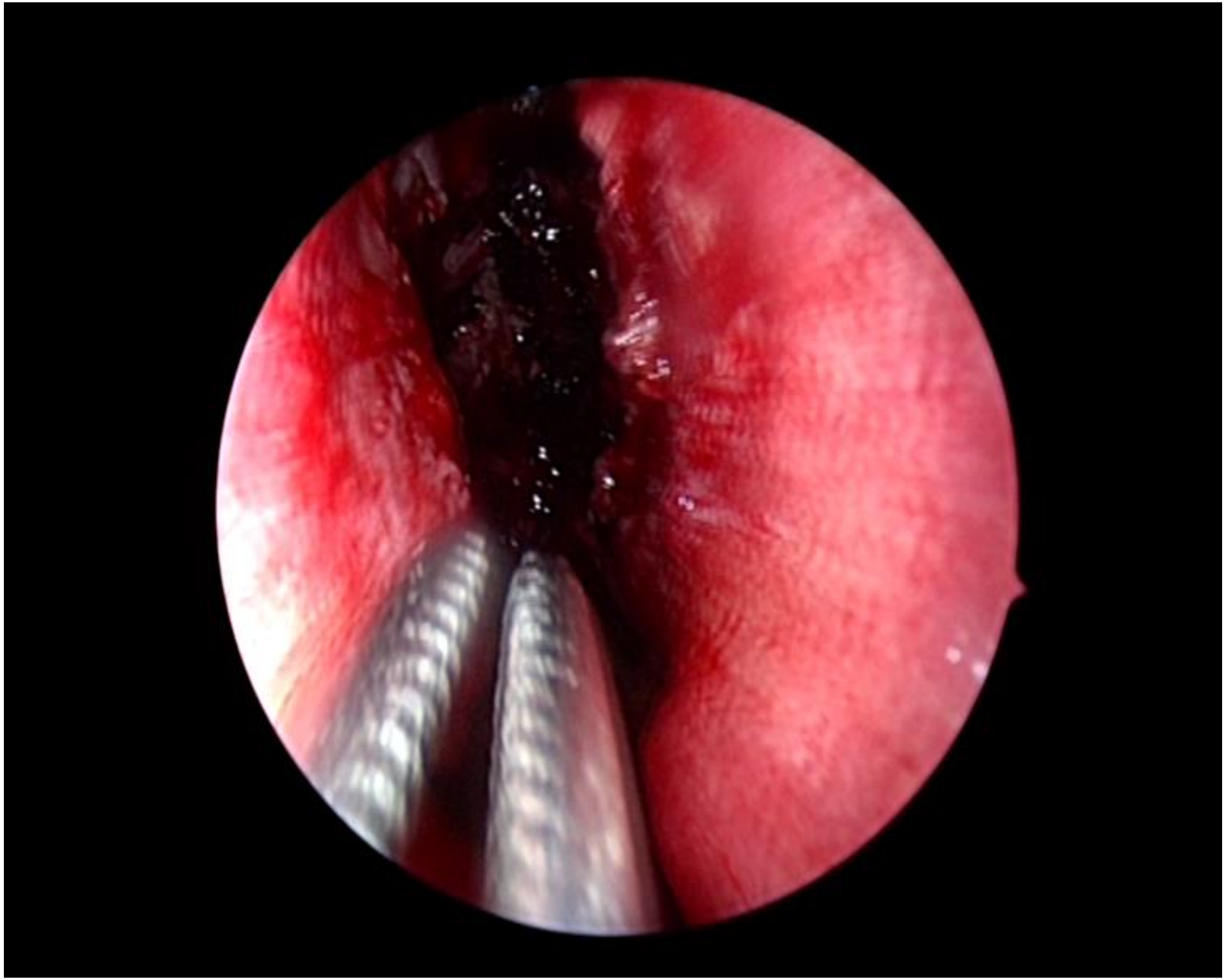


www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

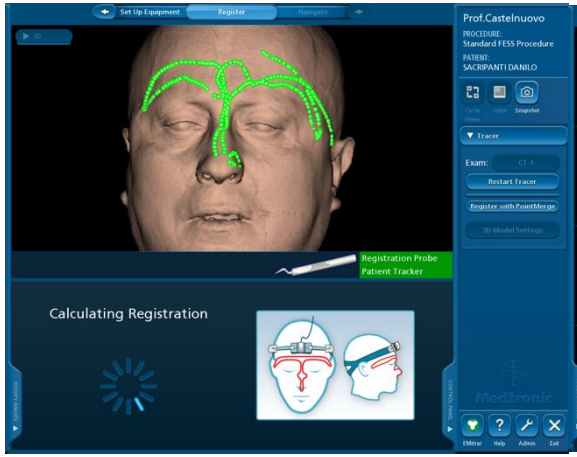




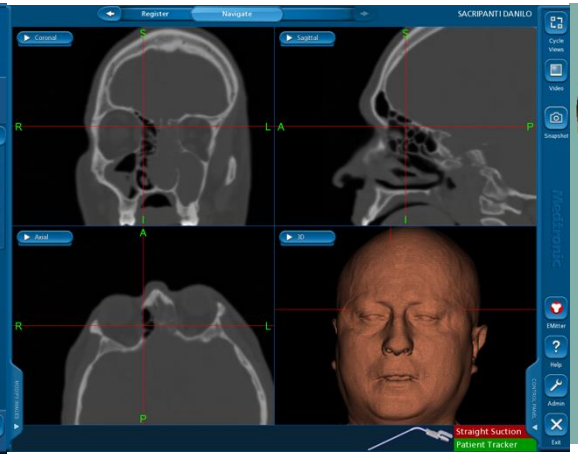





14 DAYS LATER


LOST
CONFUSED
UNSURE
UNCLEAR
PERPLEXED
DISORIENTED
BEWILDERED


Set Up Equipment
Register
Navigate
Prof.Castelnuovo
PROCEDURE:
Standard FESS Procedure
PATIENT:
SACRIPANTI DANILO
Tracer
Exam:
Restart Tracer
Register with PointMerge
3D Model Settings
Registration Probe
Patient Tracker
Calculating Registration
Medtronic
EMitter
Help
Admin
Exit


Register
Navigate
SACRIPANTI DANILO
Coronal
Sagittal
Axial
Straight Suction
Patient Tracker
Medtronic


STORZ
clearvision II
40 3341 20

OPTICAL NAVIGATION SYSTEM

MAGNETIC NAVIGATION SYSTEM

The use of image guidance for ESS has been gradually increasing and in the USA has been supported by the AAONHS guidelines for ESS and the International Consensus Statement on Allergy. and Rhinology. for Rhinosinusitis in 2016[496][401, 497].
The examples they list as appropriate for IGS include:

- Revision sinus surgery.
- Distorted sinus anatomy of development, postoperative, or traumatic origin.
- Extensive sino-nasal polyposis.
- Pathology involving the frontal, posterior ethmoid and sphenoid sinuses.
- Disease abutting the skull base, orbit, optic nerve or carotid artery.
- CSF rhinorrhea or conditions where there is a skull base defect.
- Benign and malignant sino-nasal neoplasms.

In terms of evaluating the role of image-guided surgery (IGS) or computer-assisted sinus surgery (CASS), key issues to address are:

- Its role in reducing complication rates
- Its role in improving clinical outcomes
- Its value in training
- Its cost-effectiveness

European Position Paper on Rhinosinusitis and Nasal Polyps EPOS2020

Tallaght University Hospital

Instruments

- Bipolar forceps
- Cutting instruments
- Powered instruments
- “ENT navigation”
- 3D Surgery

Surgeon

Patient

- Comorbidity
- History
- Anatomy
- Disease

Complication

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital


YOU

Instruments

- Bipolar forceps
- Cutting instruments
- Powered instruments
- “ENT navigation”
- 3D Surgery

Surgeon

- **Training**
  (Imaging, laboratory)
- **Self evaluation**

Patient

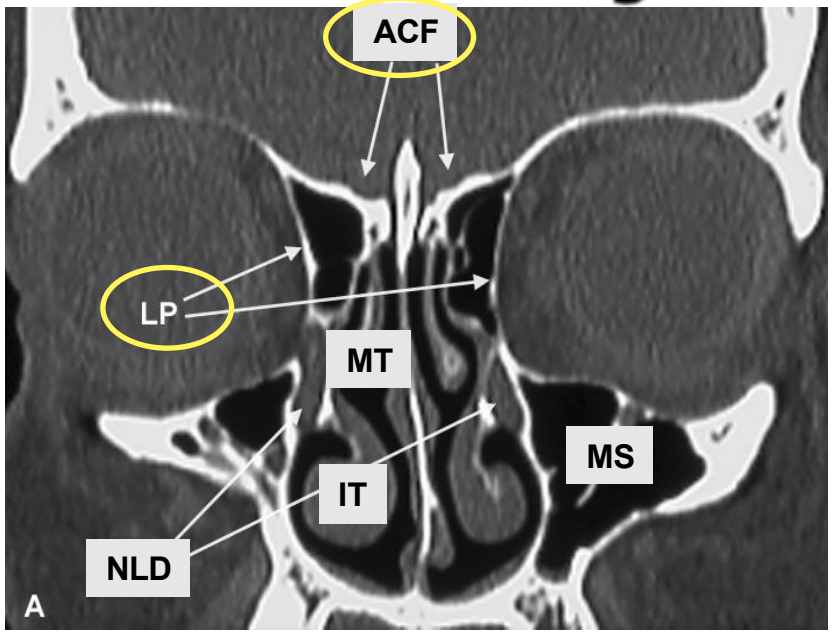
- Comorbidity
- History
- Anatomy
- Disease

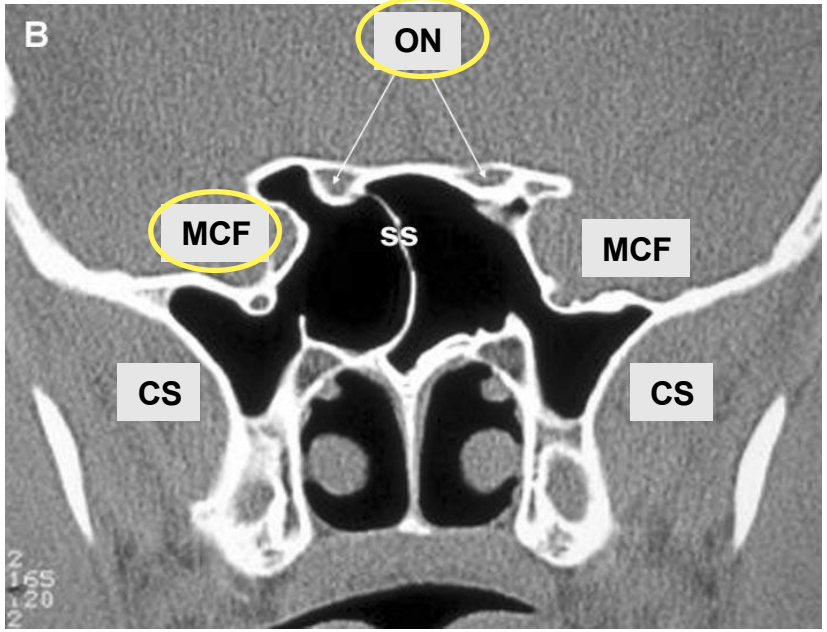
Complication

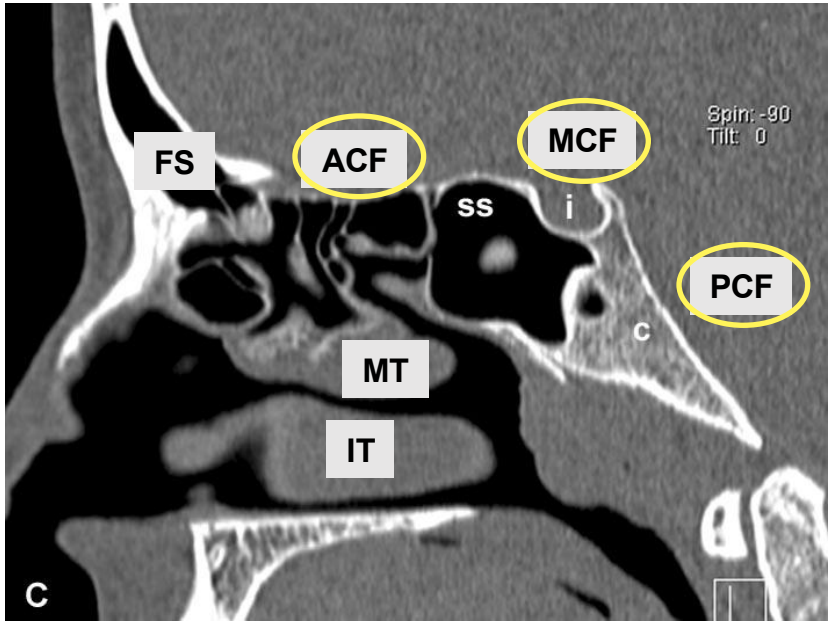
www.TheEarNoseThroatDoctor.com

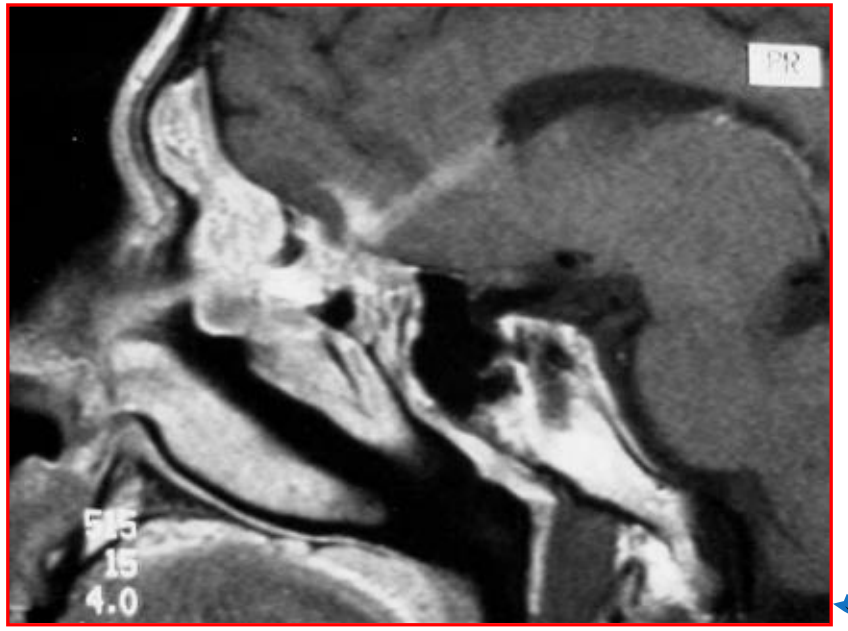
Tallaght University Hospital

Surrounding anatomical structures

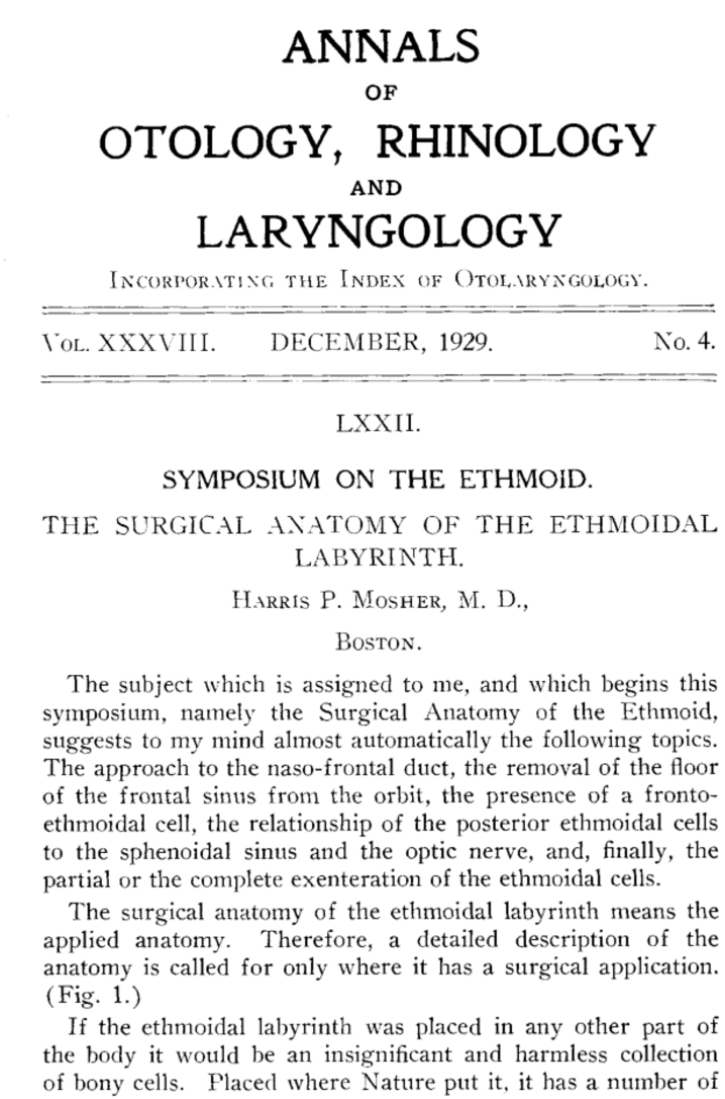








Tallaght University Hospital



ANNALS
OF
OTOLOGY, RHINOLOGY
AND
LARYNGOLOGY
INCORPORATING THE INDEX OF OTOLARYNGOLOGY.
VOL. XXXVIII. DECEMBER, 1929. No. 4.

LXXII.

SYMPOSIUM ON THE ETHMOID.

THE SURGICAL ANATOMY OF THE ETHMOIDAL LABYRINTH.

HARRIS P. MOSHER, M. D.,
BOSTON.

The subject which is assigned to me, and which begins this symposium, namely the Surgical Anatomy of the Ethmoid, suggests to my mind almost automatically the following topics. The approach to the naso-frontal duct, the removal of the floor of the frontal sinus from the orbit, the presence of a fronto-ethmoidal cell, the relationship of the posterior ethmoidal cells to the sphenoidal sinus and the optic nerve, and, finally, the partial or the complete exenteration of the ethmoidal cells.

The surgical anatomy of the ethmoidal labyrinth means the applied anatomy. Therefore, a detailed description of the anatomy is called for only where it has a surgical application. (Fig. 1.)

If the ethmoidal labyrinth was placed in any other part of the body it would be an insignificant and harmless collection of bony cells. Placed where Nature put it, it has a number of

"it has been proven to be one of the easiest ways to kill patient"

Mosher HP. The symposium on the ethmoid. The surgical anatomy of the ethmoidal labyrinth. Am Acad Opthalmol Otolaryngol 1929; 376-410.

Anatomical variants

Unsafe procedure

"Anatomical dissection" is the KEY

Safe FESS

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital


SQU Otorhinolaryngology Dissection Workshops 2022
Date: 18-19 Sep 2022
Endoscopic Sinus and
Date: 20-21 Sep 2022
Date: 22 Sep 2022
Thyroid & Neck
Ultrasound


Basic Fundamental of
Endoscopic Sinus
Surgery Course

2024

2015

www.TheEarNoseThroatDoctor.com

SAVE THE DATE!

15th-19th September 2026

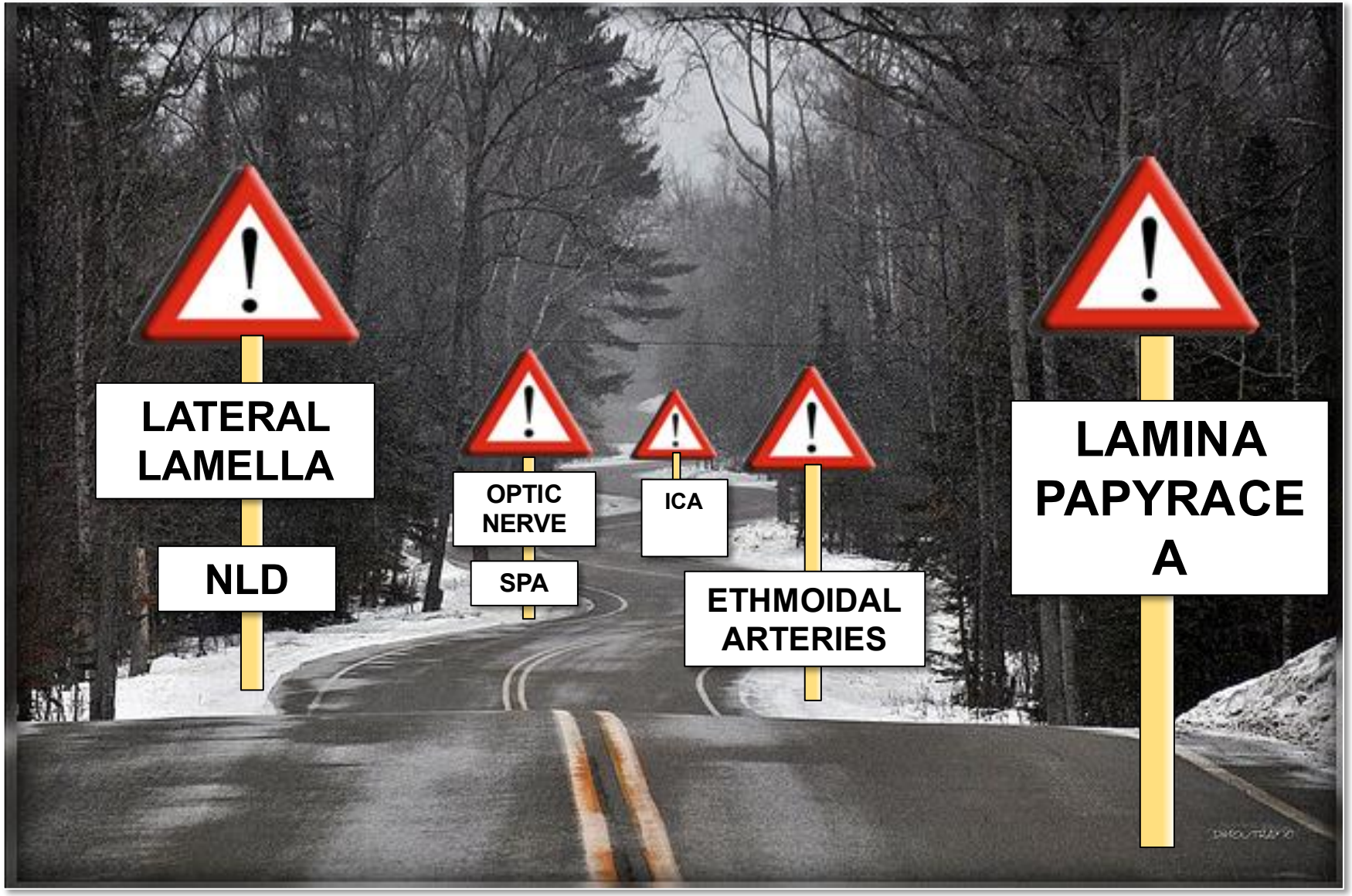
RhinoSul Conference

Master Dissection course in Rhinology

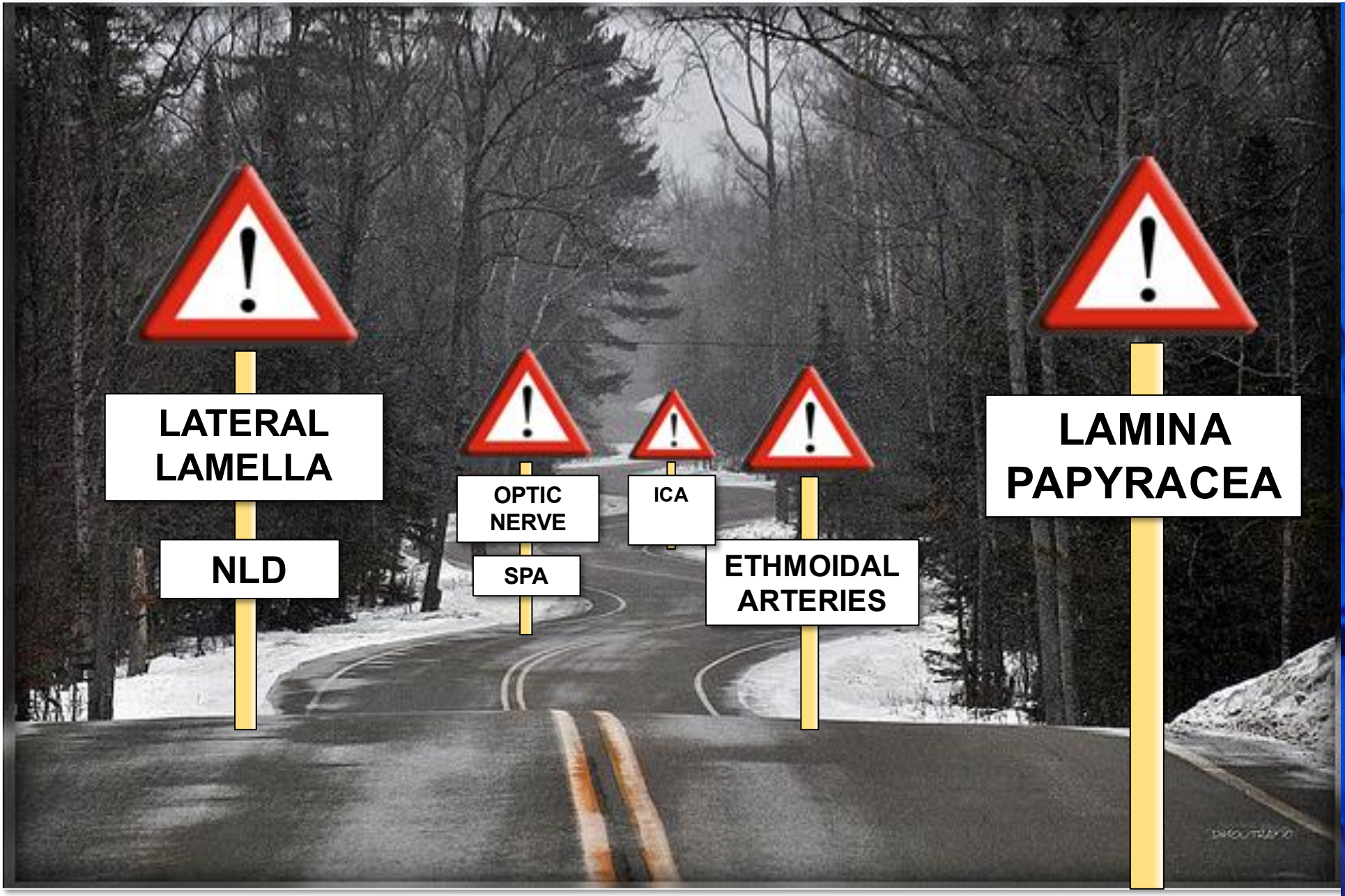
5th Conference
8th Dissection course

Tallaght University Hospital

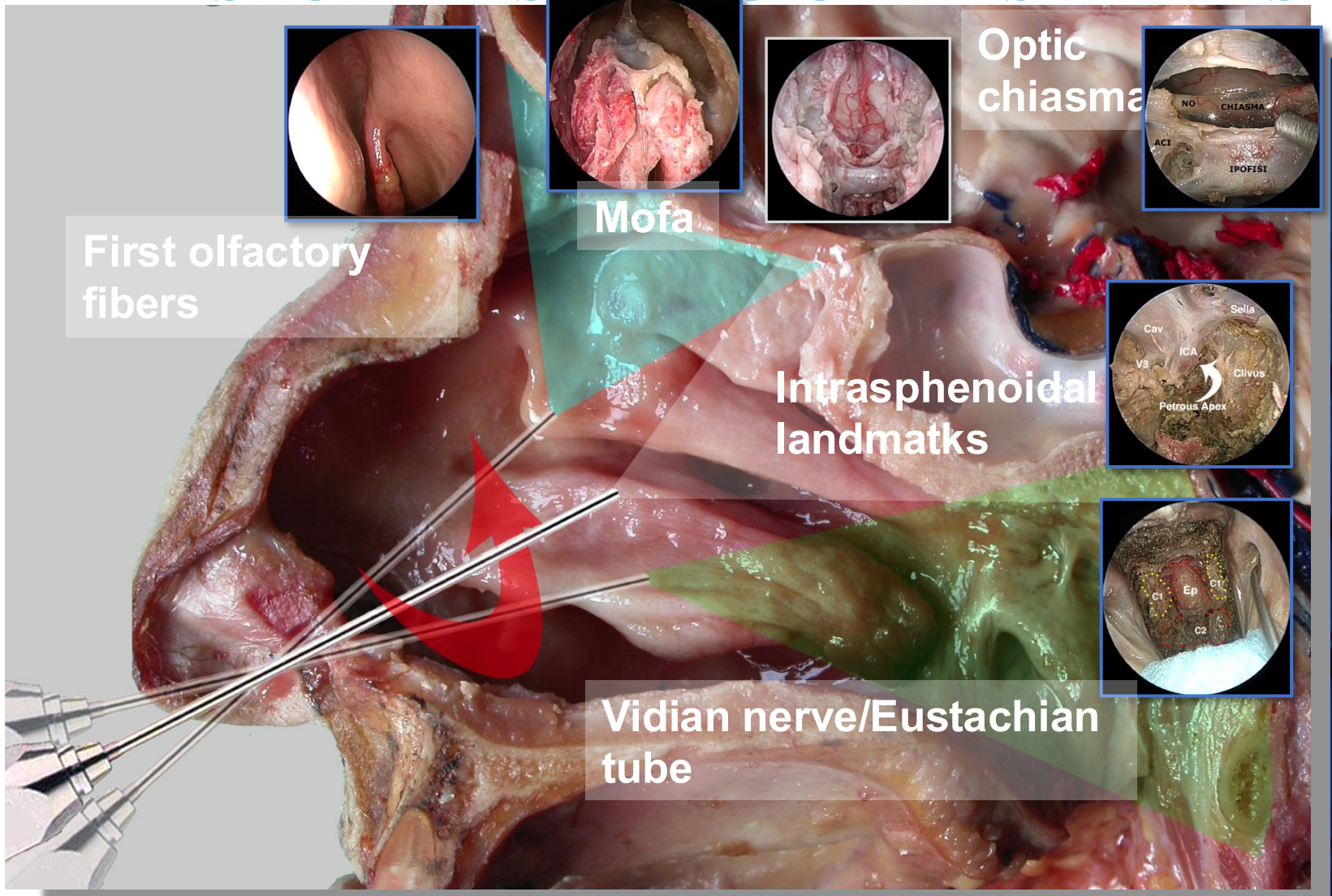
SINO-NASAL SURGICAL RISK AREAS

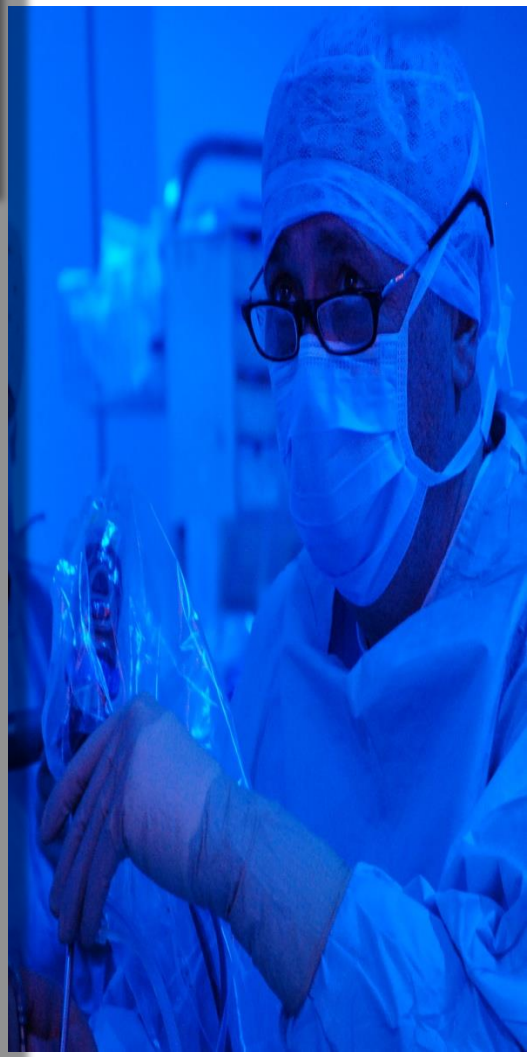


SINO-NASAL SURGICAL RISK AREAS



SKULL BASE SURGICAL RISK AREAS





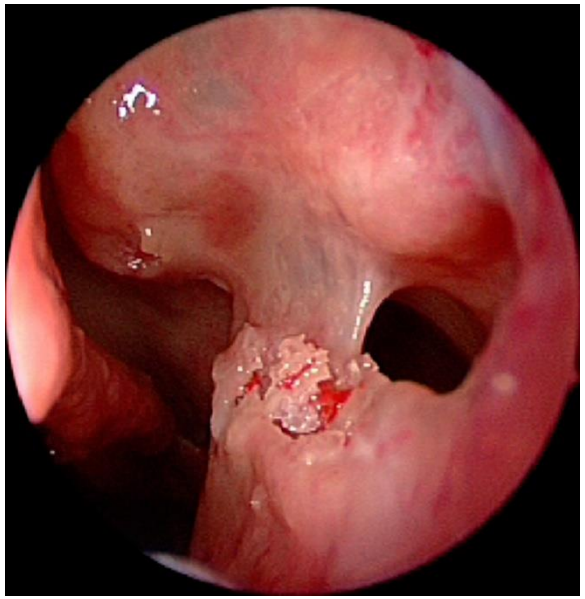
SAFE ANATOMICAL LANDMARKS

www.TheEarNoseThroatDoctor.com

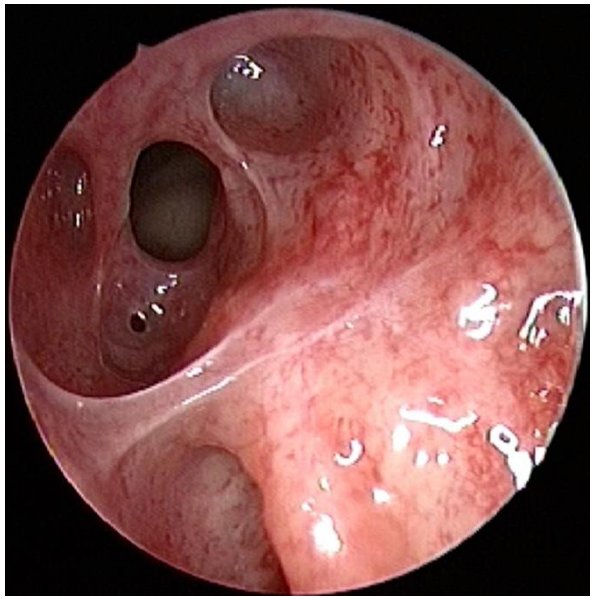
Tallaght University Hospital

Fundamental principle of FESS:

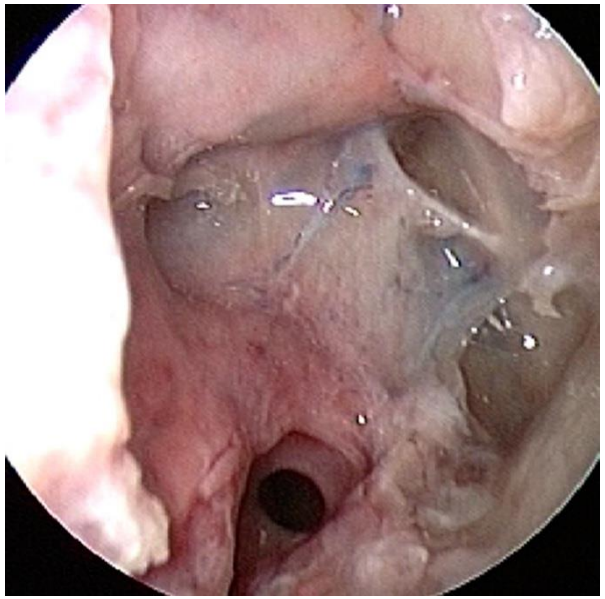
The target is:
the sinus ostium patency



MAXILLARY



FRONTAL



SPHENOIDAL

3 FESS Steps

I	*Maxillary* pre-chambers surgery	OMC
II	*Frontal* pre-chambers surgery	FR
III	*Sphenoidal* pre-chambers surgery	SER

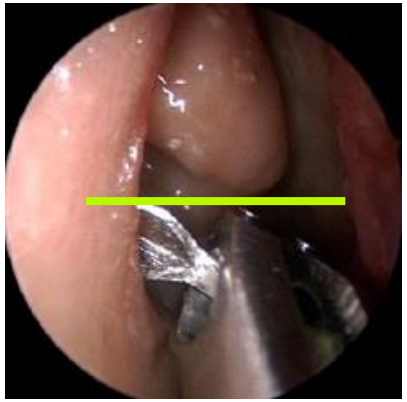
3 FESS Steps

I — *Maxillary pre-chambers surgery* — OMC

II — *Frontal pre-chambers surgery* — FR

III — *Sphenoidal pre-chambers surgery* — SER

Partial inferior uncinotomy



SURGICAL RISK AREAS

- LAMINA PAPIRACEA
- NASOLACRIMAL DUCT

SAFETY ANATOMICAL LANDMARKS

MEDIAL BORDER of the UNCINATE PROCESS

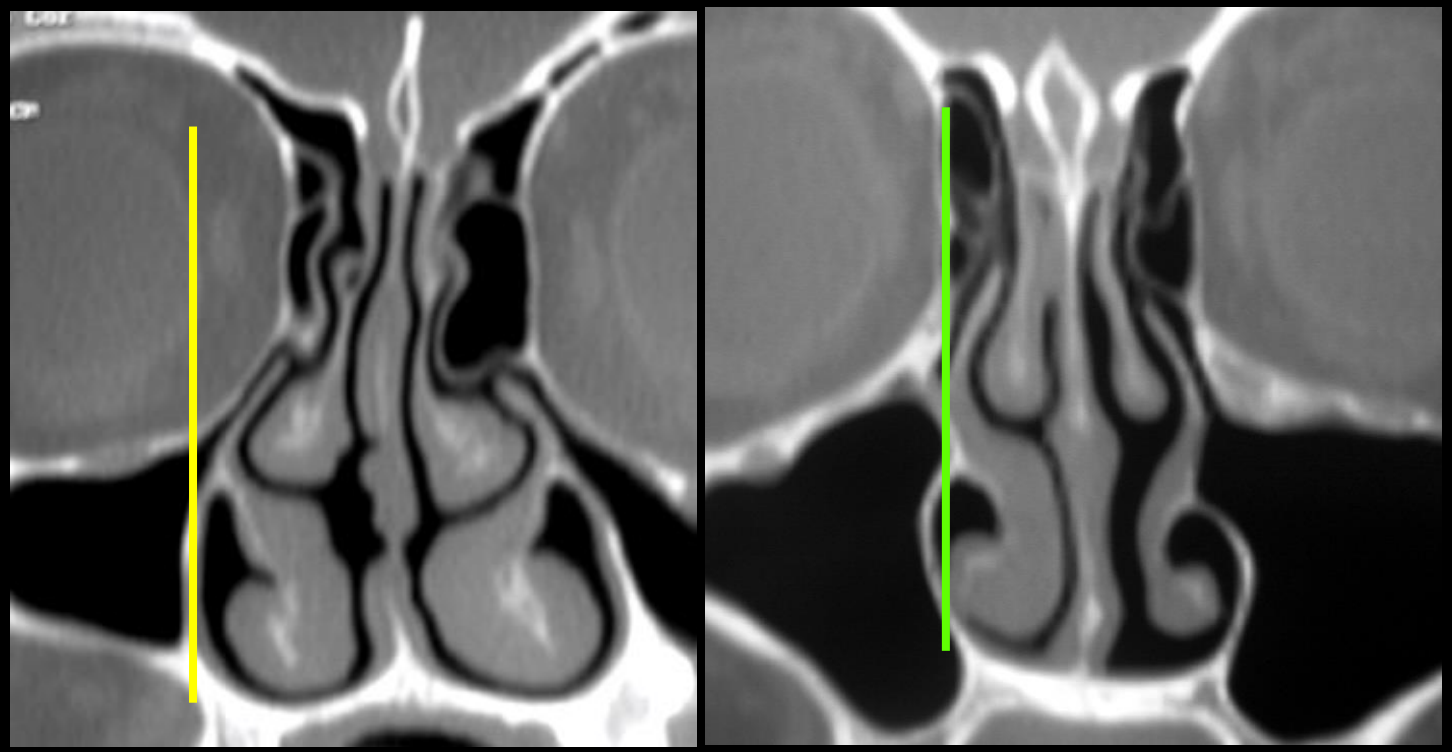
Under the floor of ethmoidal bulla

I

Partial inferior uncinectomy

SURGICAL RISK AREAS

- LAMINA PAPIRACEA



Lateralization of medial maxillary wall
and inferior uncinate process insertion

LESION OF THE LAMINA PAPIRACEA

HEMATOMA

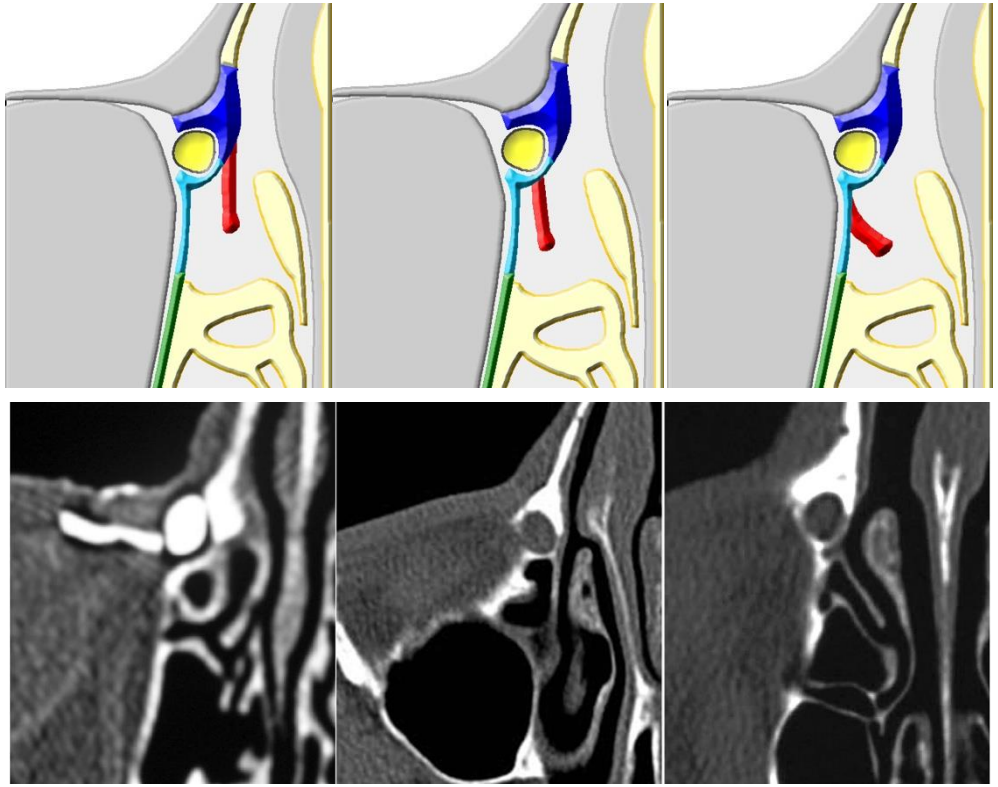
EMPHYSEMA

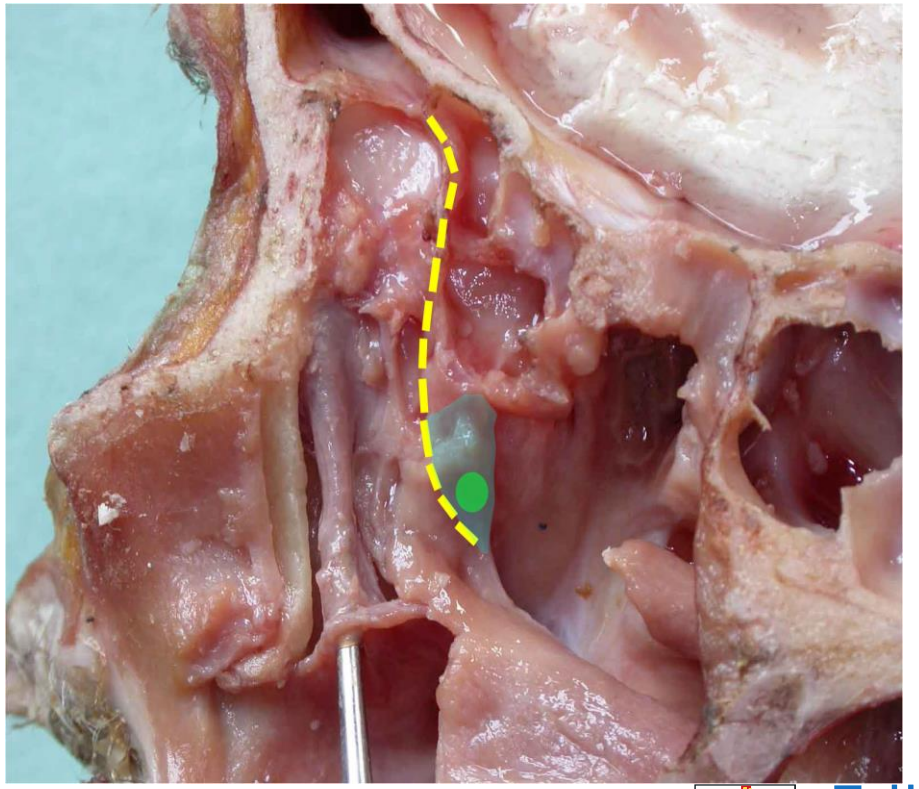
Partial inferior uncinectomy

I

SURGICAL RISK AREAS

- *NASOLACRIMAL DUCT*





Anterior insertion of uncinate process

3 FESS Steps

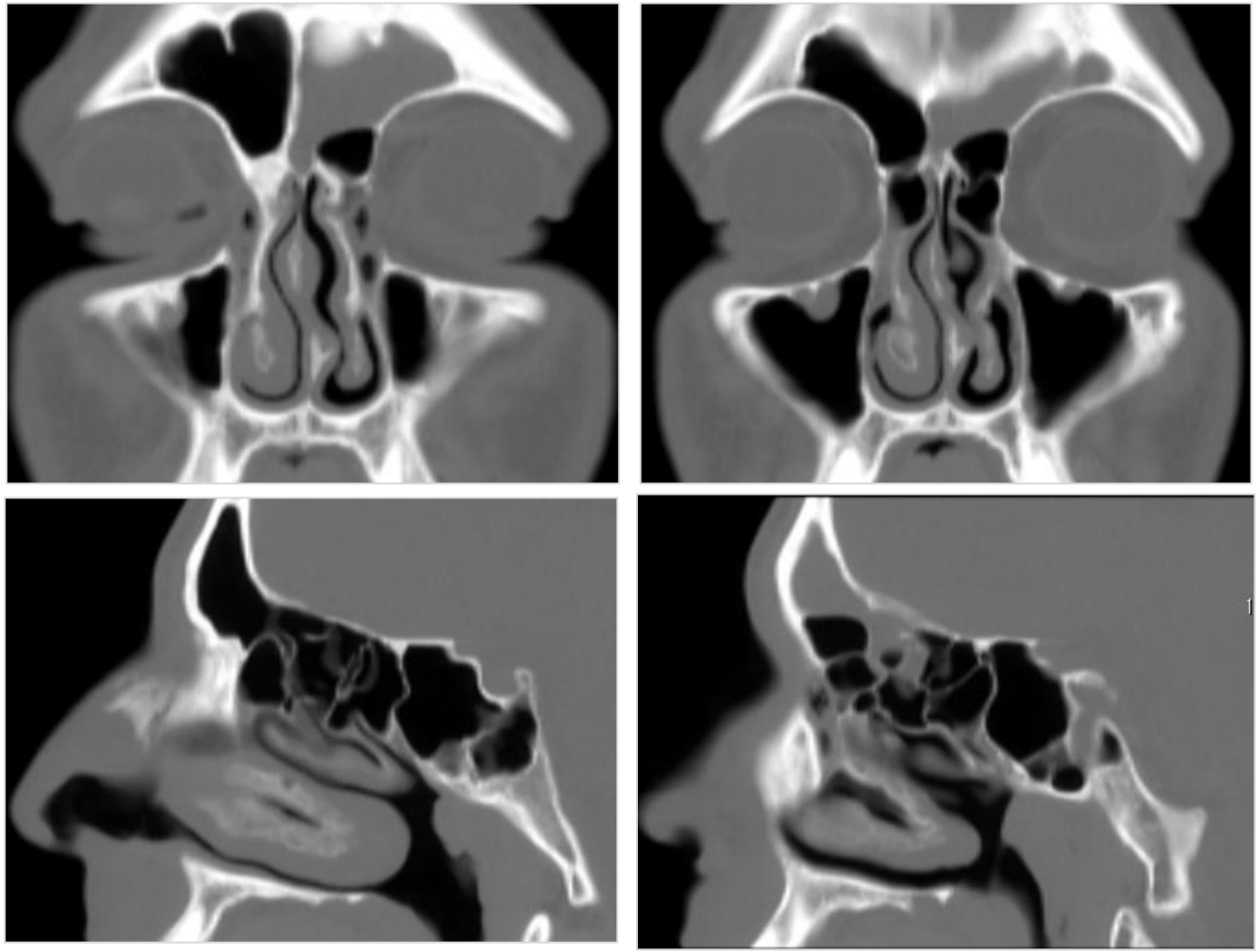
I — *Maxillary pre-chambers surgery* — OMC

II — *Frontal pre-chambers surgery* — FR

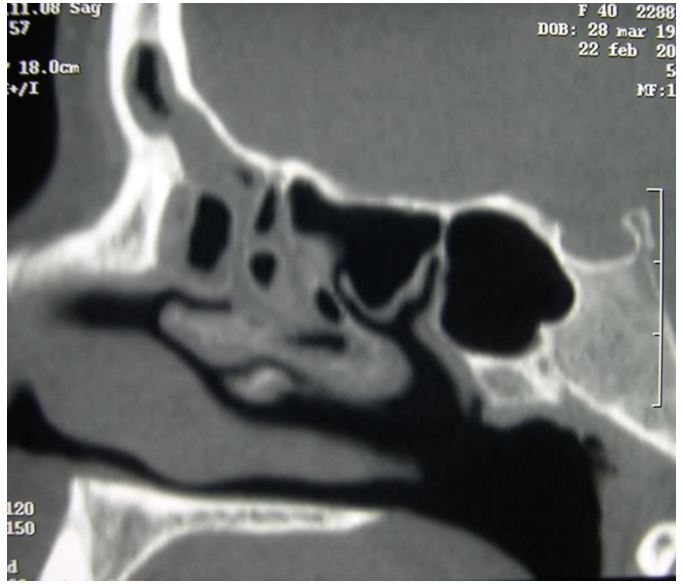
III — *Sphenoidal pre-chambers surgery* — SER

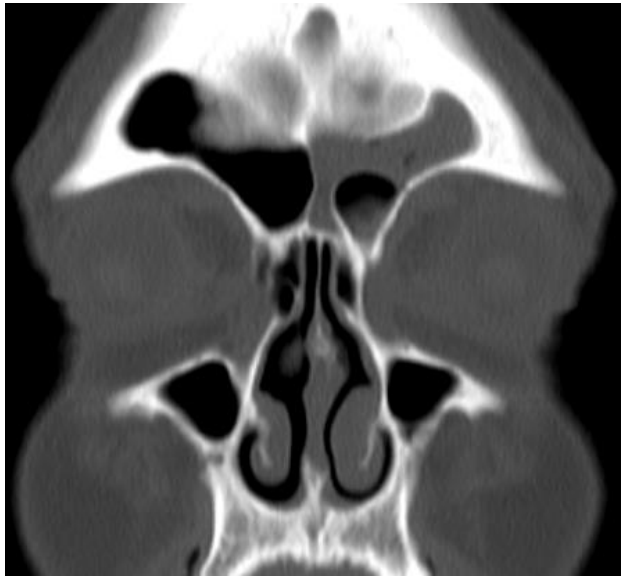
II

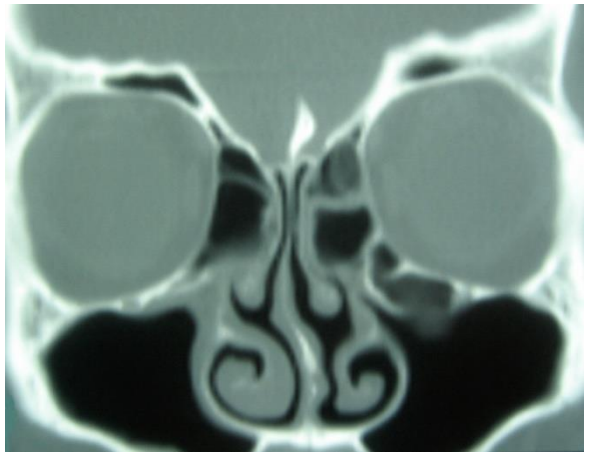
Frontal
pre-chambers surgery

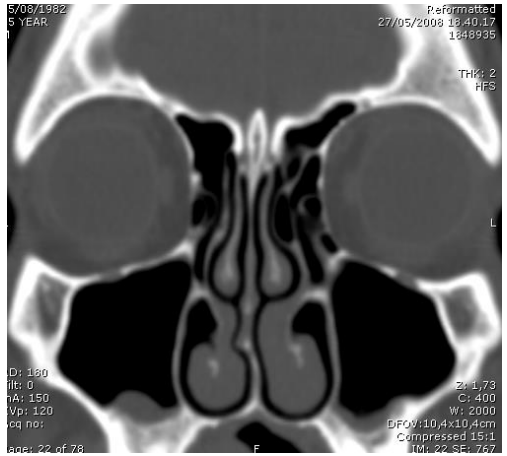


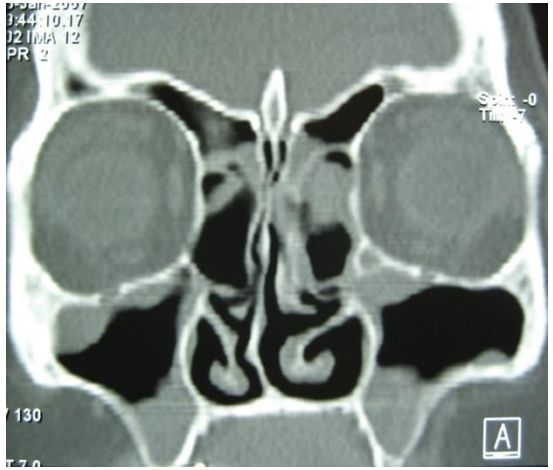
II







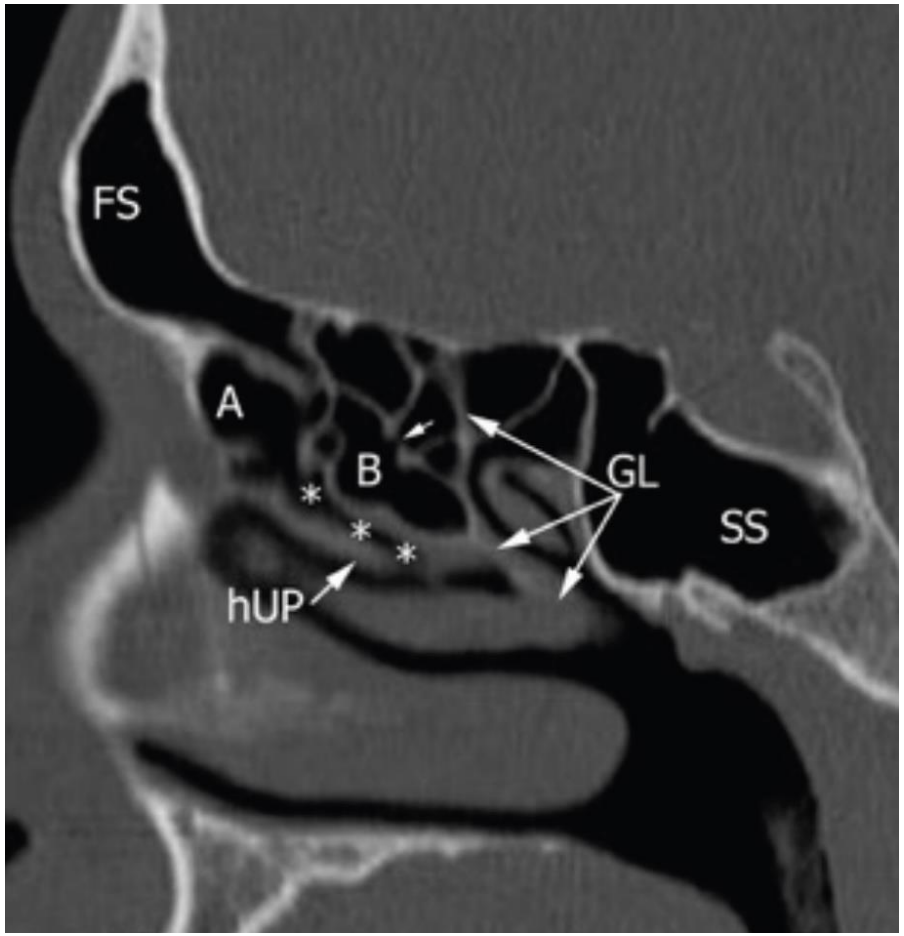




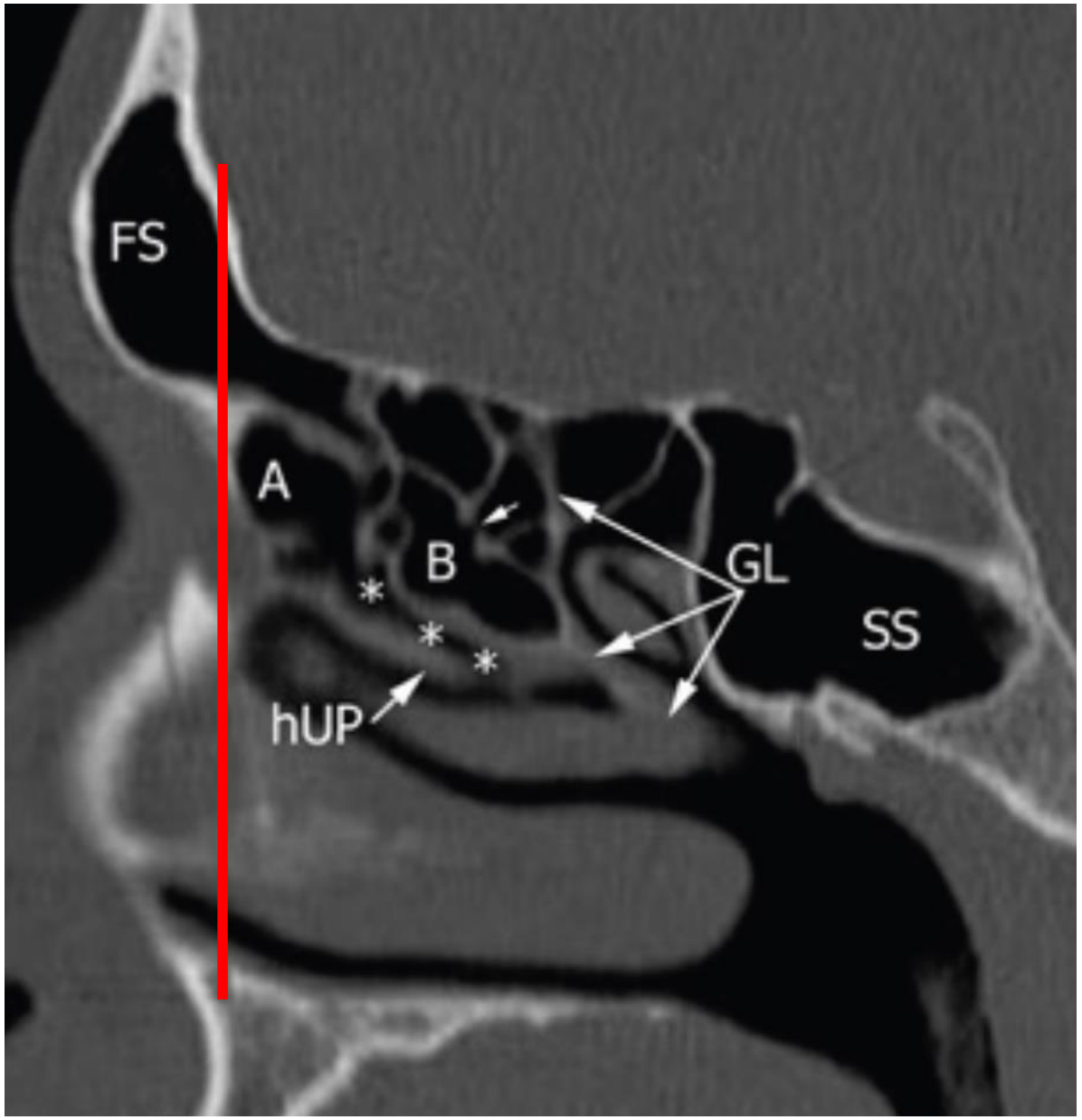
www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

II

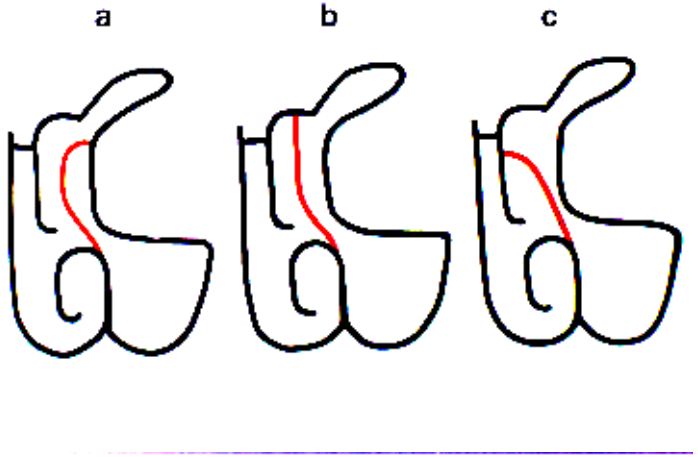


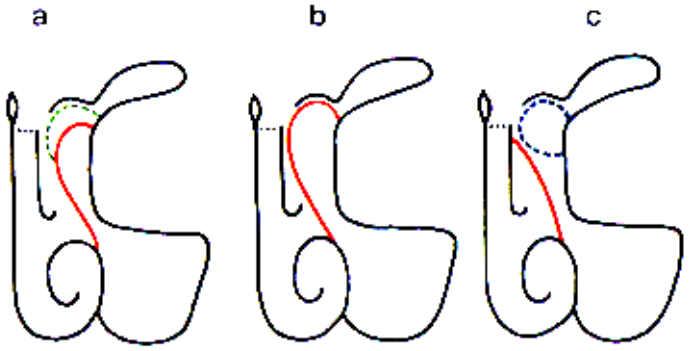
VS

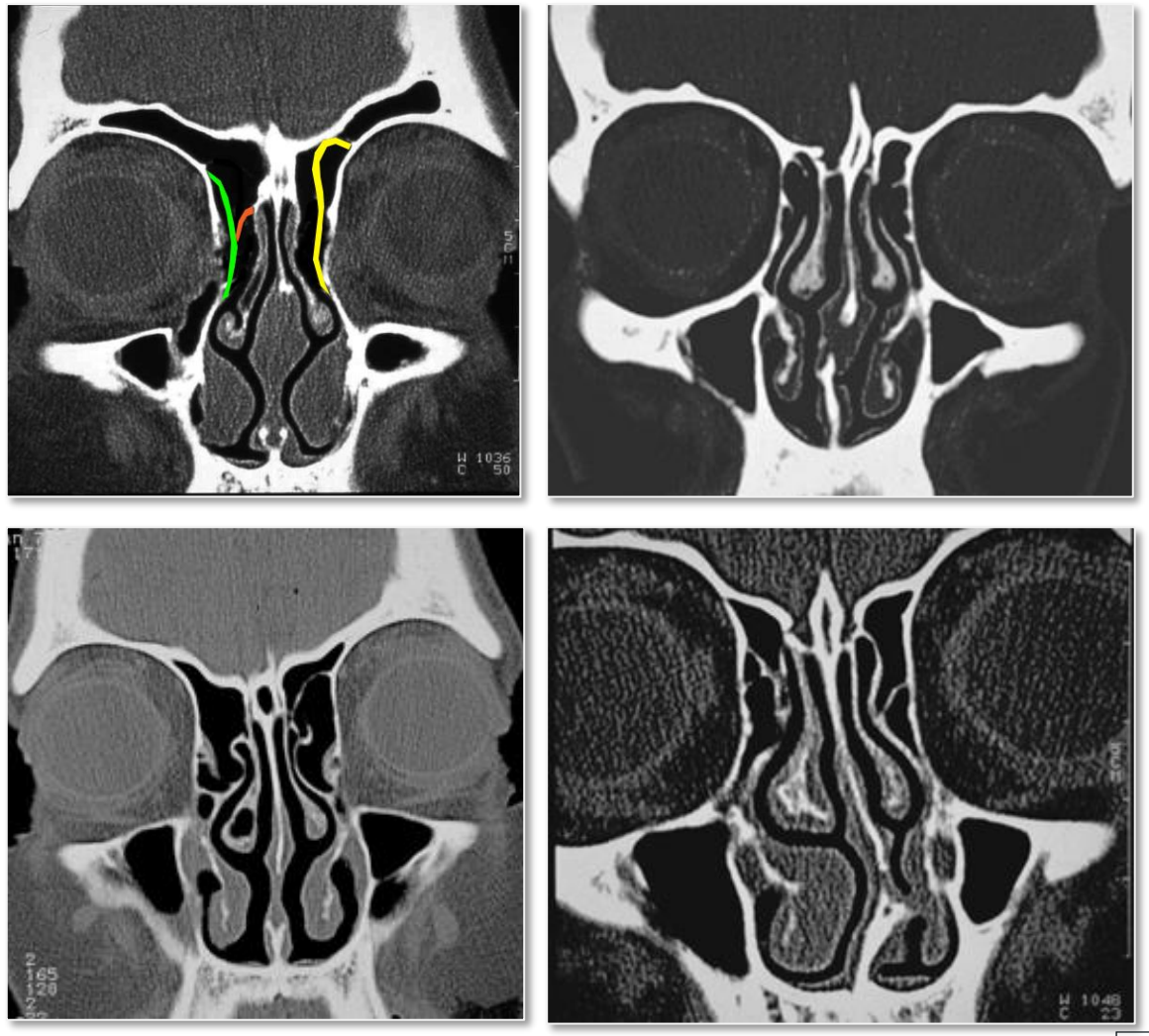

FS
A
B
GL
SS
hUP

II

Uncinate process insertion







courtesy of Stammberger

COMPLICATIONS

II

Iatrogenic CSF-like

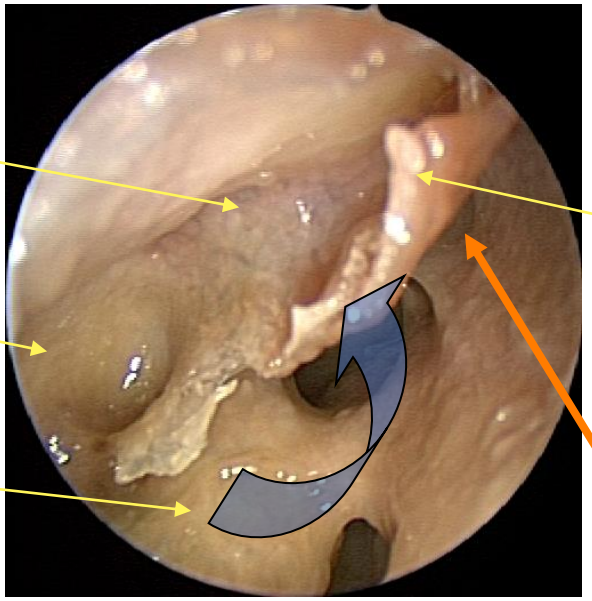
Intraorbital bleeding

II

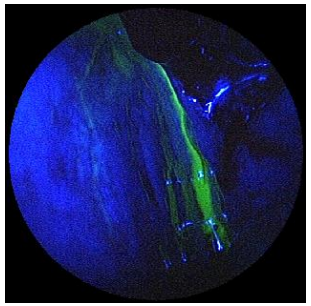
Total uncinectomy following the ***Cranial portion of uncinate process***

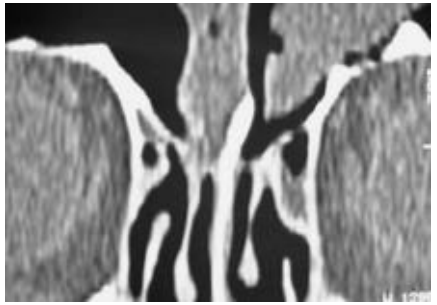
SURGICAL RISK AREAS

- *LATERAL LAMELLA OF THE CRIBRIFORM PLATE*



CSF-L



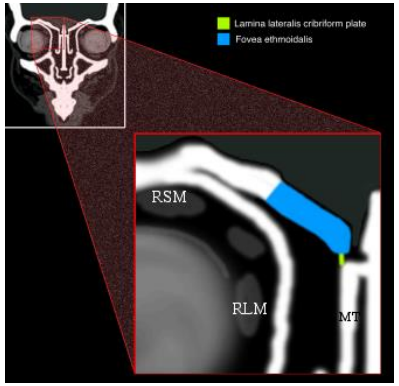


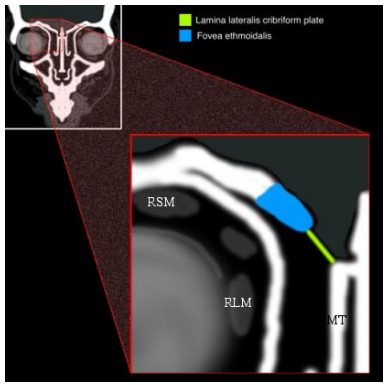
PNEUMOENCEPHALUS

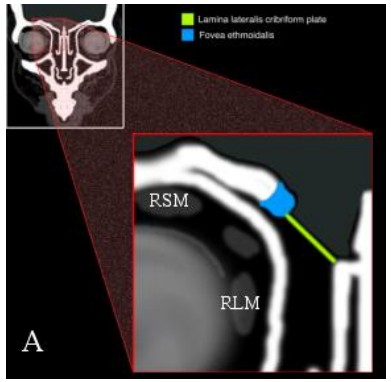
www.TheEarNoseThroatDoctor.com

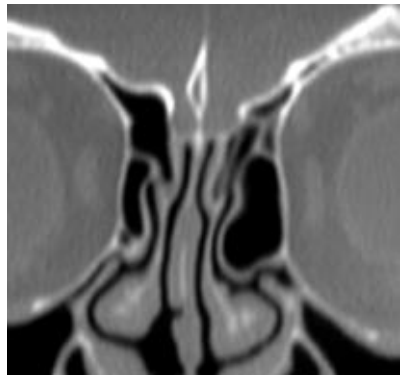
Tallaght University Hospital

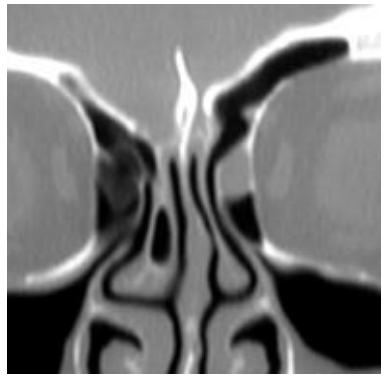
II

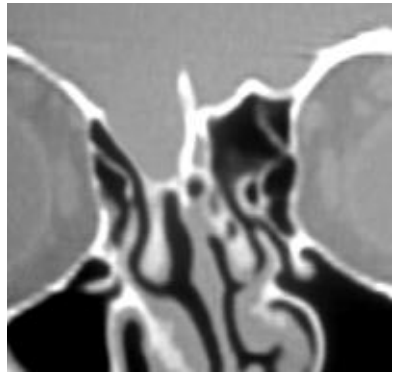


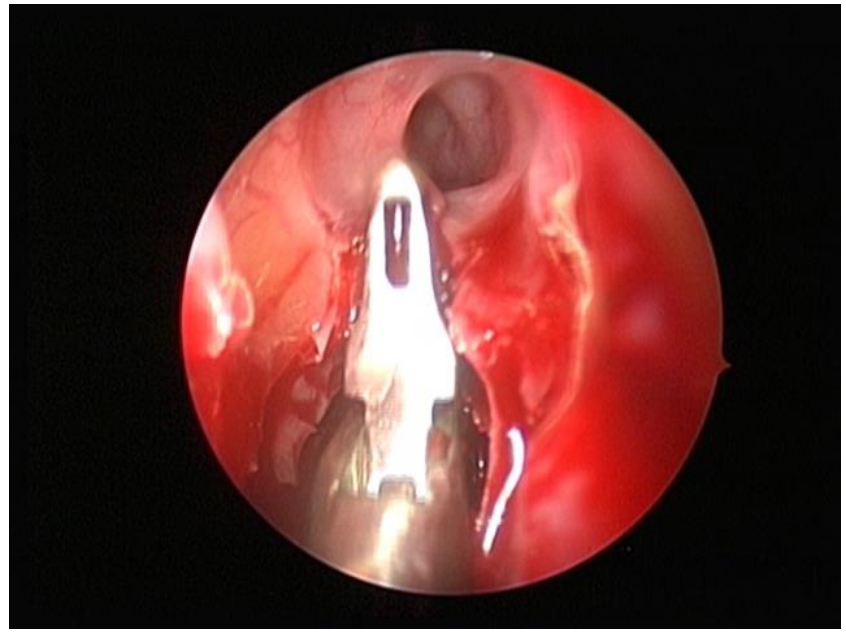


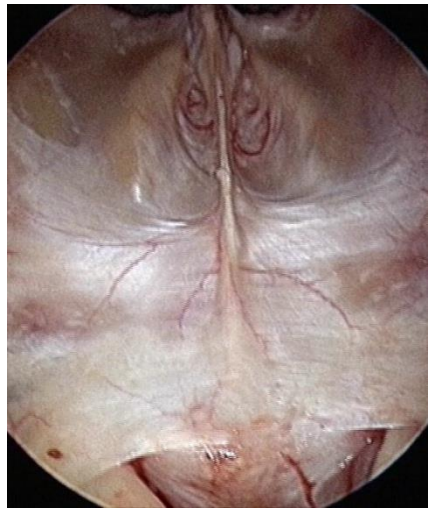








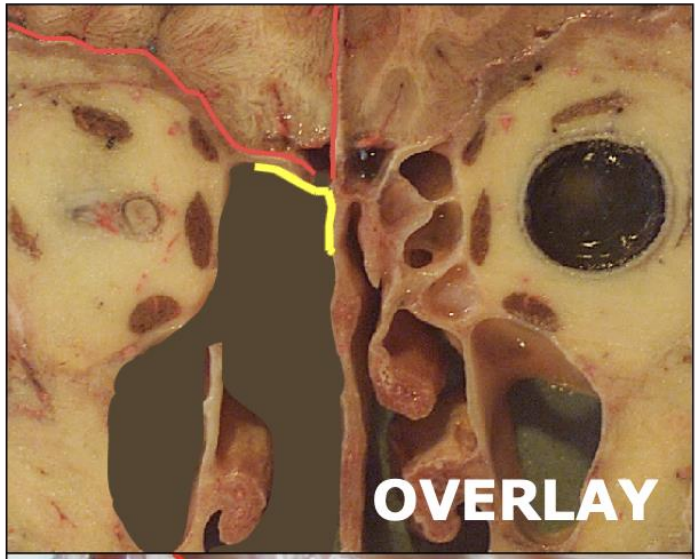


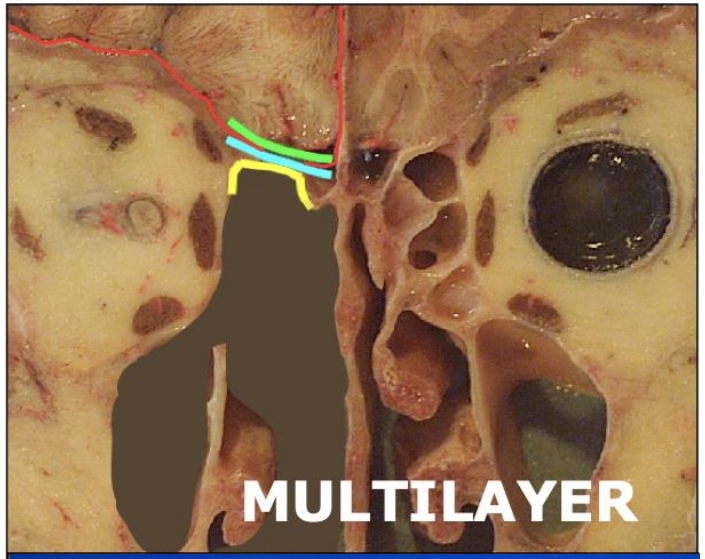


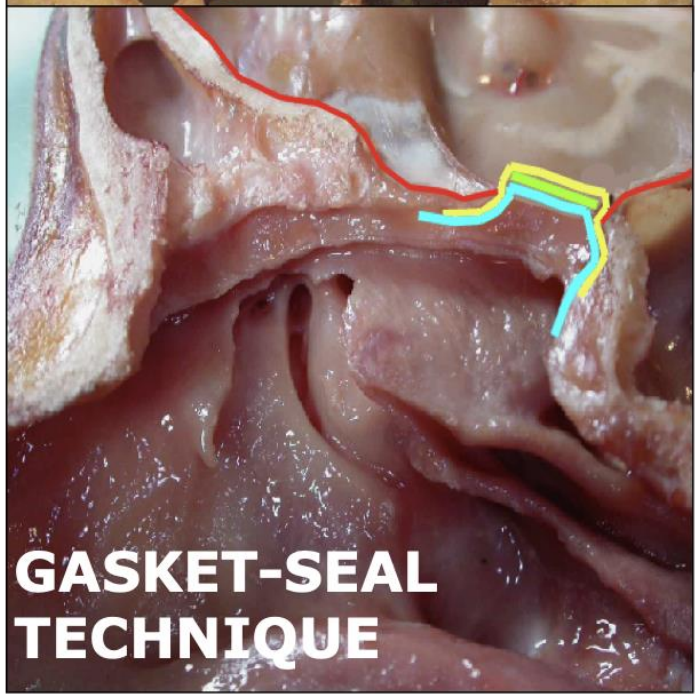
www.TheEarNoseThroatDoctor.com

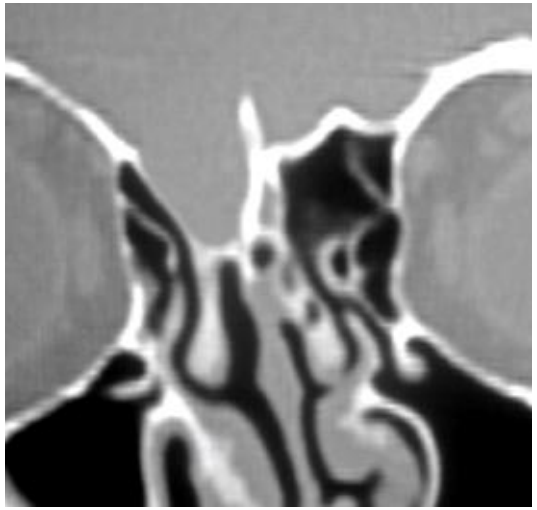
Tallaght University Hospital

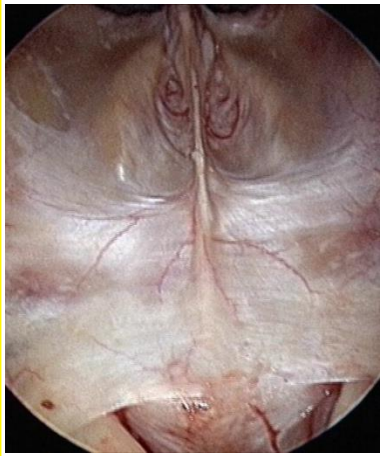
OPTIONS: free grafting techniques











www.TheEarNoseThroatDoctor.com

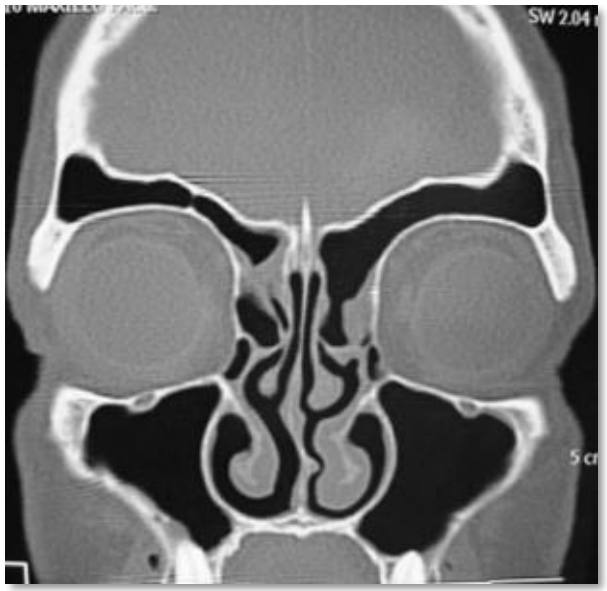
Tallaght University Hospital

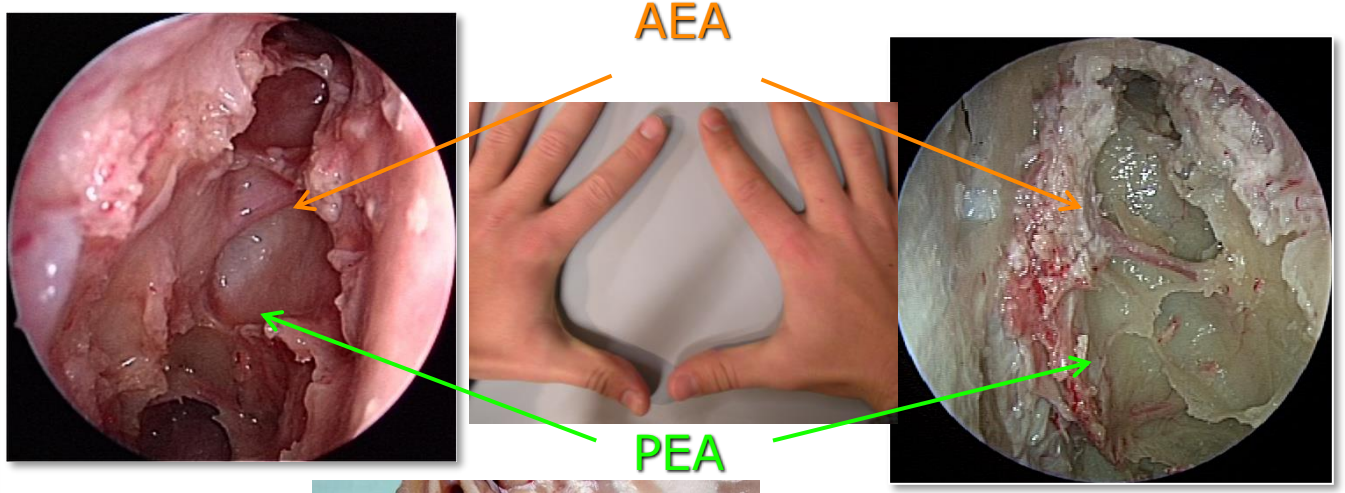
II

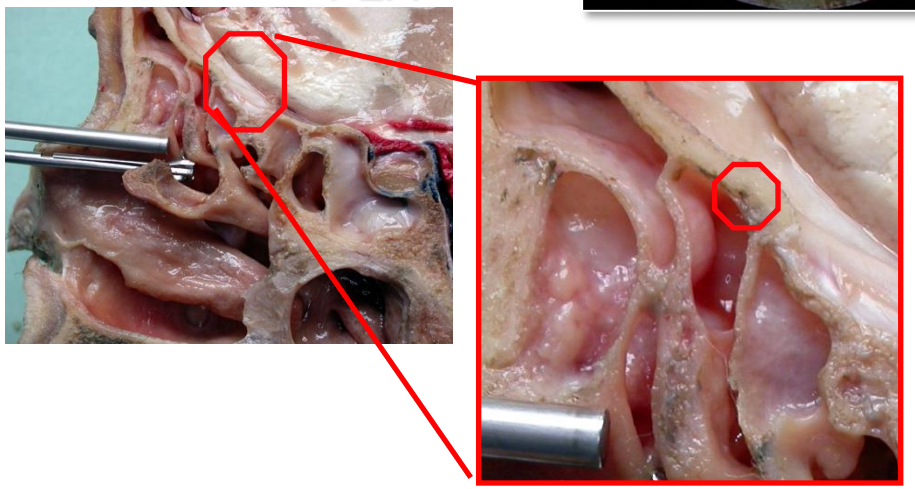
Anatomical landmark = cranial border of PU

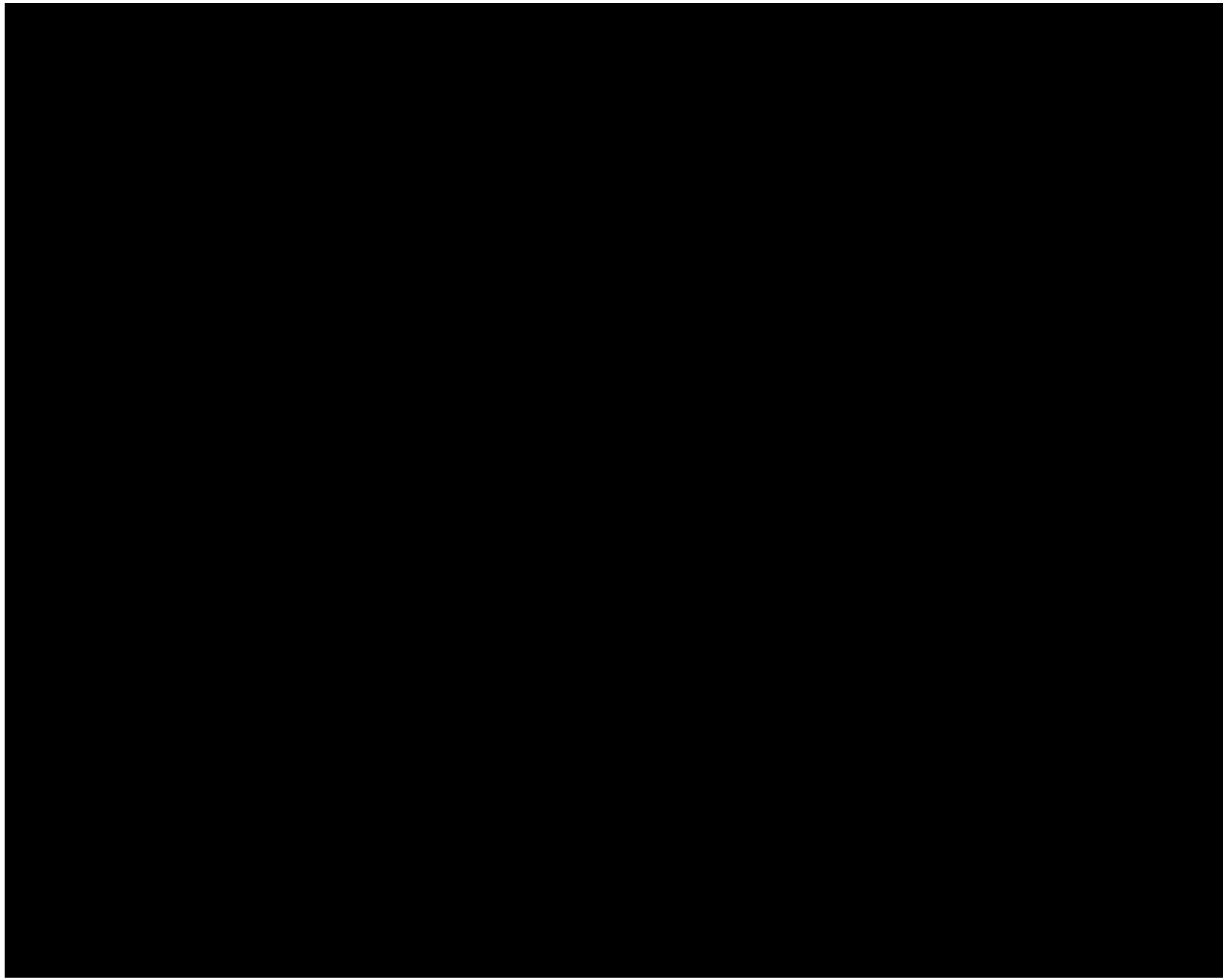
SURGICAL RISK AREAS

- **ANTERIOR ETHMOIDAL ARTERY**



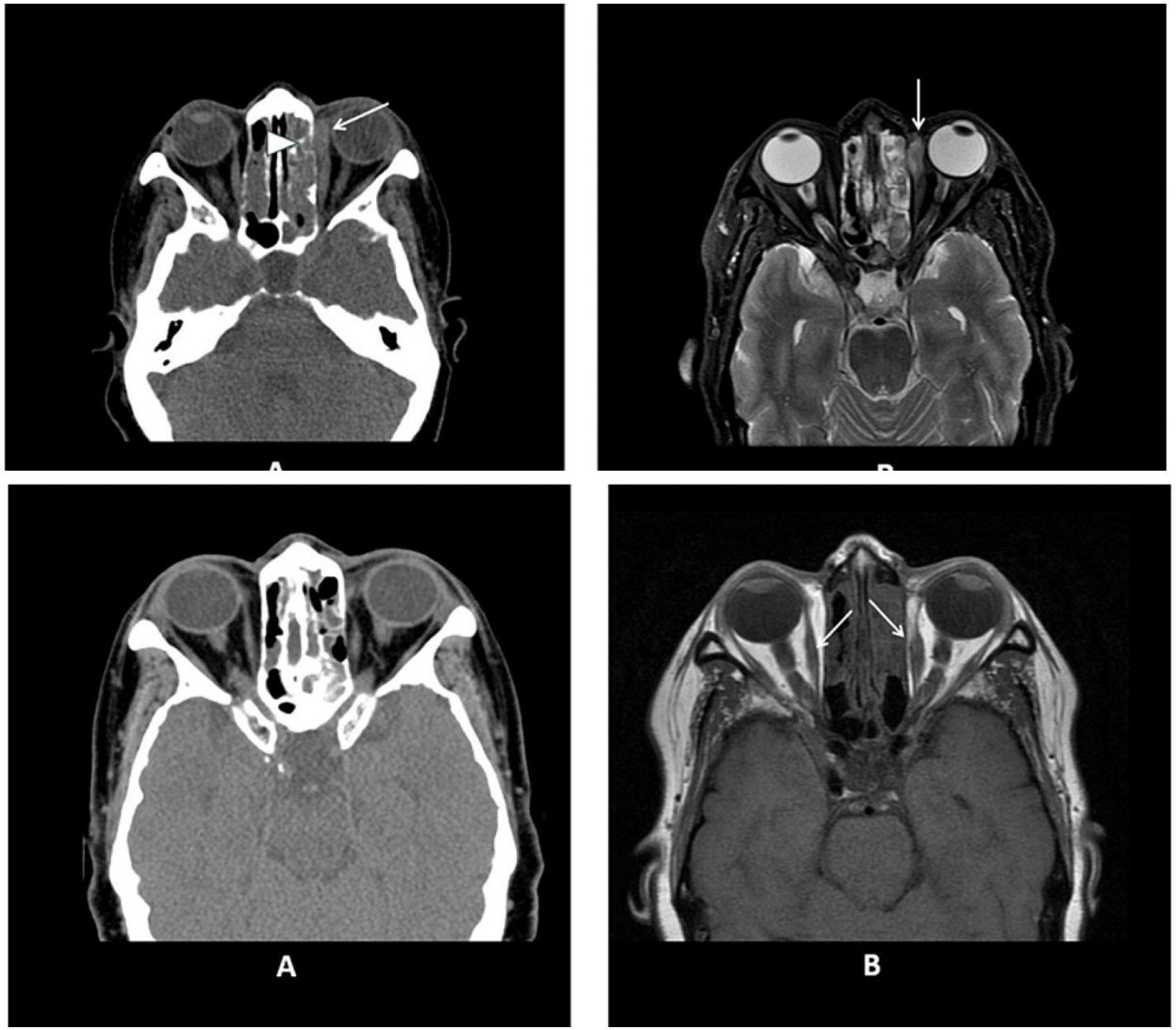






AEA injury

Stankiewicz JA (1989c) Blindness in intranasal ethmoidectomy: prevention and management. Otorhinolaryngol Head Neck Surg 101:320-329



MR injury common pattern	description	Repair
I	Complete Transection	Immediate
II	Partial/Contusion	Immediate
III	Intact but Entrapment	Release entrapment
IV	Contusion	Conservative 3-6/12,injection antagonist muscle

Huang CM, Meyer DR, Patrinely JR, et al.: Medial rectus muscle injuries associated with functional endoscopic sinus surgery: characterization and management. Ophthalmic Plast Reconstr Surg. 2003, 19:25- 37. 10.1097/00002341-200301000-00004

Orbital Hematoma

- **Removal of nasal packing**
- **Check visual acuity(Red color),Fundus and intraocular pressure(retina can tolerate ischaemia up to 90 min).**
- **IV acetazolamide,Mannitol and topical timolol 0.6%.**
- **Mega dose steroid (**intravenous methylprednisolone 30 mg/kg over 15 minutes followed by an infusion of 5.4 mg/kg per hour for 48 hours from the first day of trauma. As patients showed improvement on their clinical findings within that 48 hours, they were placed on rapid oral taper doses of prednisone lasting 2 weeks.**).**
- **Lateral canthotomy and Cantholysis.**
- **+/_ Orbital decompression.**

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

3 FESS Steps

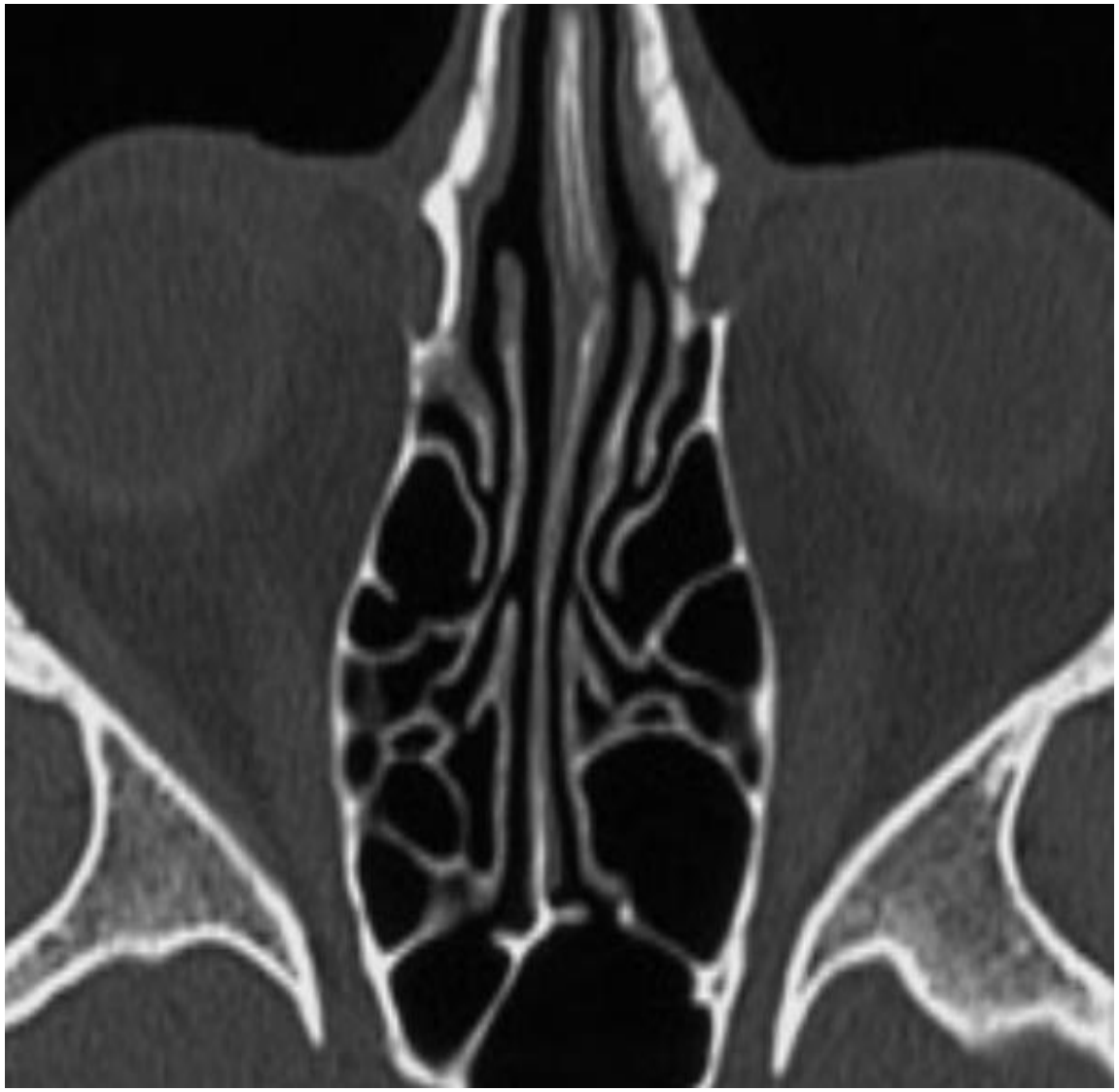
I — *Maxillary pre-chambers surgery* — OMC

II — *Frontal pre-chambers surgery* — FR

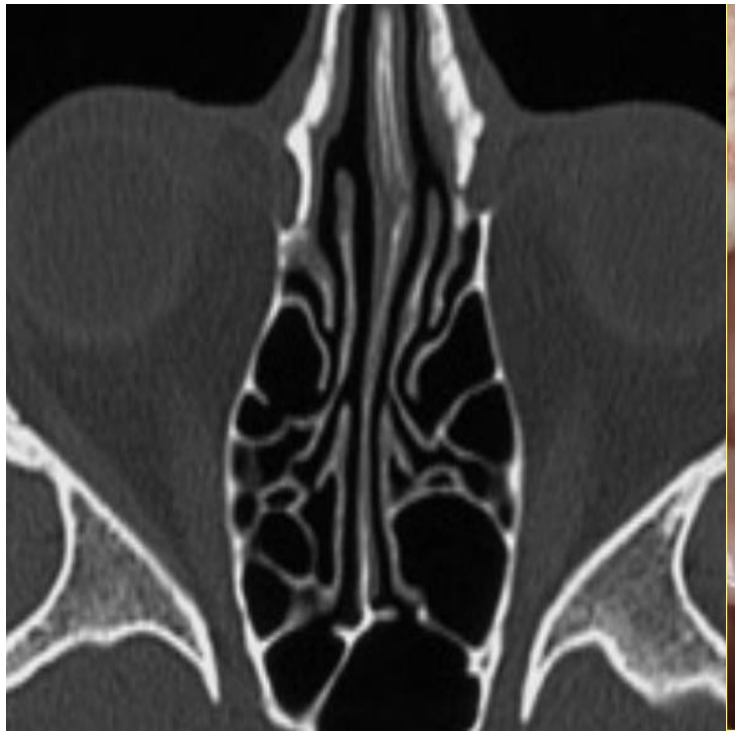
III — *Sphenoidal pre-chambers surgery* — SER

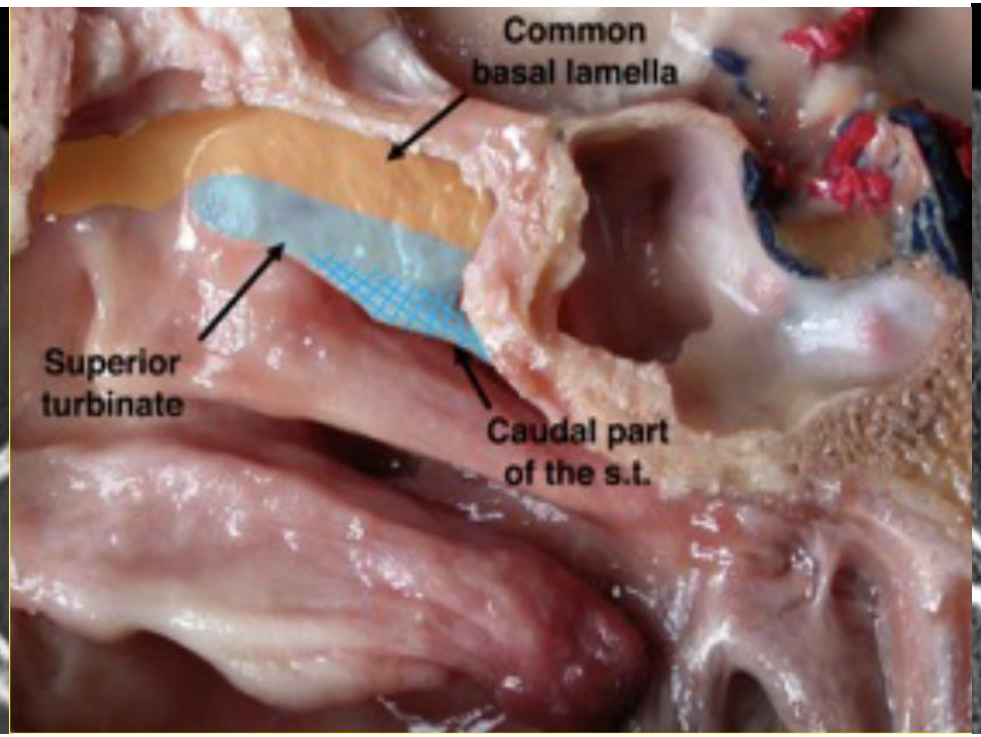
III

Ostium location



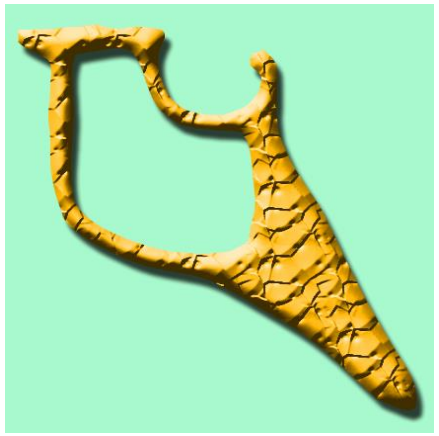
III




Common
basal lamella
Superior
turbinate
Caudal part
of the s.t.

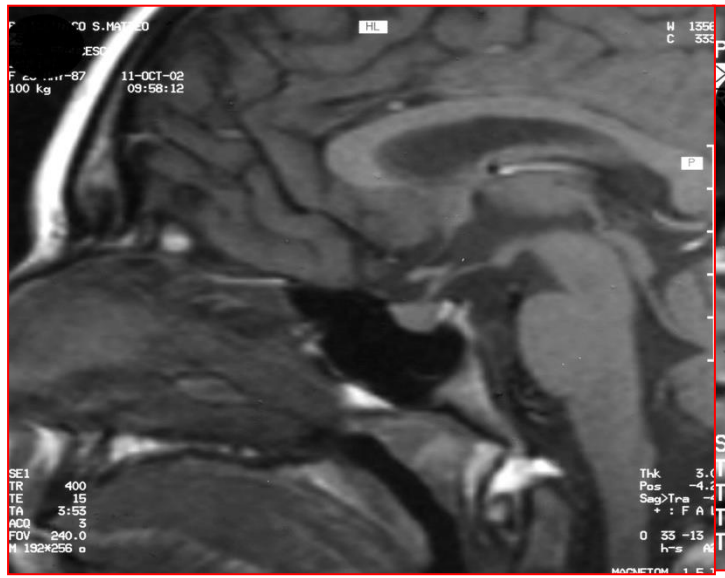
III

SELLAR



PRESELLAR

CONCHAL



SPHENOID SINUS: Variant Anatomy

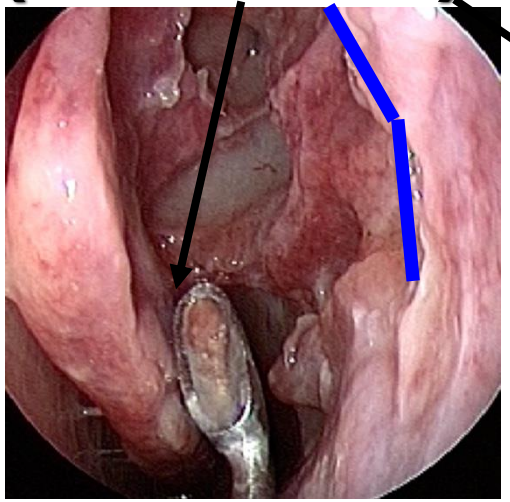
Tallaght University Hospital

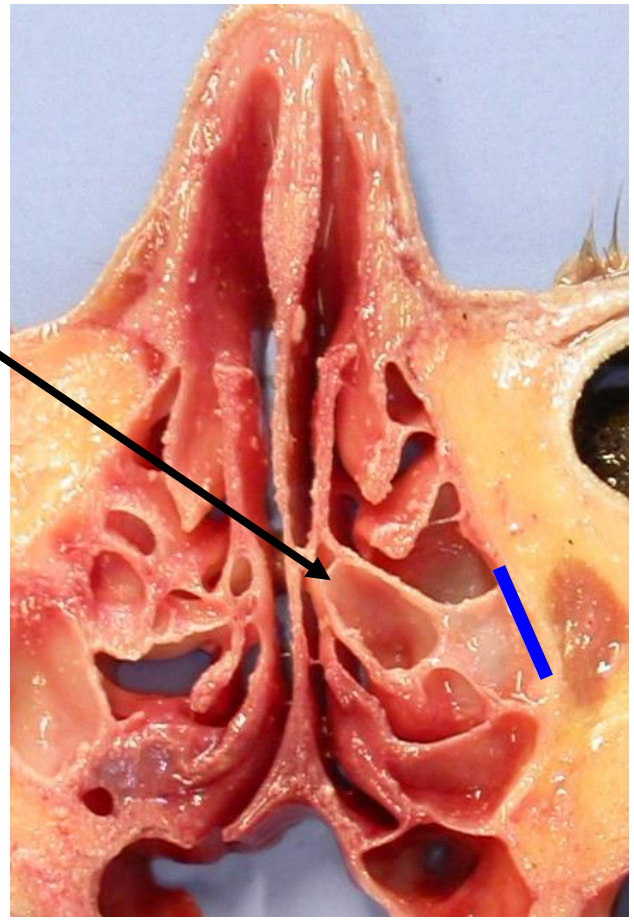
III Transethmoidal sphenoidotomy

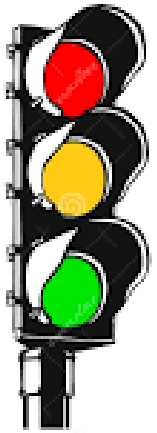
SURGICAL RISK AREAS

- LAMINA PAPIRACEA

Safe surgical landmark:
Carrefour of the 3 MT portions (infero-medial)







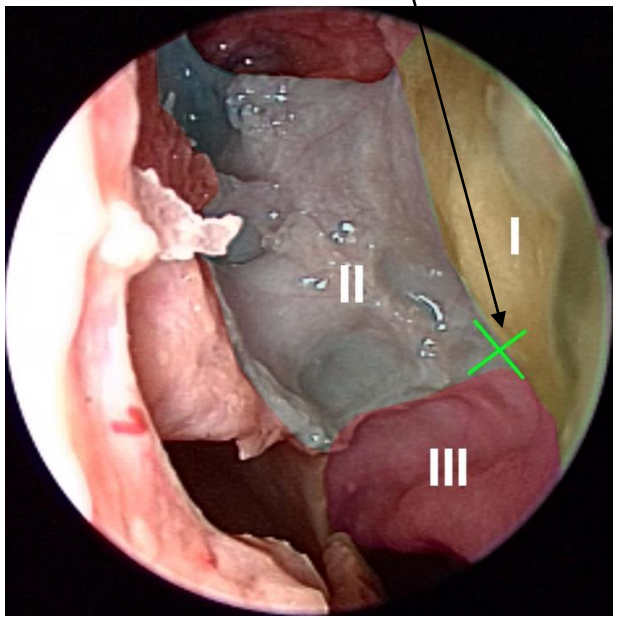
III

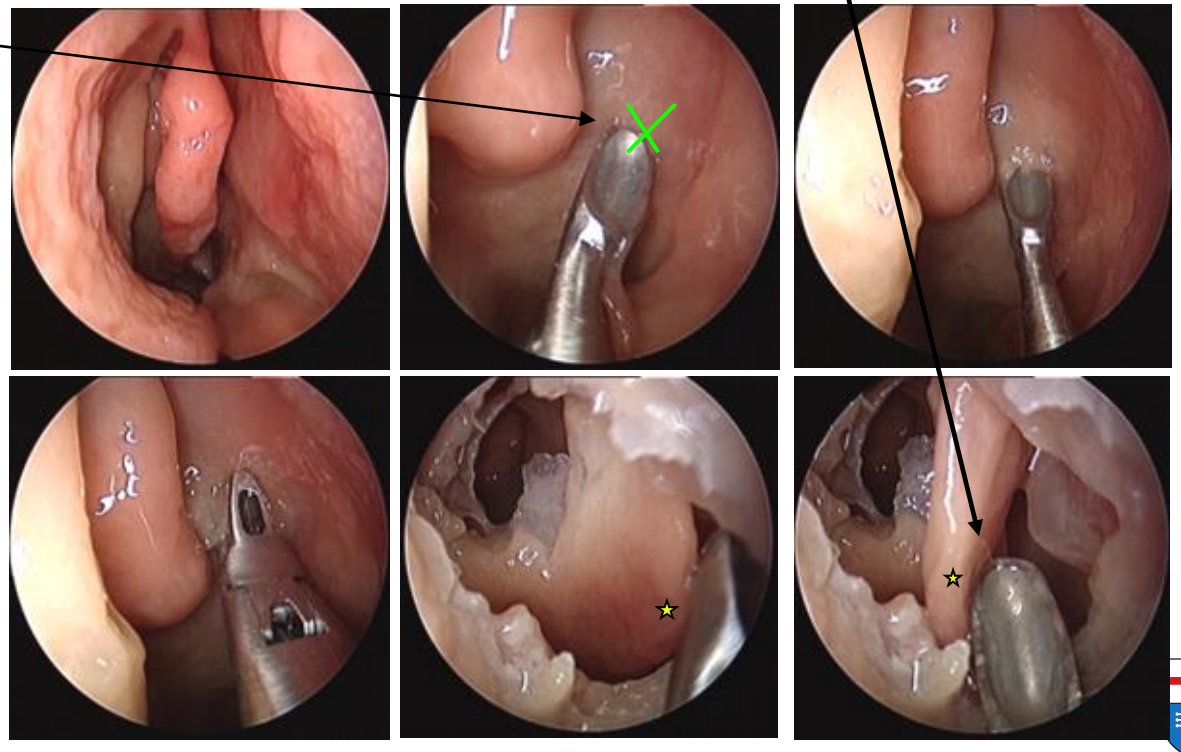
Approaching the sphenoidal ostium

Anatomical landmark =

Inferior border of superior turbinate

"Safe point"





www.TheEarNoseThroatDoctor.com

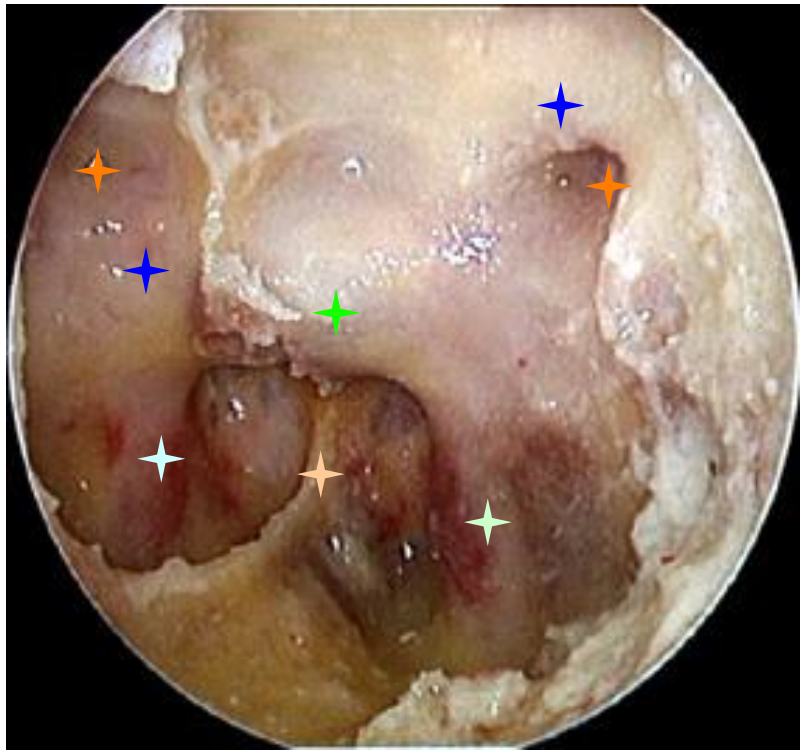
Tallaght University Hospital

III

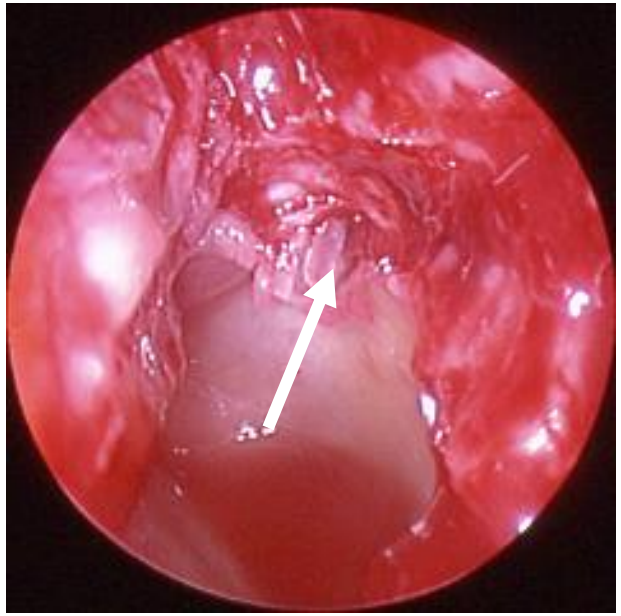
Opening of the sphenoid sinus

SURGICAL RISK AREAS

- *OPTIC NERVE*
- *CAVERNOUS ICA*



All intrasphenoidal anatomical landmarks have to be identified



Optic nerve lesion

III

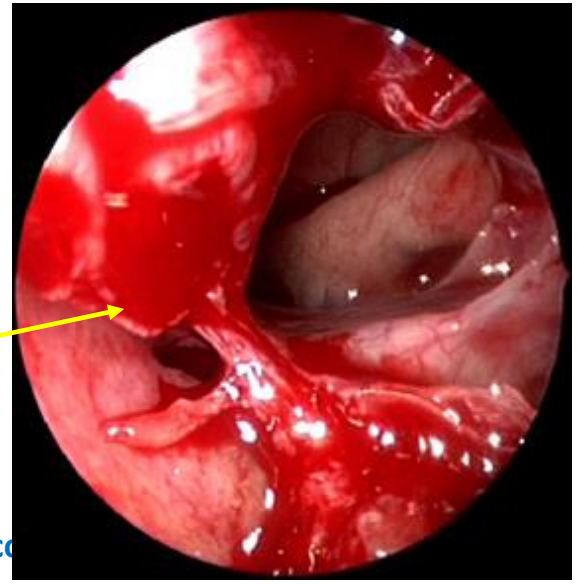
SURGICAL RISK AREAS

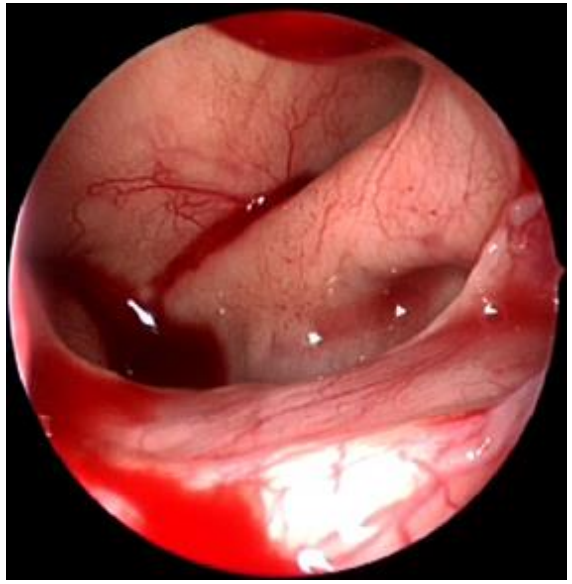
Onodi cell

Optic nerve dehiscence

Anatomical landmark =

Inferior border of superior turbinate

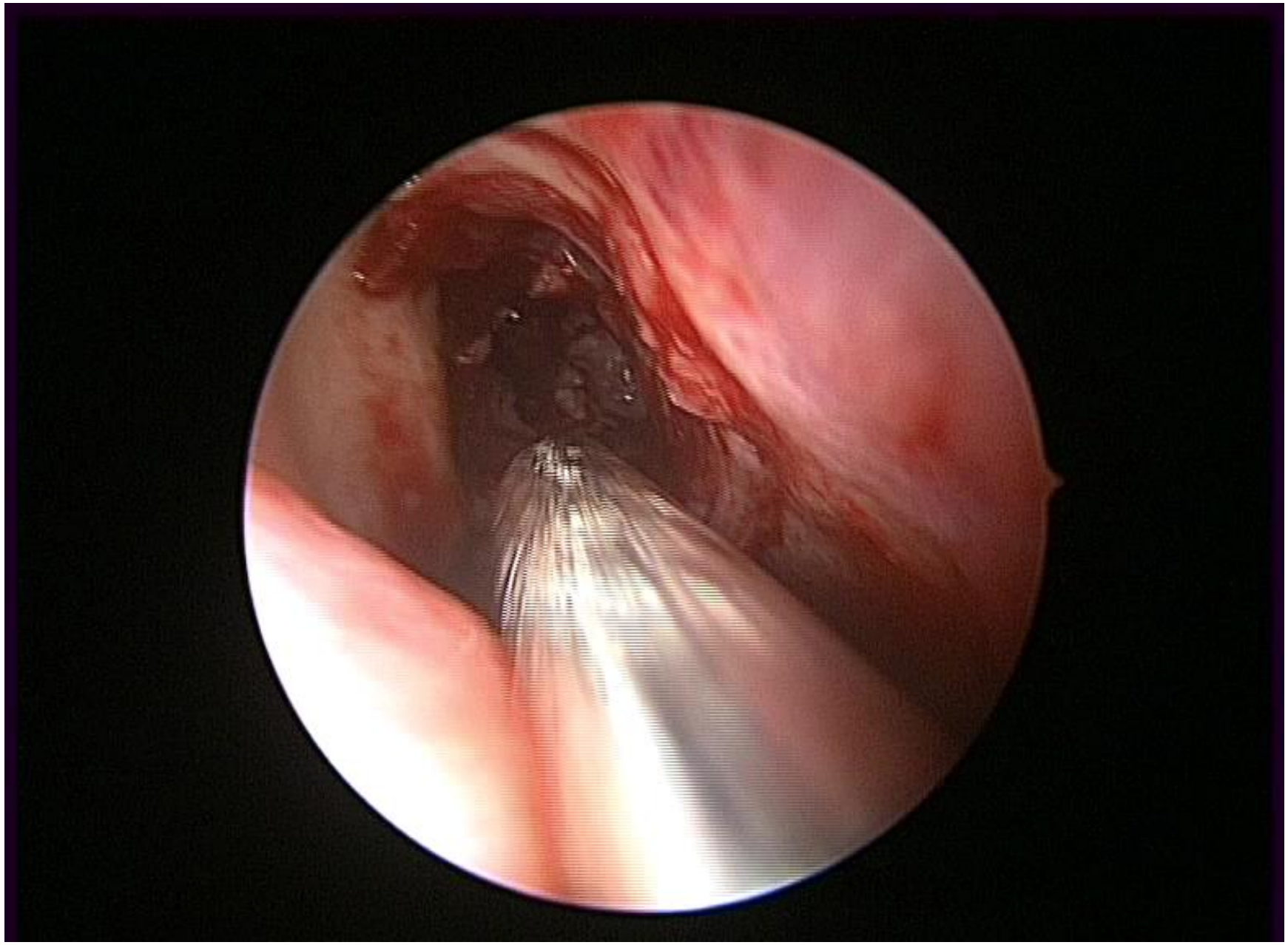




Tallaght University Hospital

Onodi Cell

Optic decompression



Carotid aneurysm

Table 1
Risk factors for ICA injury

Category	Factors
Anatomy-related	Dehiscent ICA canal Sphenoid septa with attachments to the ICA canals Short distance between ICAs Vessel wall abnormalities ICA displacement by the lesion
Pathology-related	Adherence of the lesion to ICA Previous extended surgery Previous radiotherapy Previous bromocriptine therapy
Skills and resource-related	Inexperience in skull base surgery Lack of adequate instruments and equipment
High-risk	Radical resection of an adherent lesion Encasement of ICA Need for wide exposure (≥2 segments of ICA)

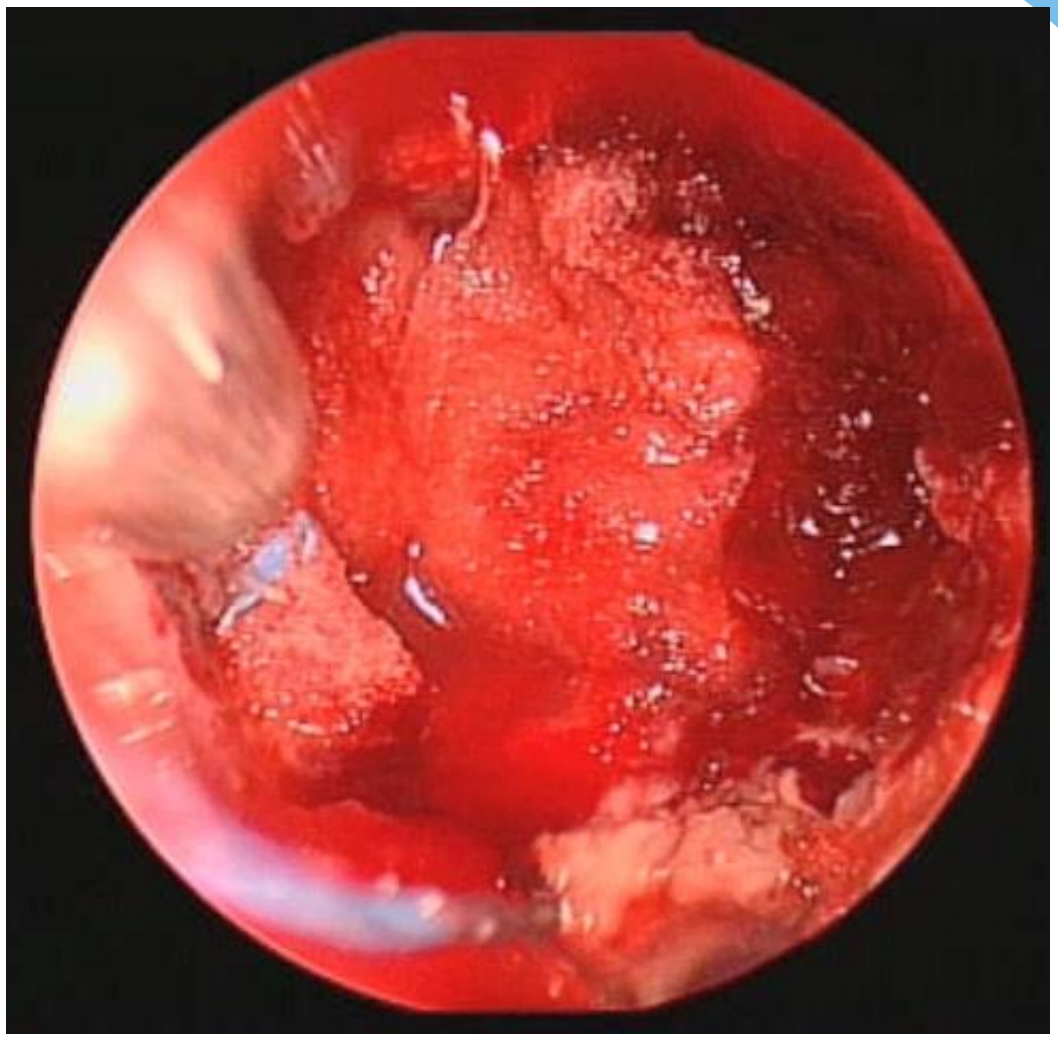
Review > Otolaryngol Clin North Am. 2016 Feb;49(1):237-52. doi: 10.1016/j.otc.2015.09.009.

Injury of the Internal Carotid Artery During Endoscopic Skull Base Surgery: Prevention and Management Protocol

AbdulAziz AlQahtani [1], Paolo Castelnuovo [2], Piero Nicolai [3], Daniel M Prevedello [4], Davide Locatelli [5], Ricardo L Carrau [6]

Affiliations + expand

PMID: 26614841 DOI: 10.1016/j.otc.2015.09.009



Review > Otolaryngol Clin North Am. 2016 Feb;49(1):237-52. doi: 10.1016/j.otc.2015.09.009.

Injury of the Internal Carotid Artery During Endoscopic Skull Base Surgery: Prevention and Management Protocol

AbdulAziz AlQahtani [1], Paolo Castelnuovo [2], Piero Nicolai [3], Daniel M Prevedello [4], Davide Locatelli [5], Ricardo L Carrau [6]

Affiliations + expand

PMID: 26614841 DOI: 10.1016/j.otc.2015.09.009

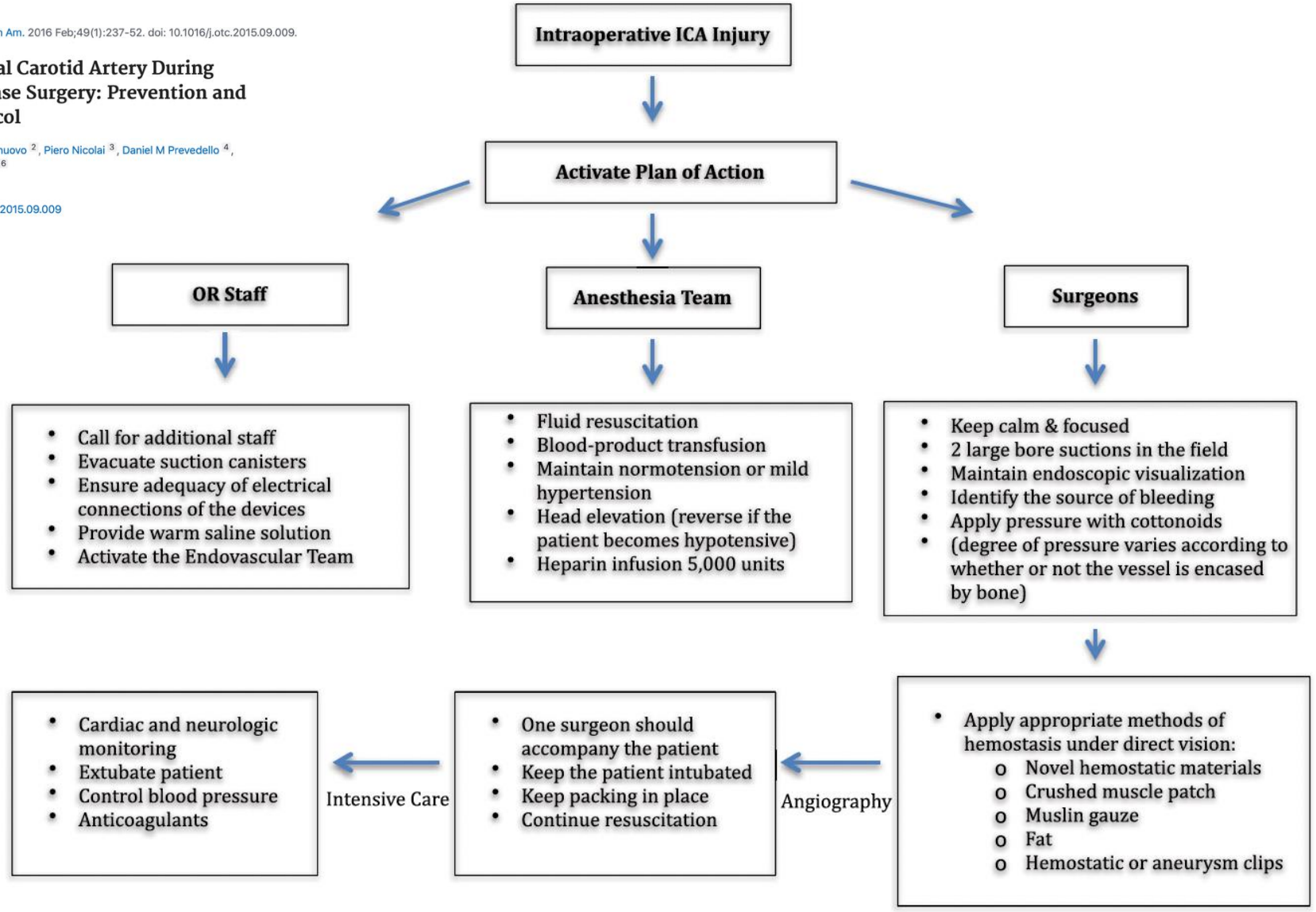
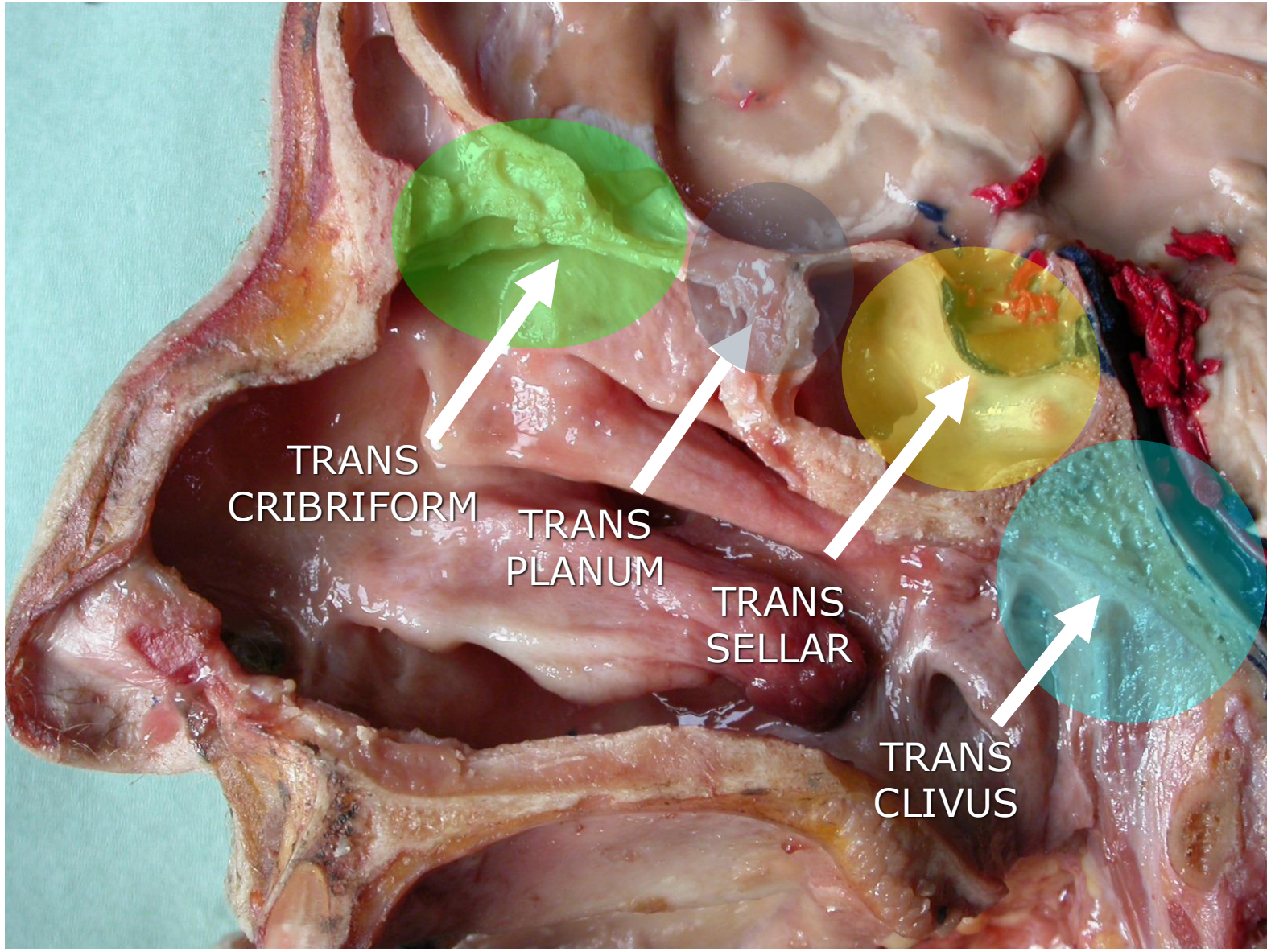
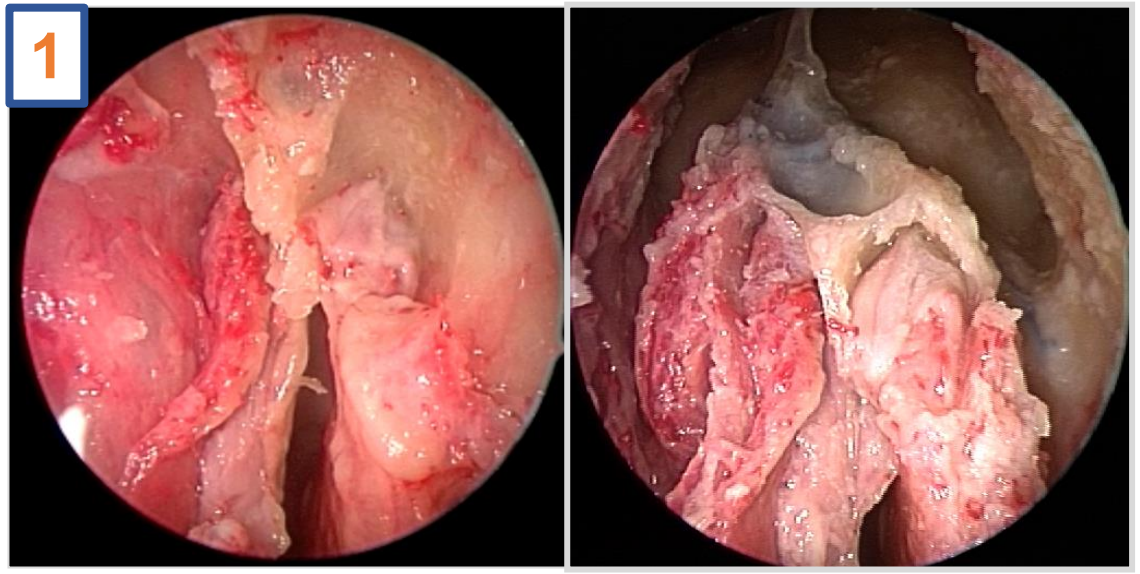
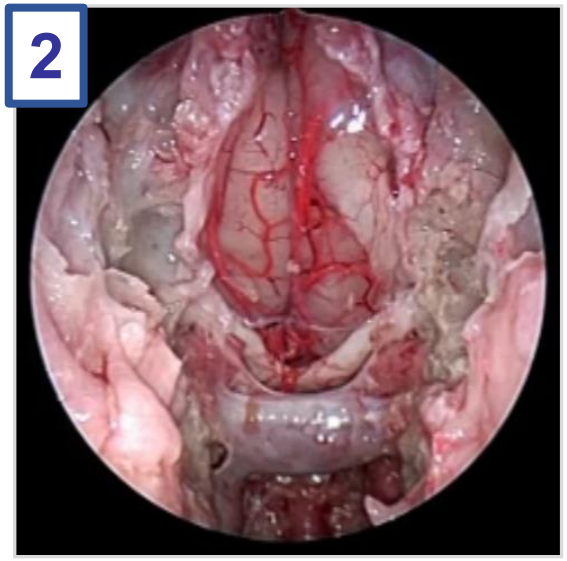


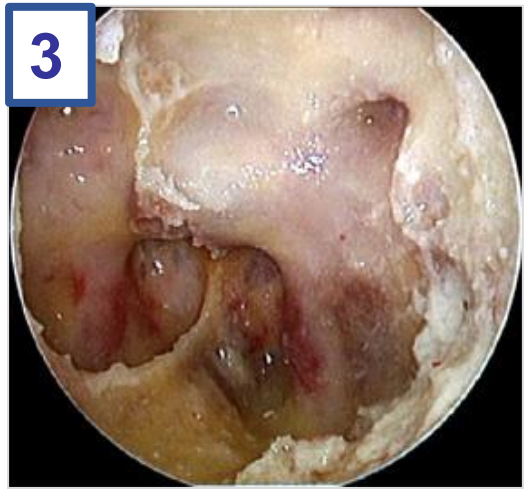
Fig. 3. Response strategy for intraoperative ICA injury.

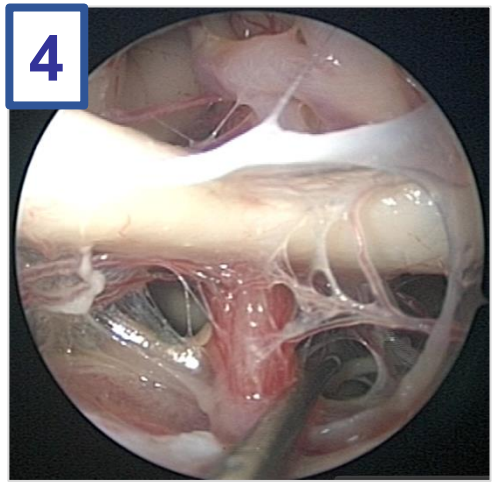
Skull base: surgical risks

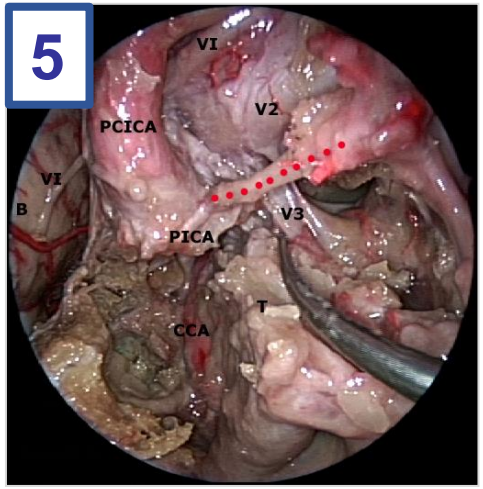


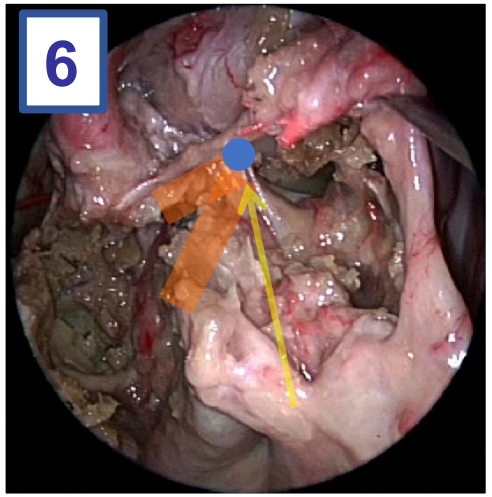

1


2


3

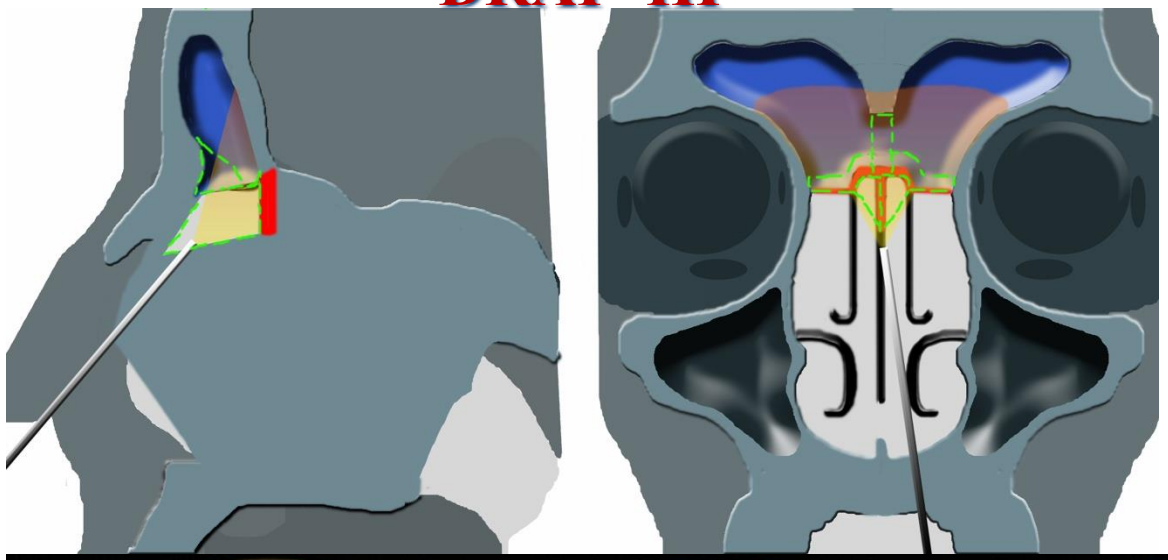

4

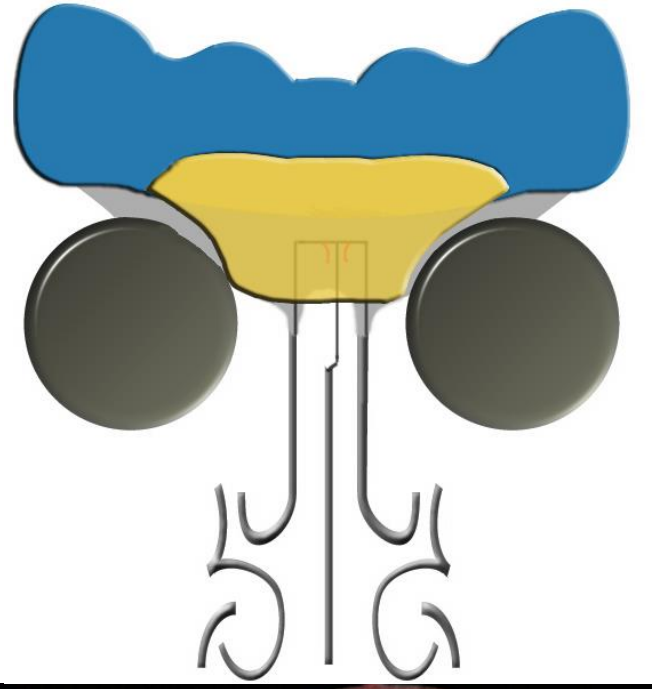

5
VI
V2
PCICA
VI
B
V3
PICA
T
CCA

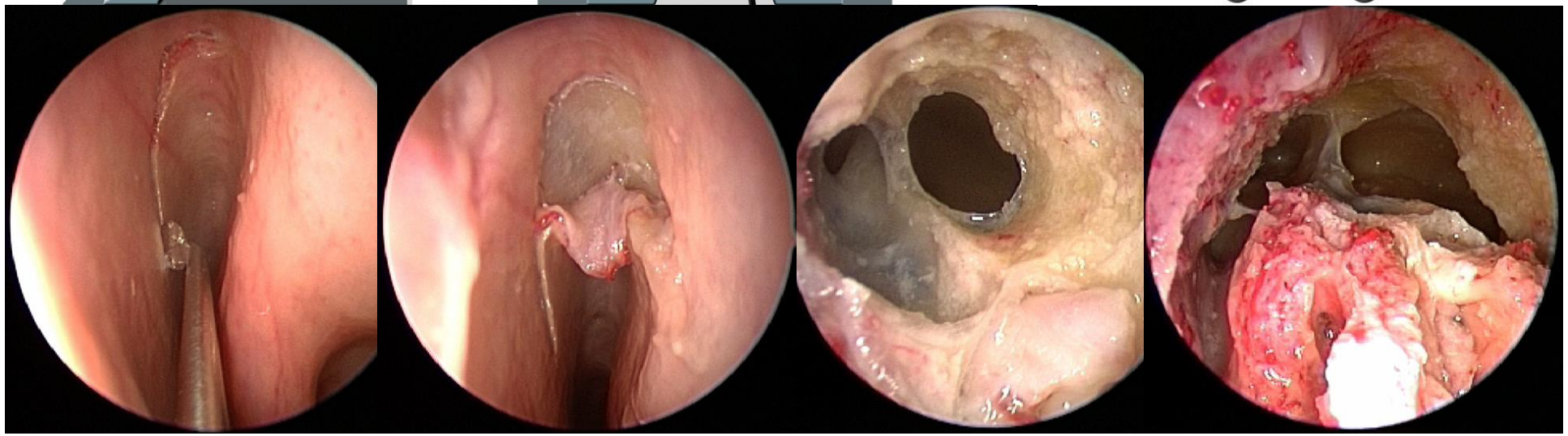

6

1 First olfactory fibers

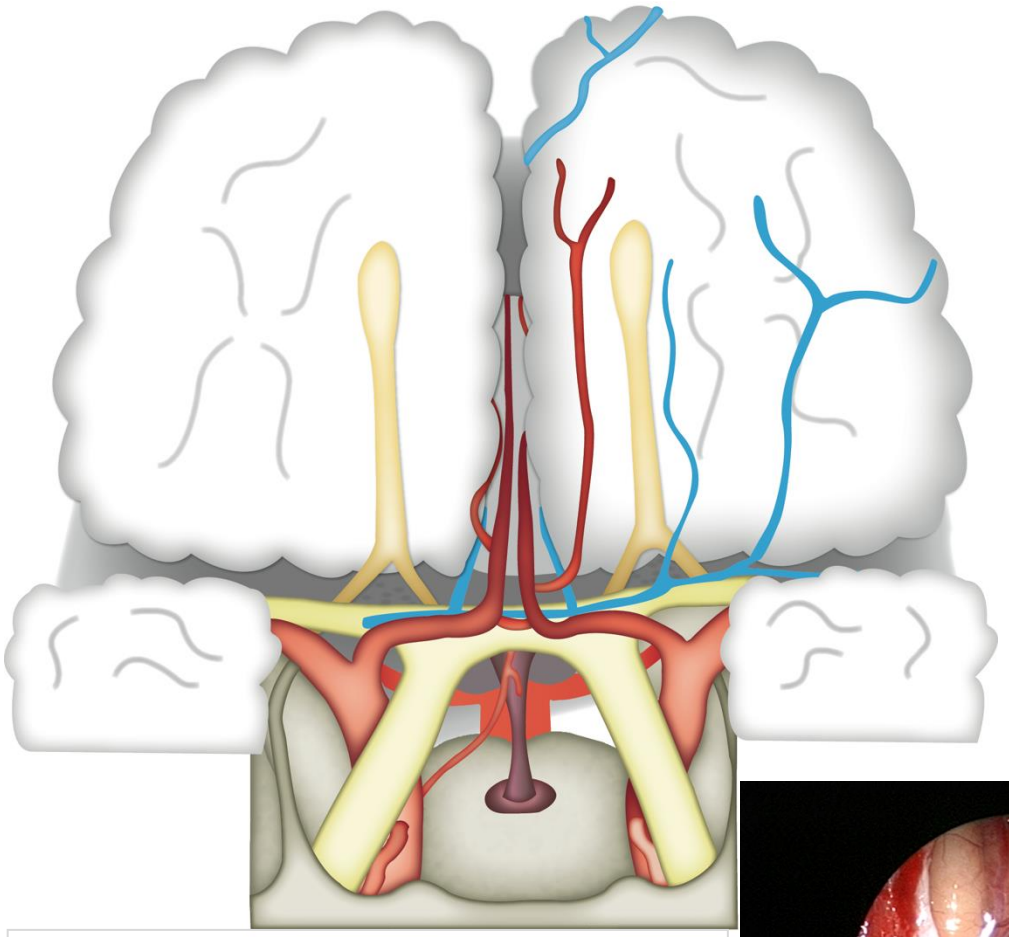
DRAF III

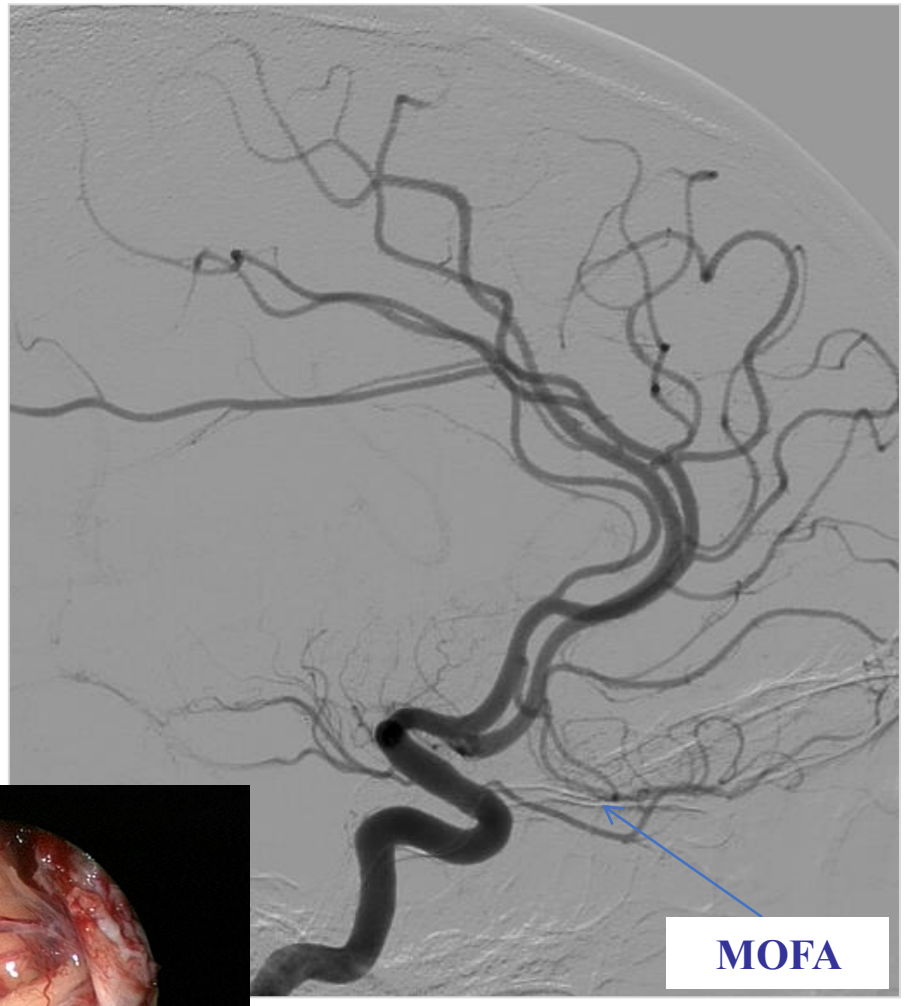


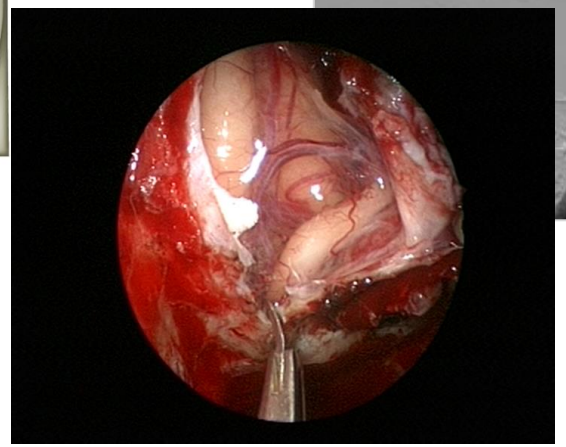




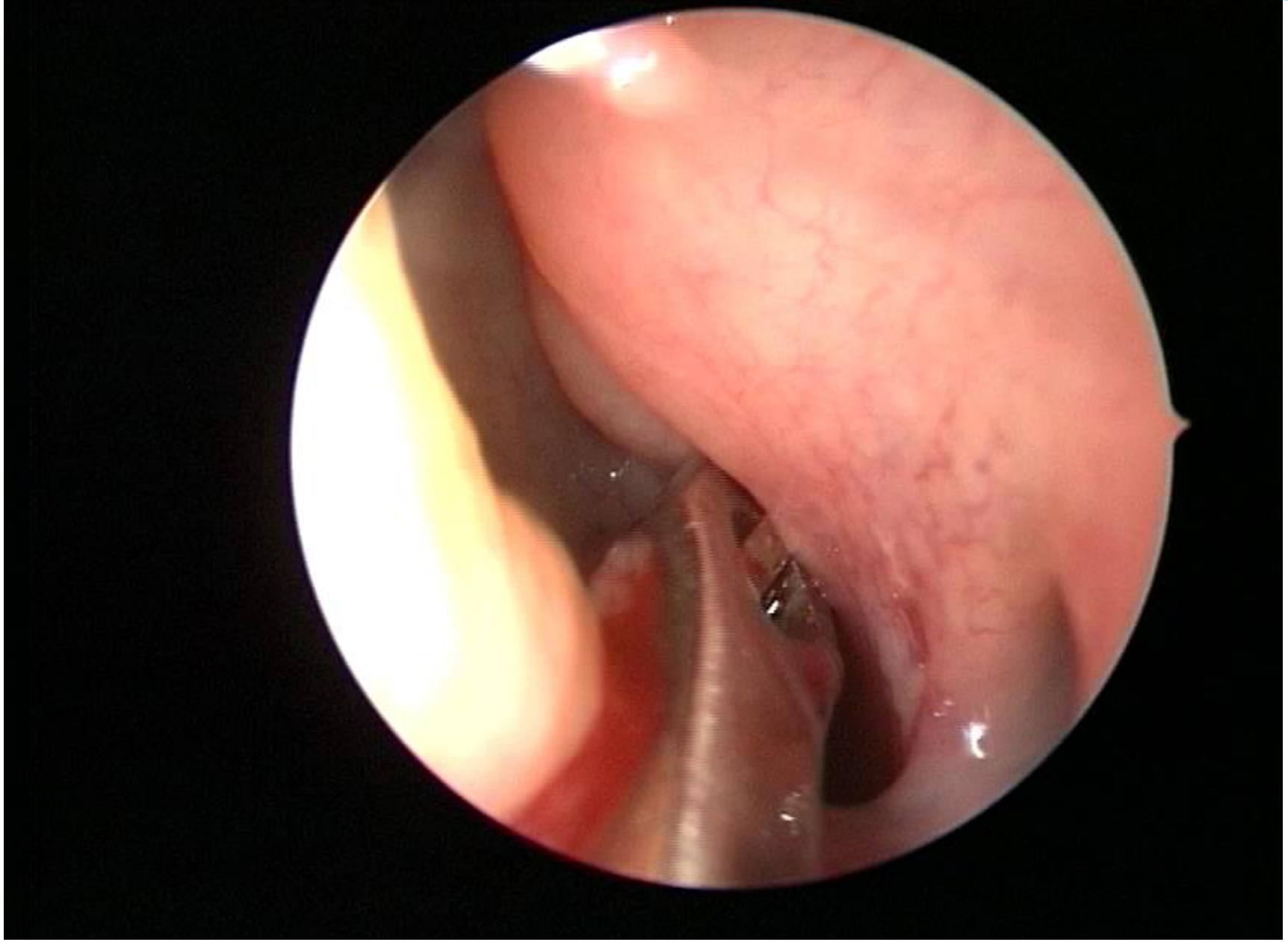
2 Medial orbital-frontal artery







Tallaght University Hospital

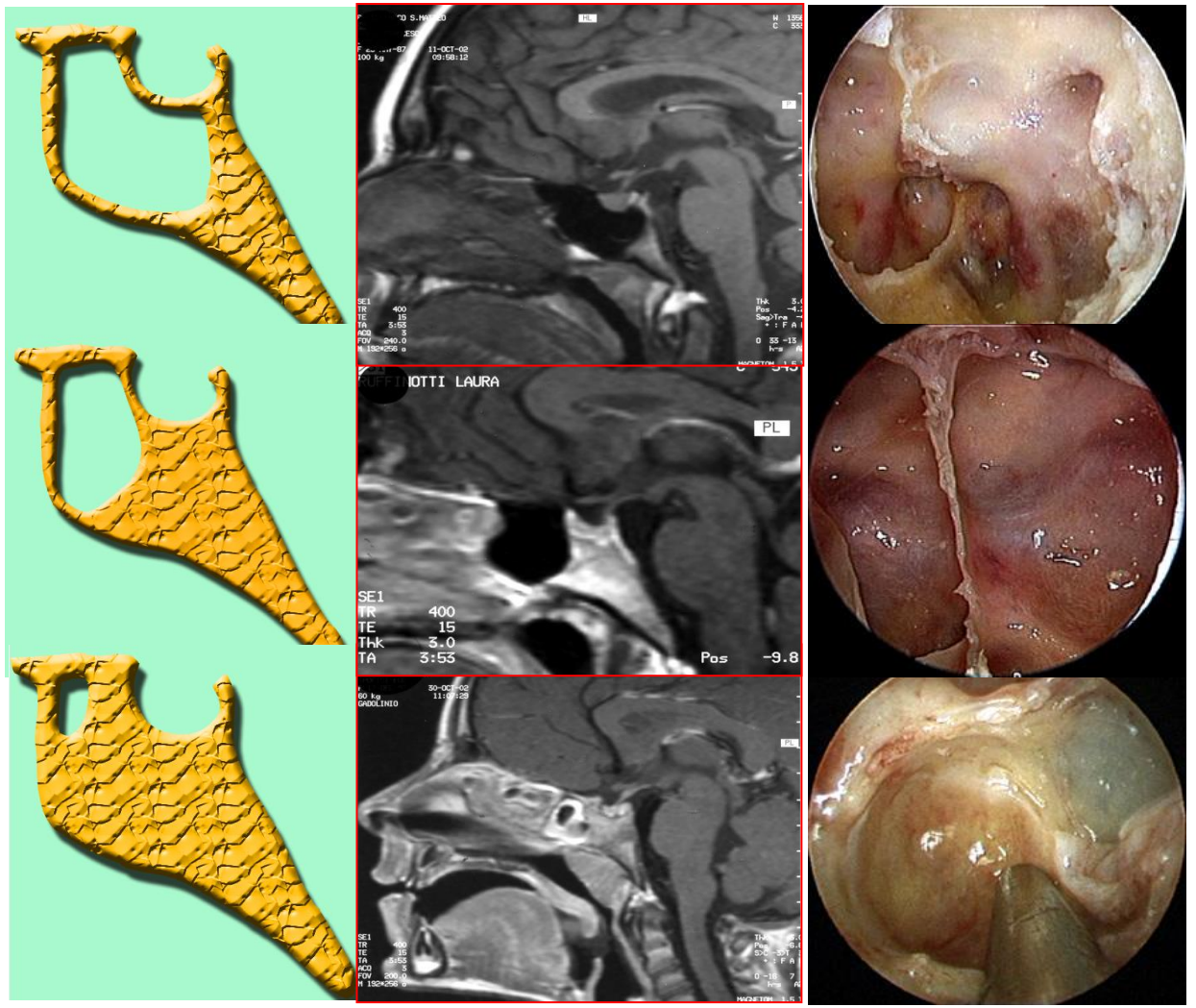


3 Intrasphenoidal landmarks

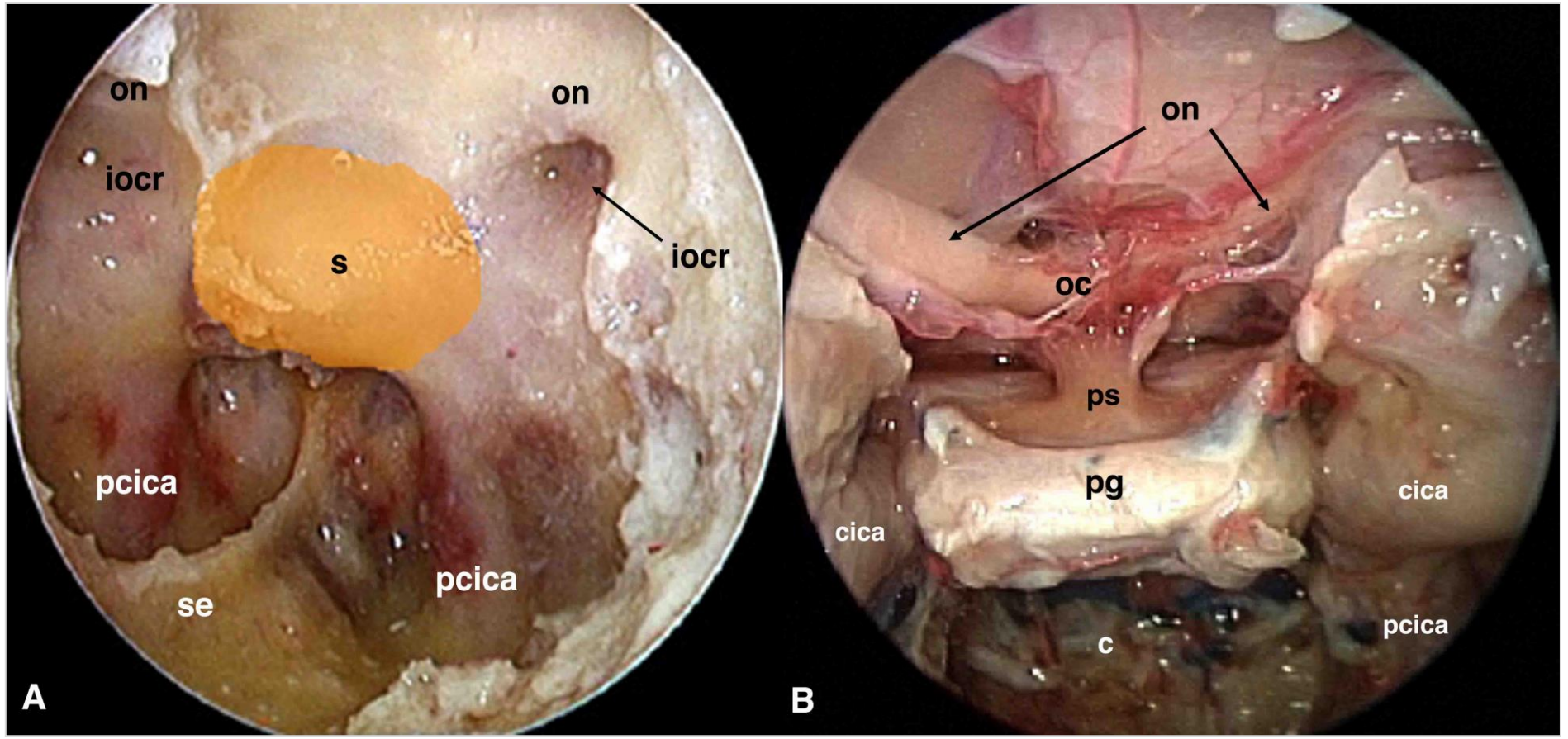
SELLAR

PRESELLAR

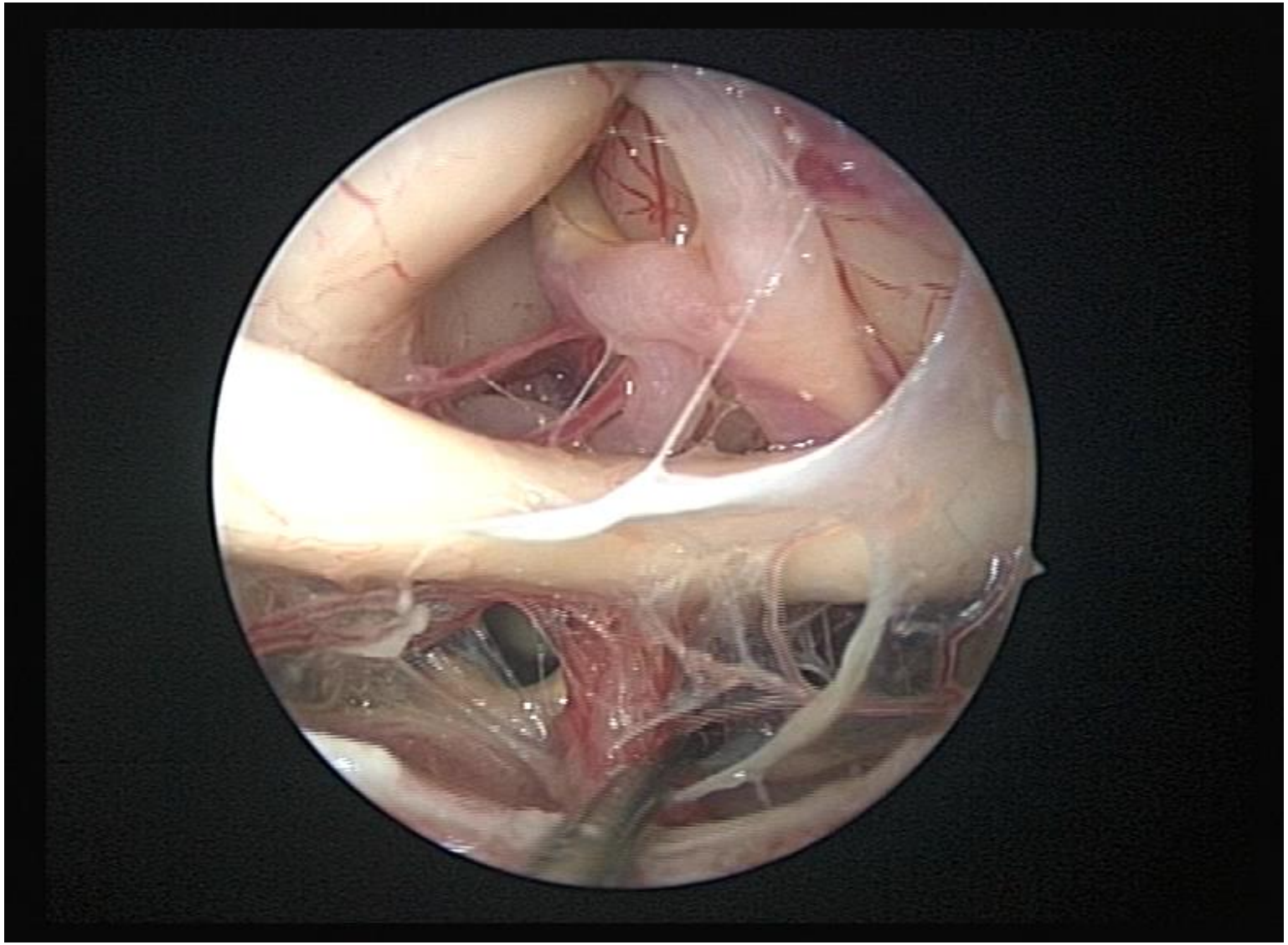
CONCHAL



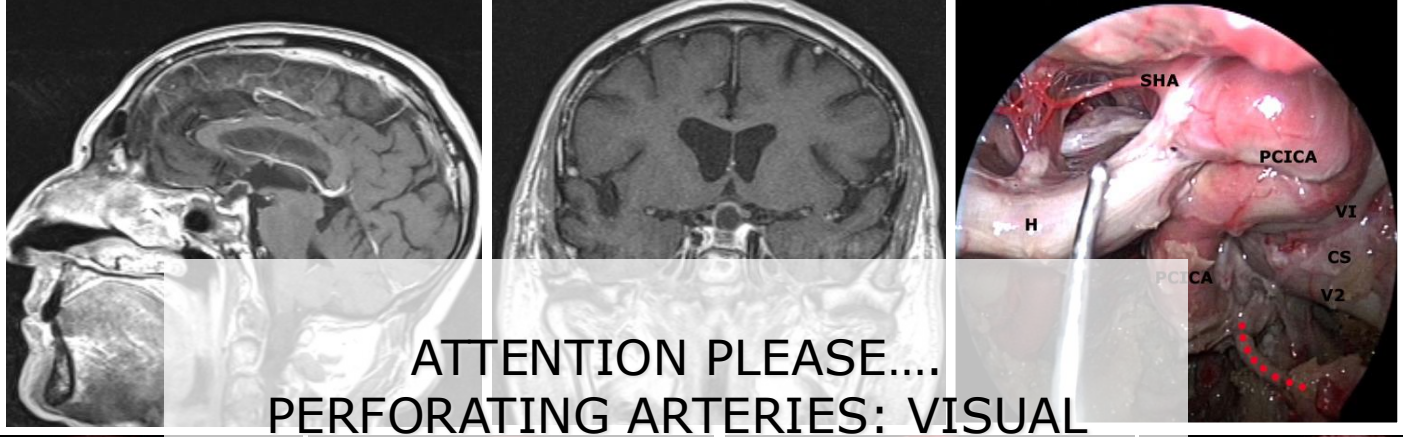
3 Intrasphenoidal landmarks



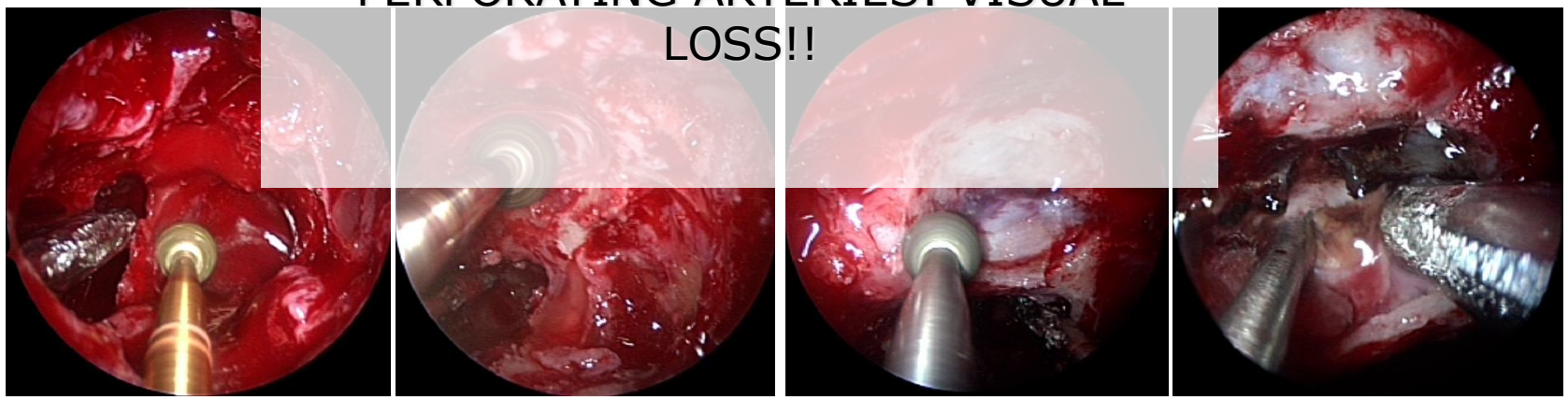
4 Optic chiasma

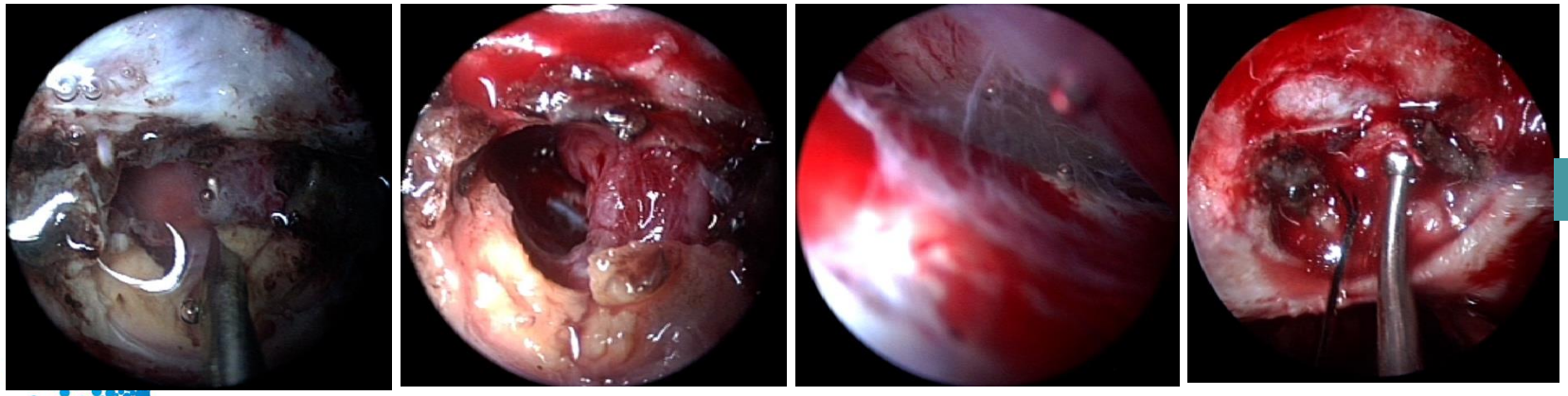


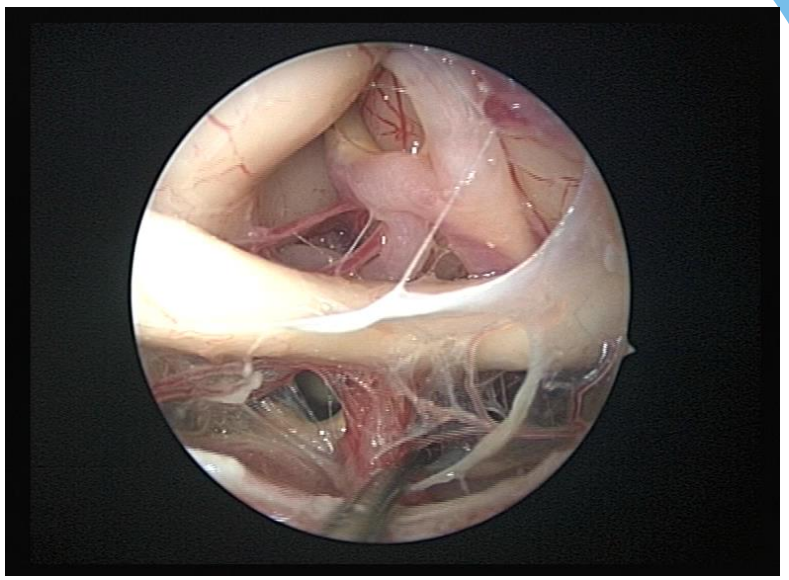
4 Optic chiasma



ATTENTION PLEASE….
PERFORATING ARTERIES: VISUAL LOSS!!





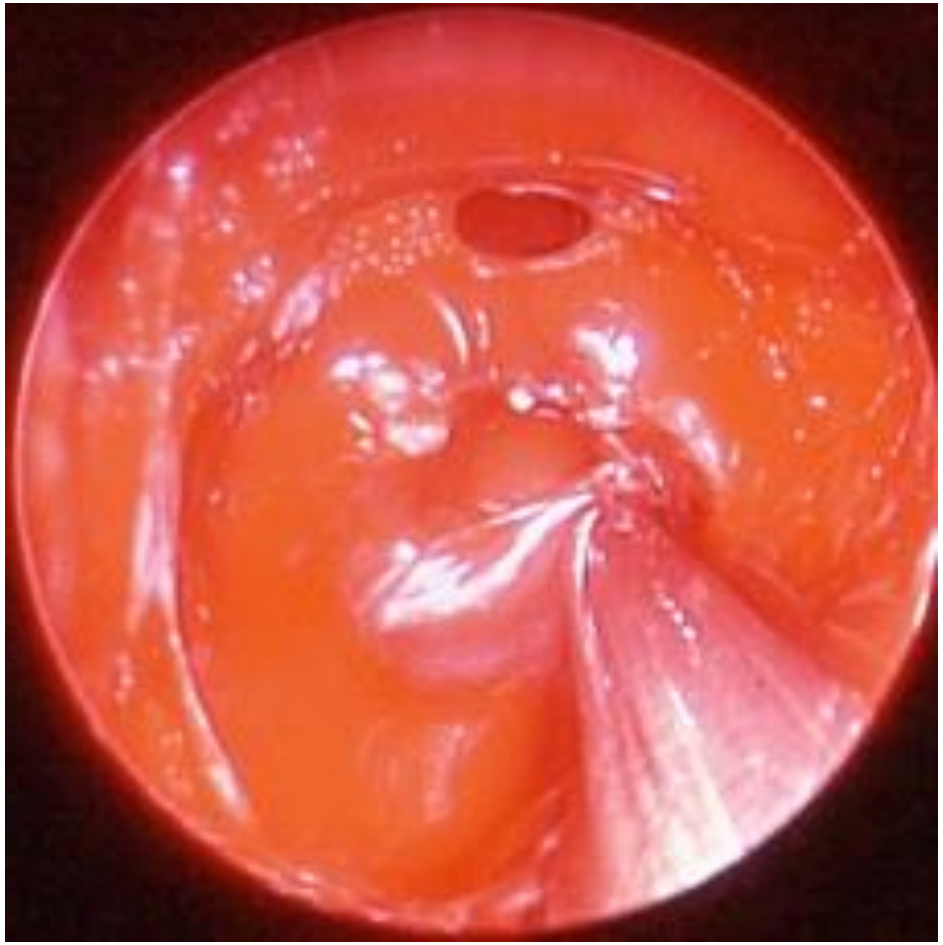


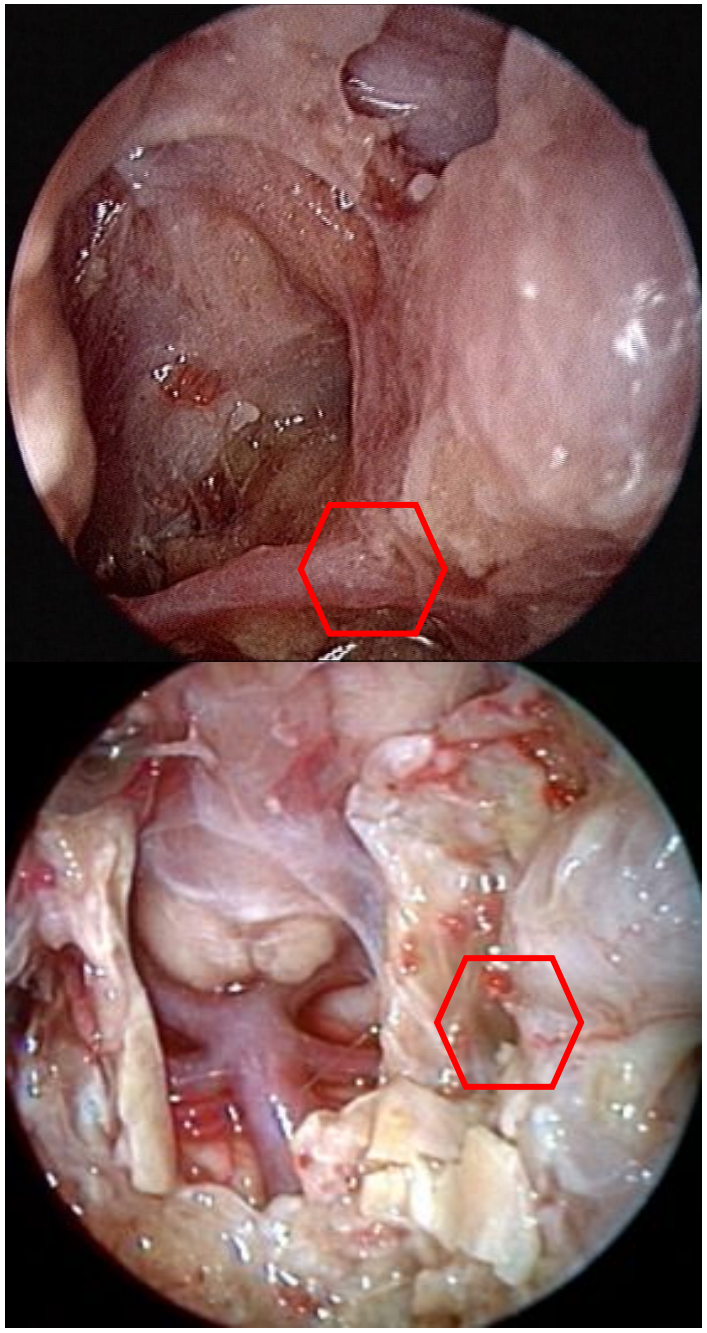
ADAMANTINOMATOUS CRANIOPHARYNGIOMA

"Transplanum approach (supradiaphragmatic)"

TRANSELLAR APPROACH

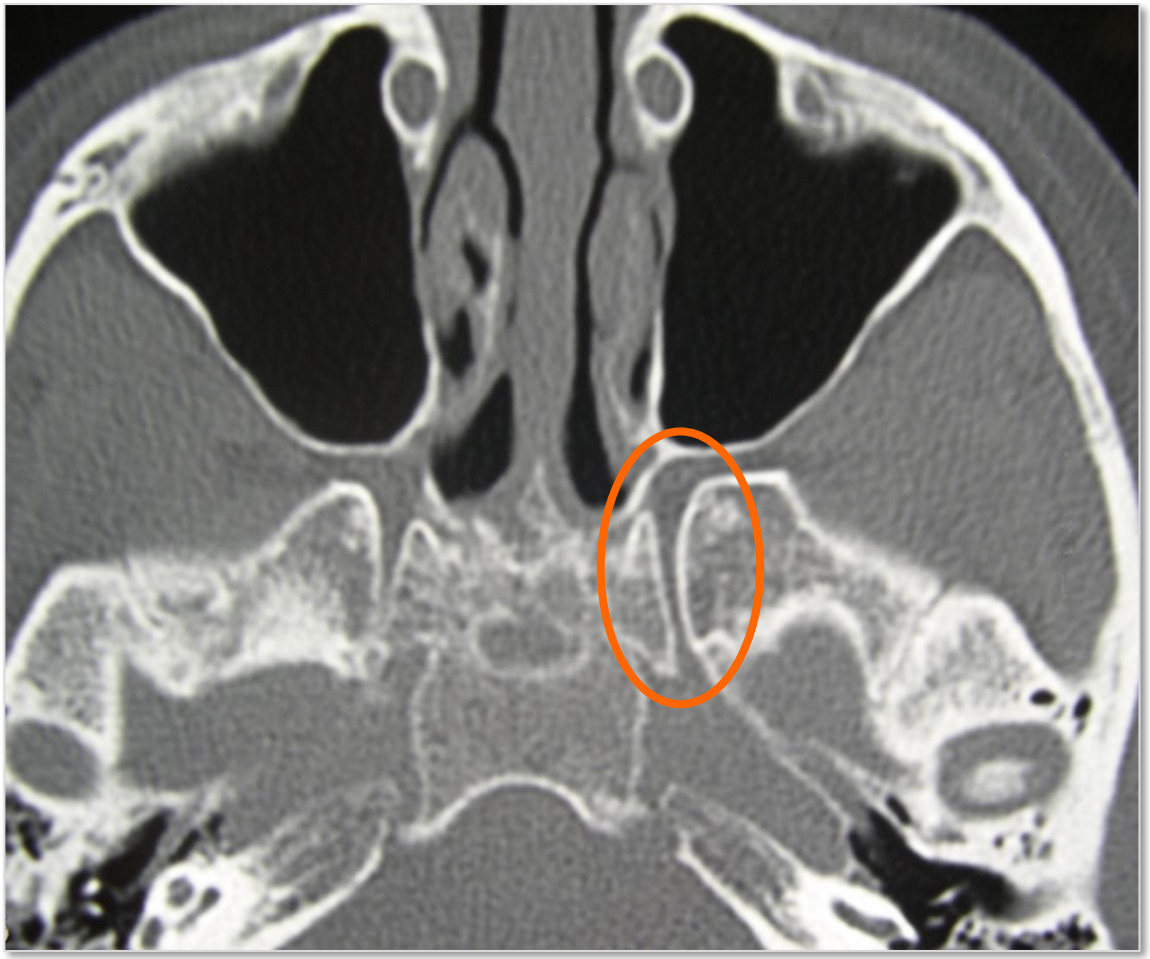
Bleeding





INFERIOR HYPOPHYSEAL ARTERY

5 Vidian nerve



- Greater petrosal + Deep petrosal→exocranial part of foramen lacerum → vidian canal → PPF
- Landmark for anterior genu of petrosal ICA

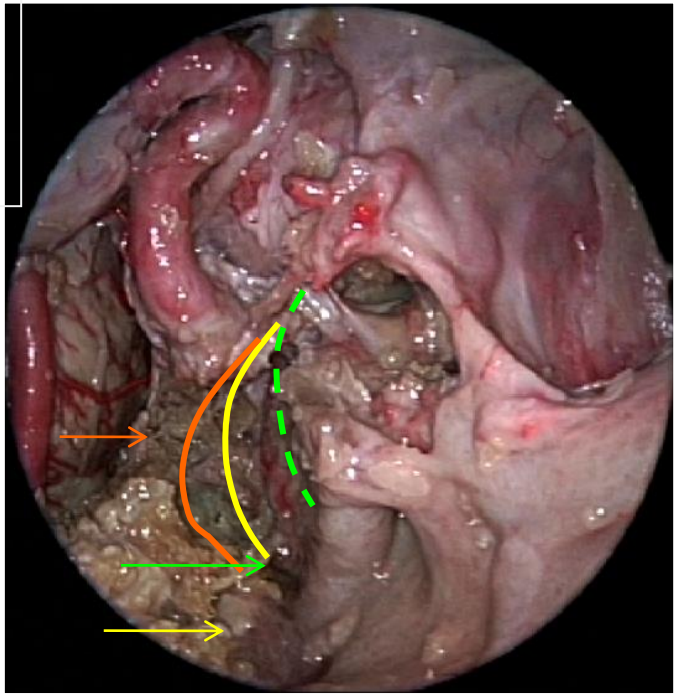
6 Eustachian tube

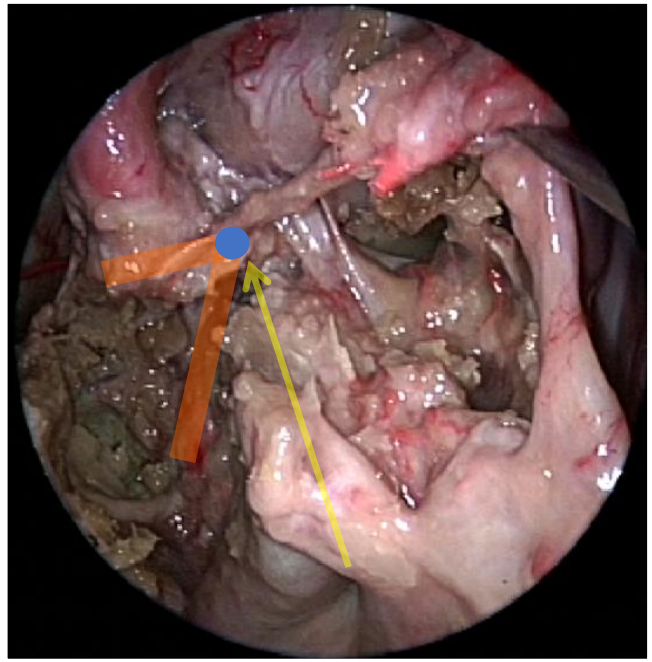
What about extreme variability of cervical loop of the ICA?

More medial
=
More risk

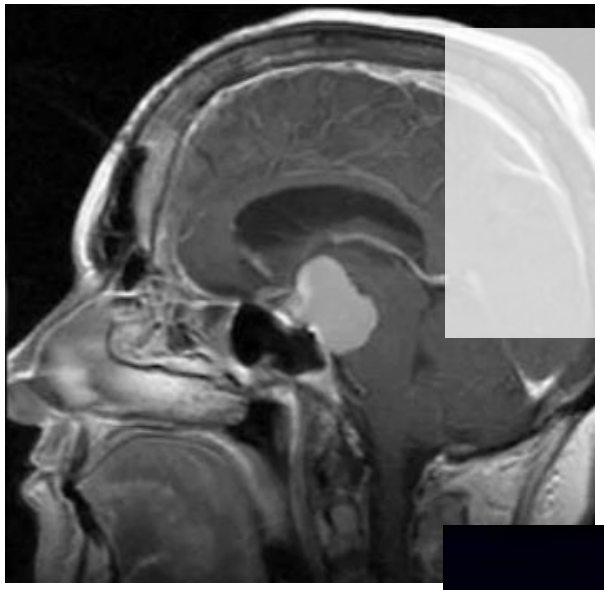
It can't be evaluated intraoperatively!

Eustachian tube is the landmark to find the ICA between petrous and cervical tract

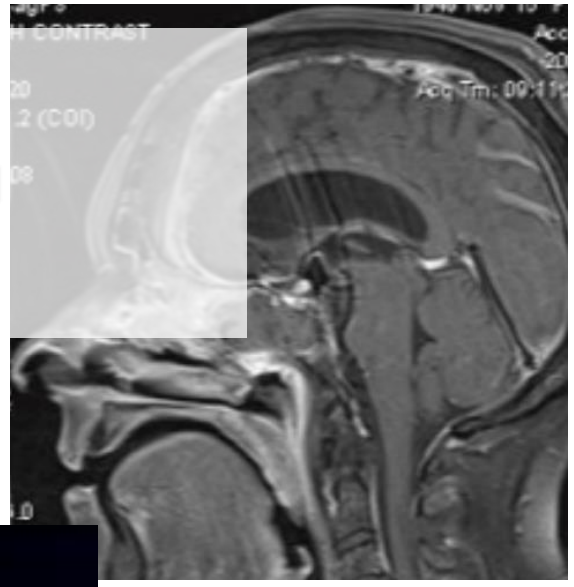


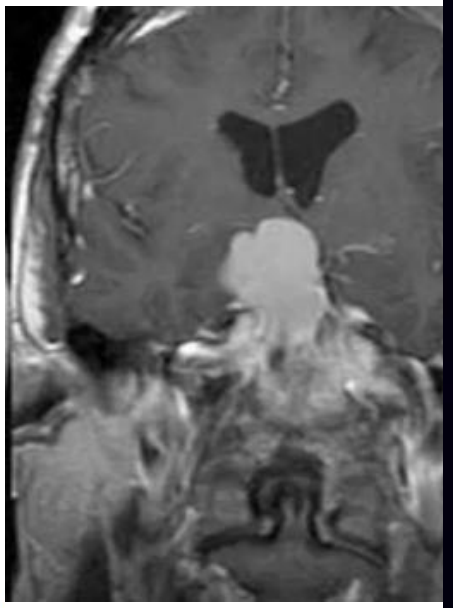


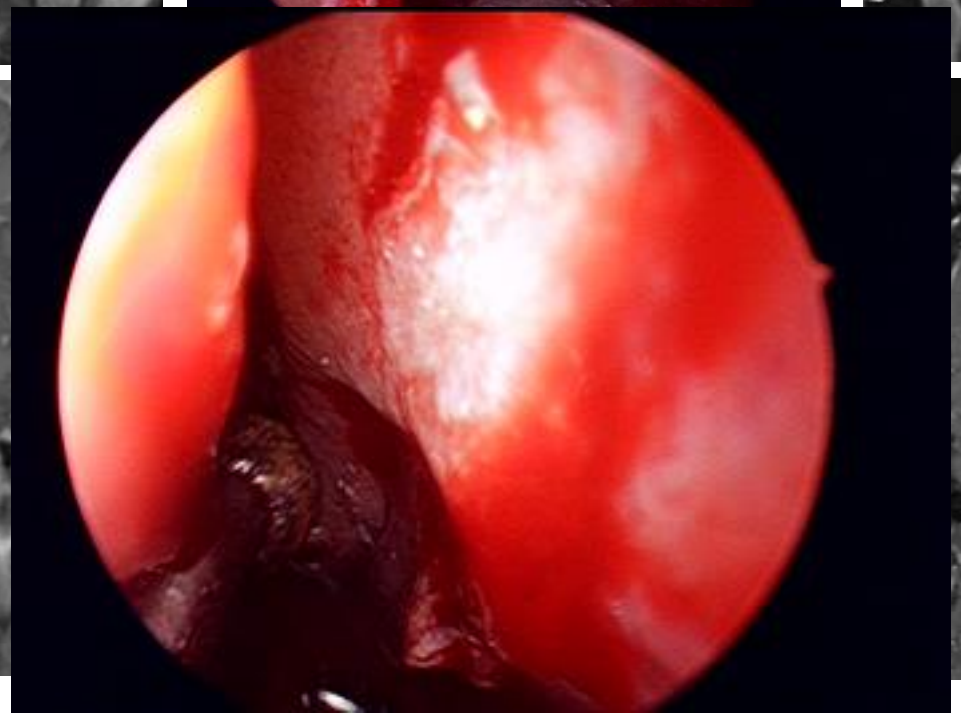
TRANSCLIVAL APPROACH

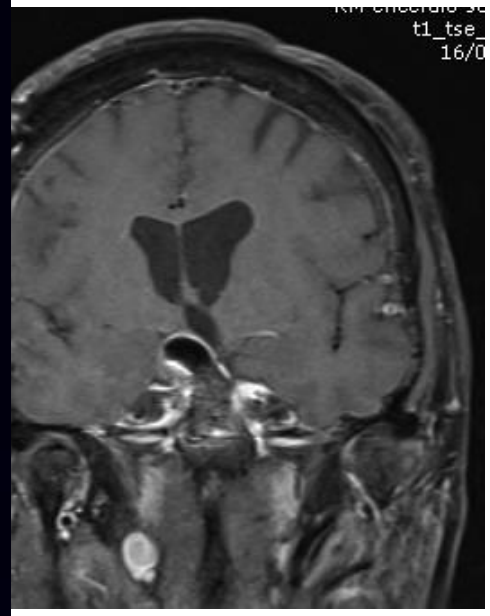


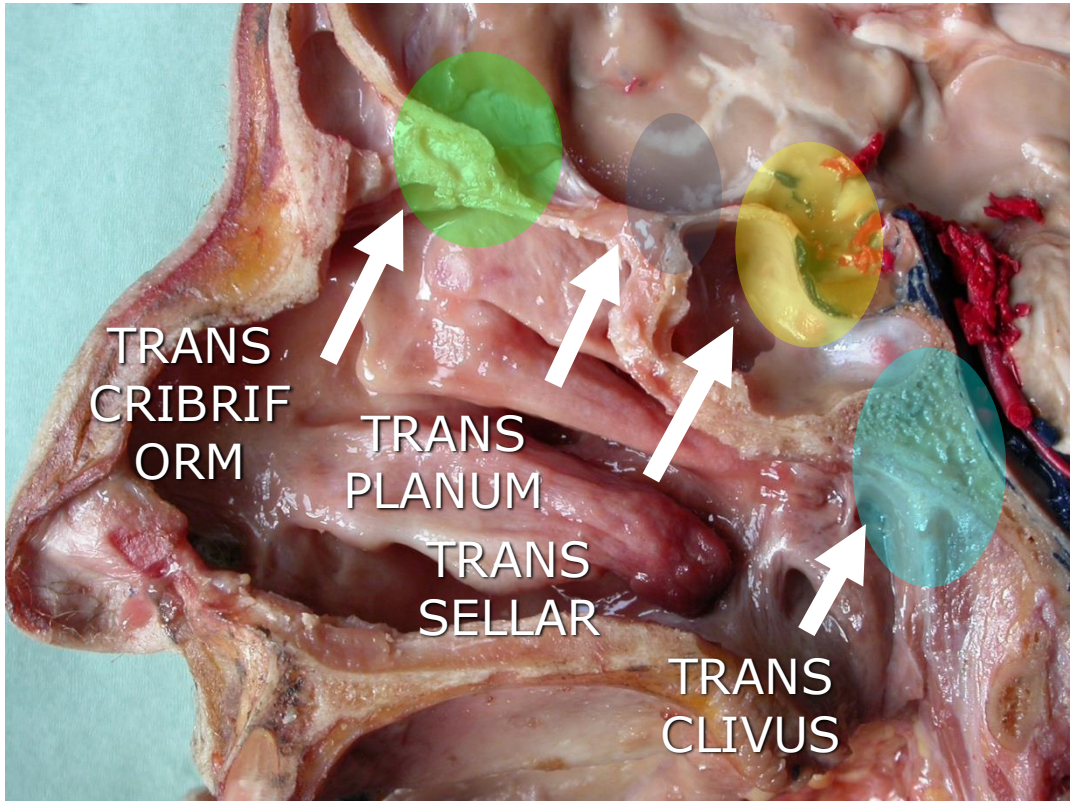
ATTENTION PLEASE….
BASILAR ARTERY SPASM

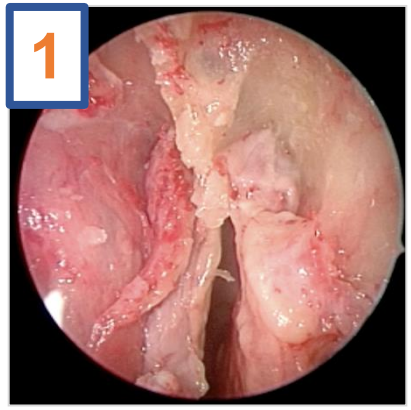


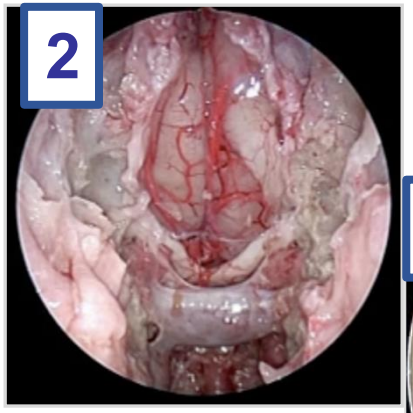


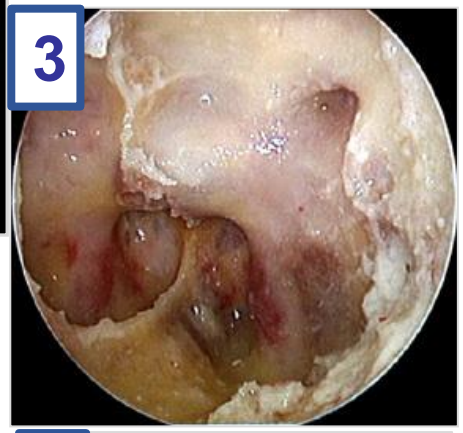


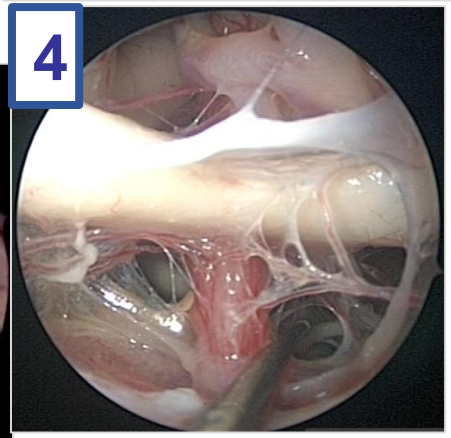


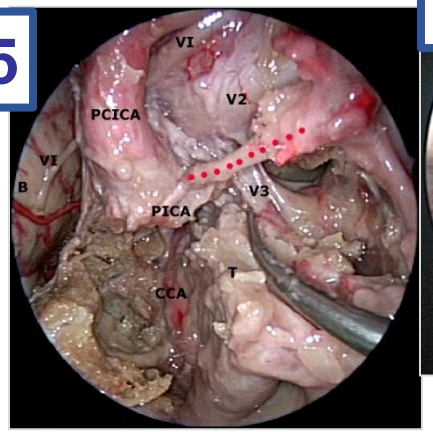


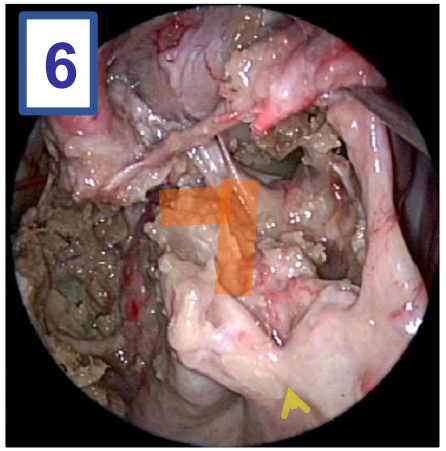










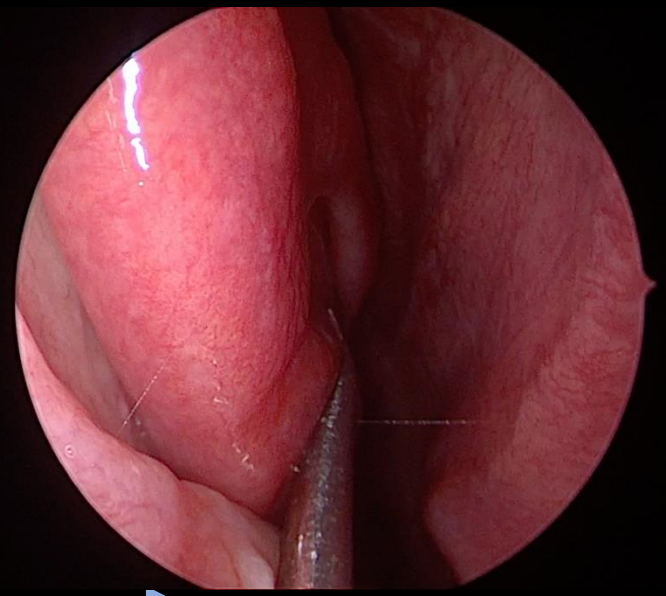


www.TheEarNoseThroatDoctor.com

Tallaght
University
Hospital

MANAGEMENT OF CAROTID INJURIES

During endoscopic skullbase surgery



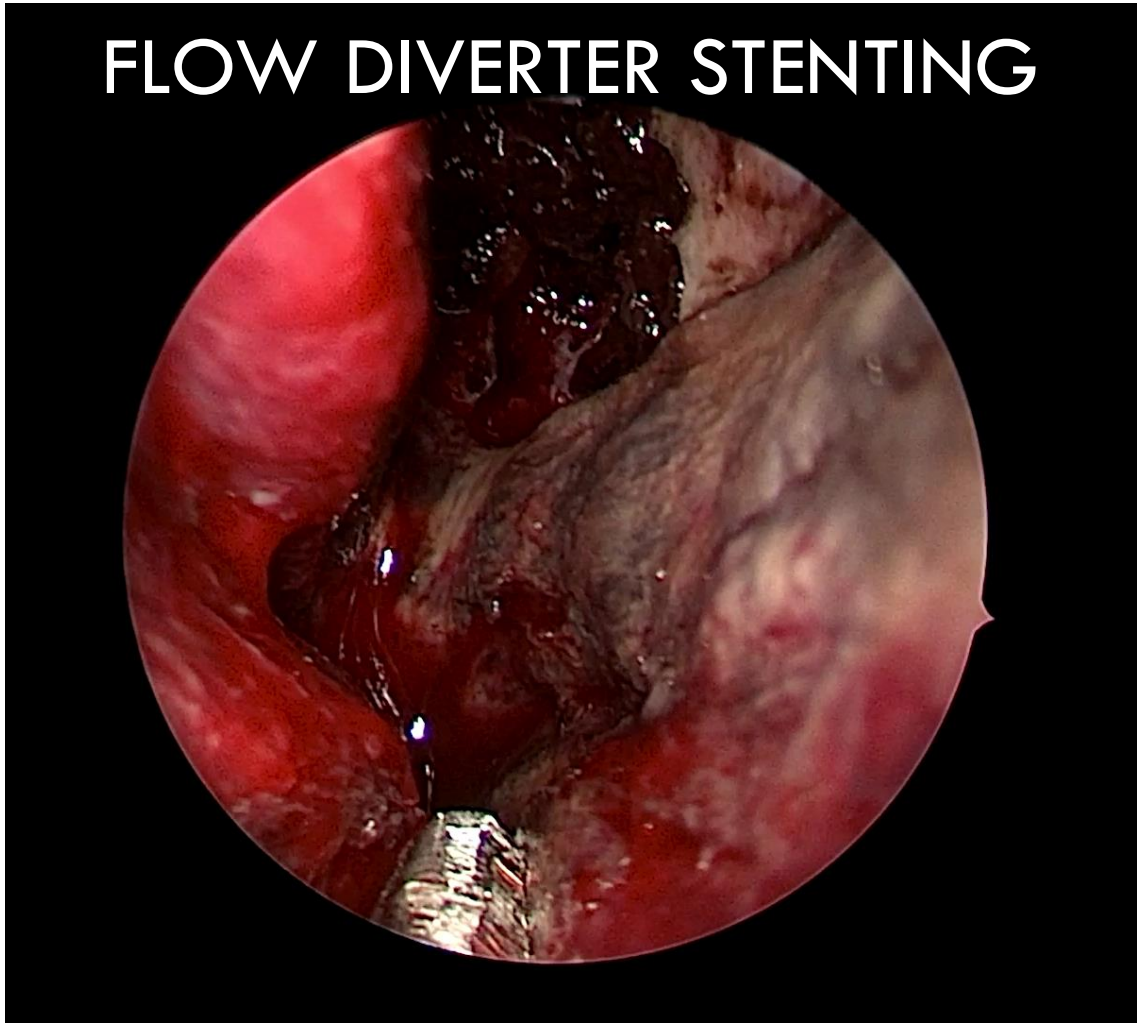
External approaches to ICA 1998

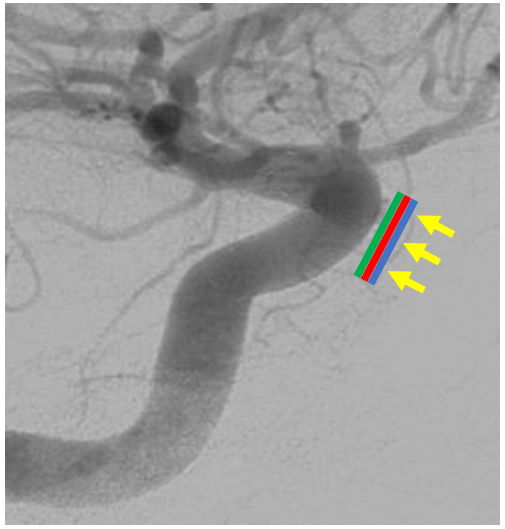
Endovascular embolization 2010

Endovascular stenting 2012

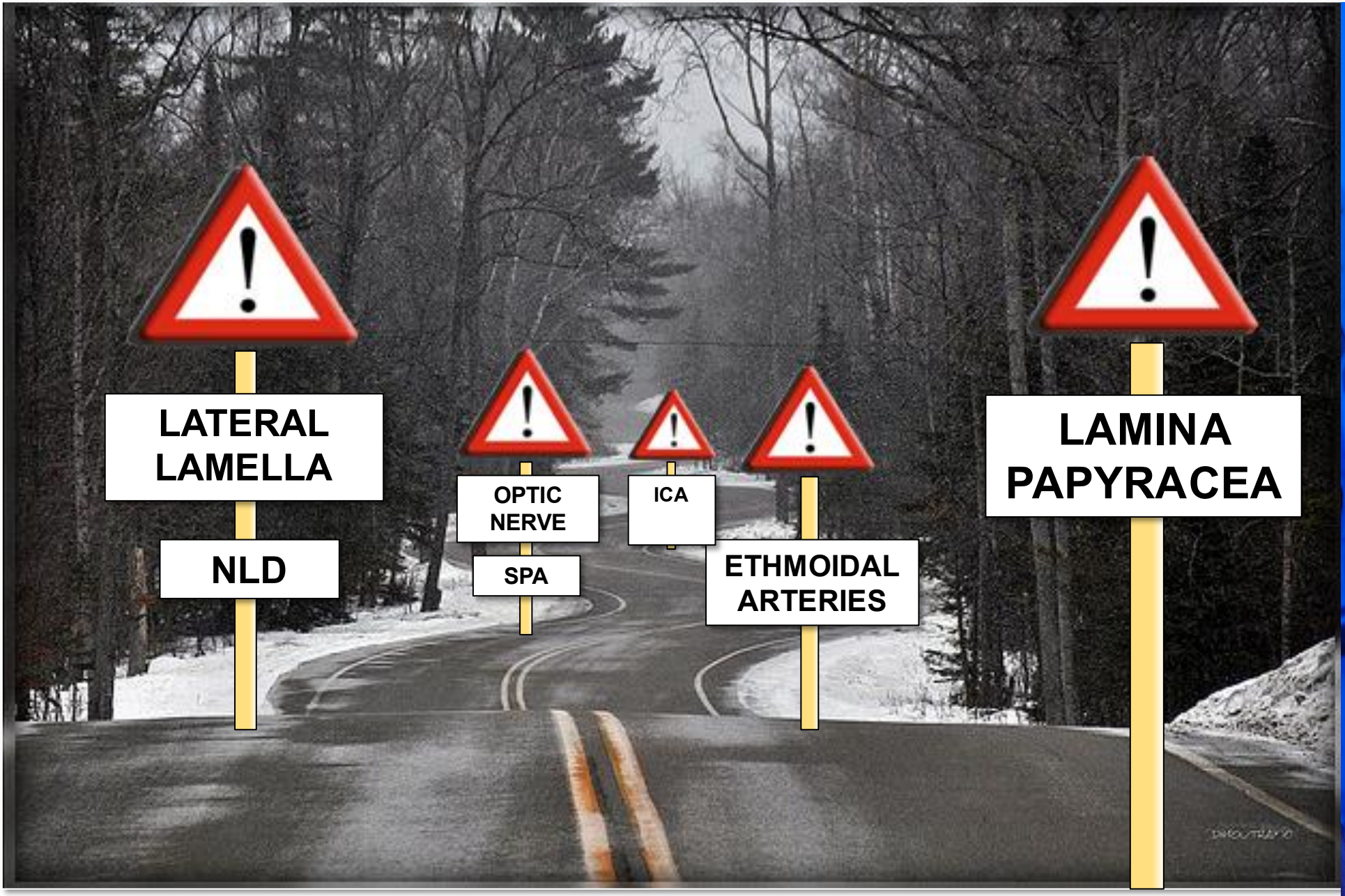
Endovascular stenting & Endoscopic transnasal ICA resurfacing 2018

FLOW DIVERTER STENTING

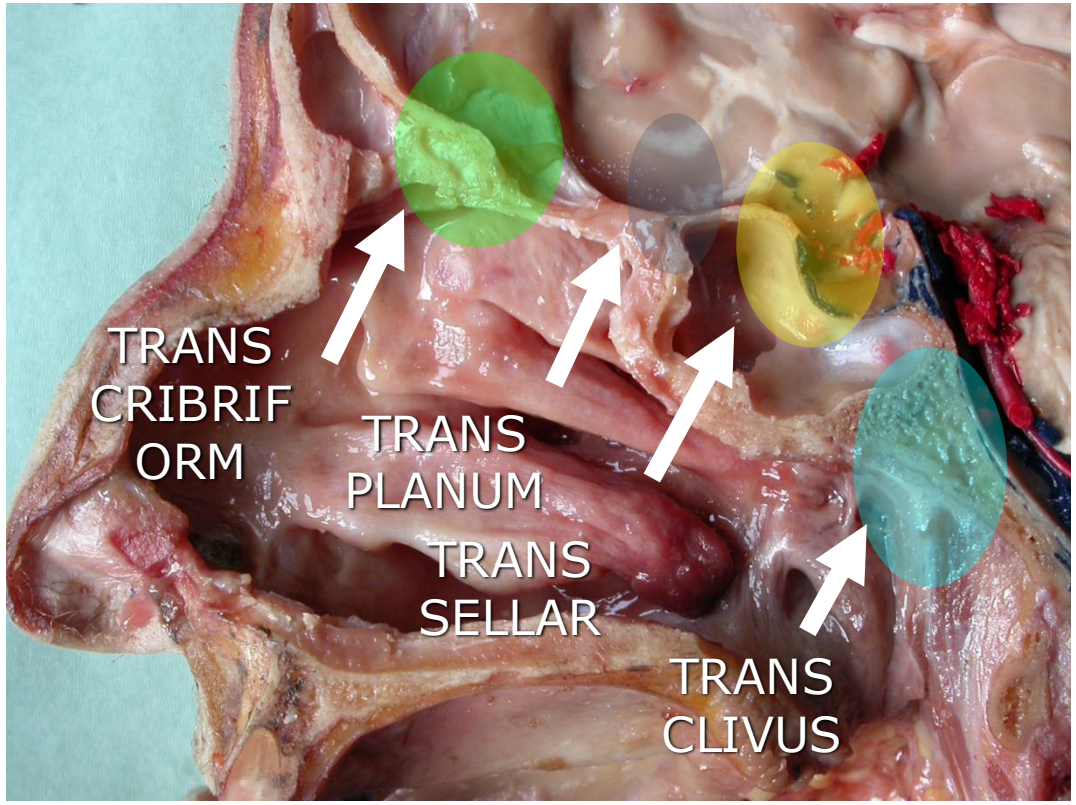


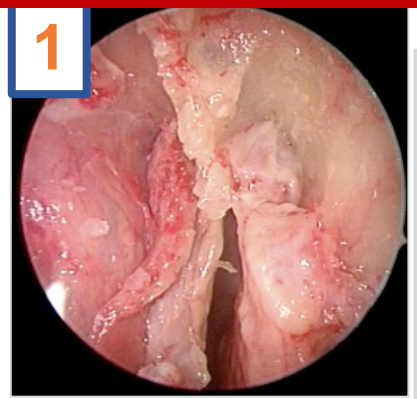


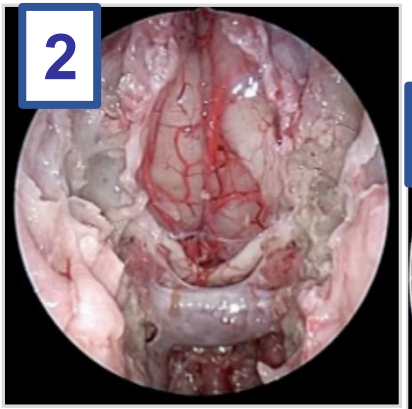
SINO-NASAL SURGICAL RISK AREAS

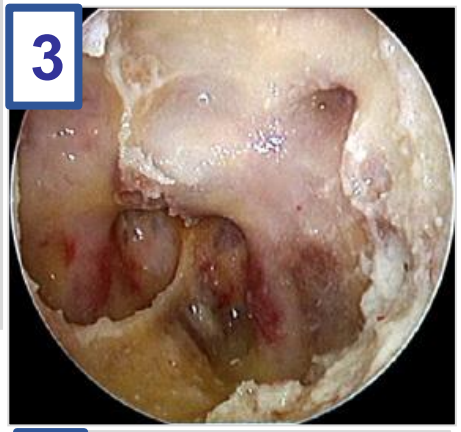


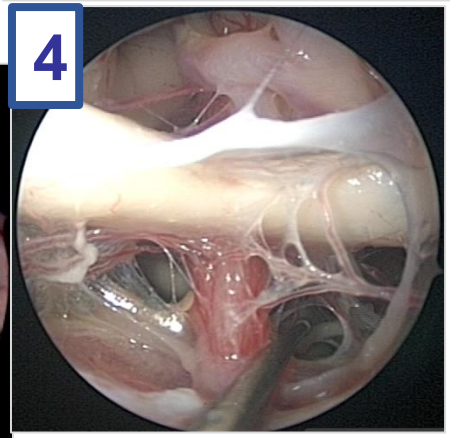
SKULL BASE SURGICAL RISK AREAS

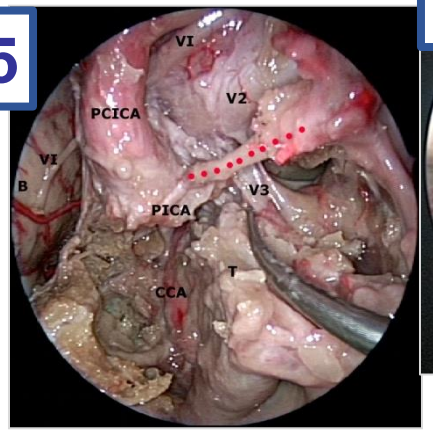


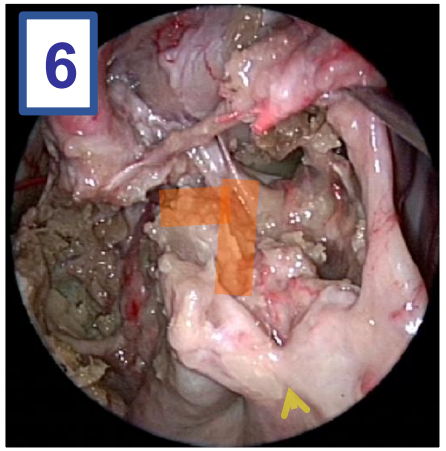












Instruments

- Bipolar forceps
- Cutting instruments
- Powered instruments
- “ENT navigation”
- 3D Surgery

Surgeon

- Training
  (Imaging, laboratory)
- **Self evaluation**

Complication

Patient

- Comorbidity
- History
- Anatomy
- Disease

www.TheEarNoseThroatDoctor.com

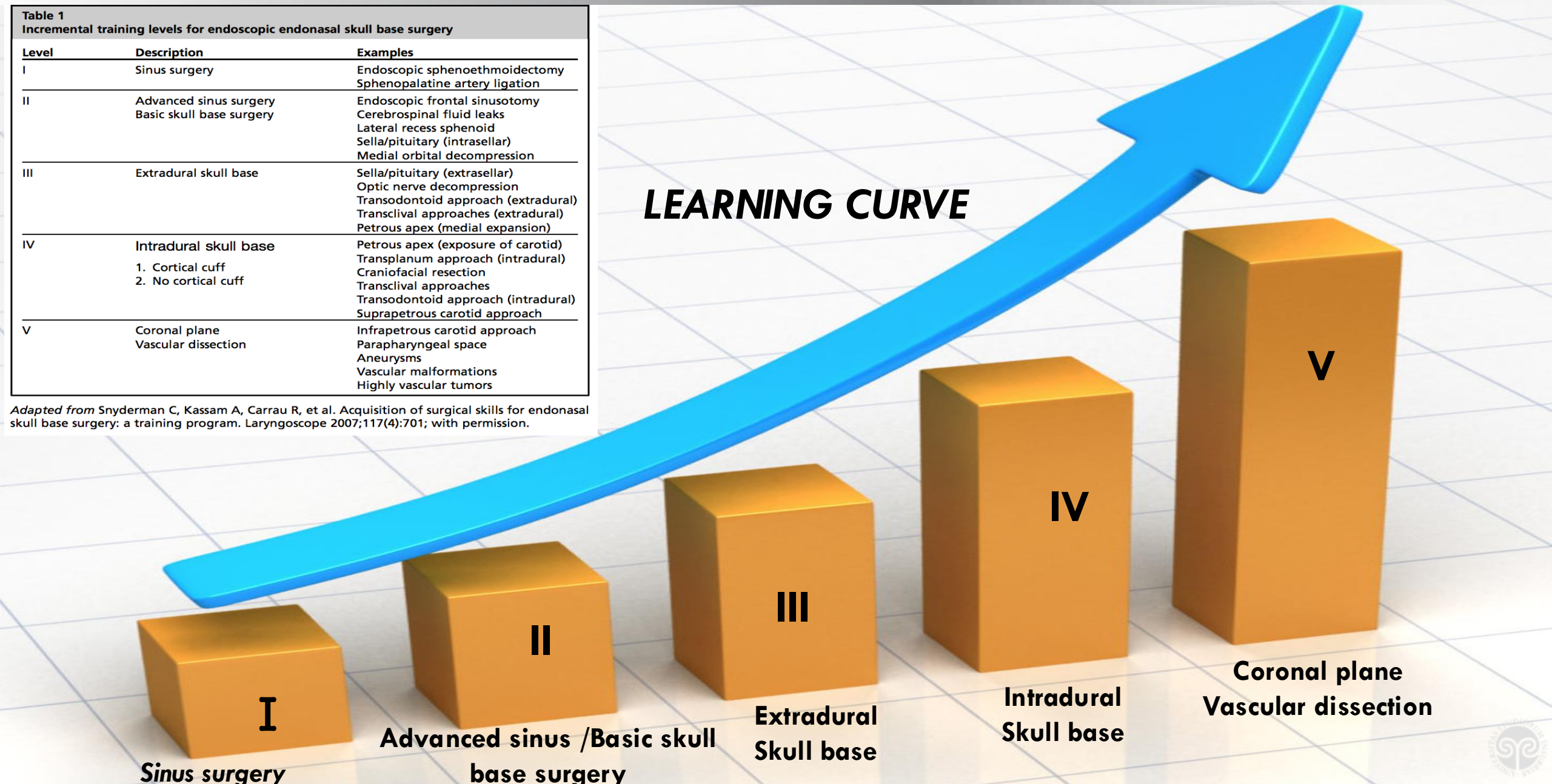
Tallaght University Hospital

Safety of the surgical gesture

Table 1
Incremental training levels for endoscopic endonasal skull base surgery

Level	Description	Examples
I	Sinus surgery	Endoscopic sphenoethmoidectomy Sphenopalatine artery ligation
II	Advanced sinus surgery Basic skull base surgery	Endoscopic frontal sinusotomy Cerebrospinal fluid leaks Lateral recess sphenoid Sella/pituitary (intrasellar) Medial orbital decompression
III	Extradural skull base	Sella/pituitary (extrasellar) Optic nerve decompression Transodontoid approach (extradural) Transclival approaches (extradural) Petrous apex (medial expansion)
IV	Intradural skull base 1. Cortical cuff 2. No cortical cuff	Petrous apex (exposure of carotid) Transplanum approach (intradural) Craniofacial resection Transclival approaches Transodontoid approach (intradural) Suprapetrous carotid approach
V	Coronal plane Vascular dissection	Infrapetrous carotid approach Parapharyngeal space Aneurysms Vascular malformations Highly vascular tumors

Adapted from Snyderman C, Kassam A, Carrau R, et al. Acquisition of surgical skills for endonasal skull base surgery: a training program. Laryngoscope 2007;117(4):701; with permission.



Instruments

- **Bipolar forceps**
- **Cutting instruments**
- **Powered instruments**
- **“ENT navigation”**
- **3D Surgery**

Surgeon

- **Training**
  (Imaging, laboratory)
- **Self evaluation**

Patient

- **Comorbidity**
- **History**
- **Anatomy**
- **Disease**

Complication

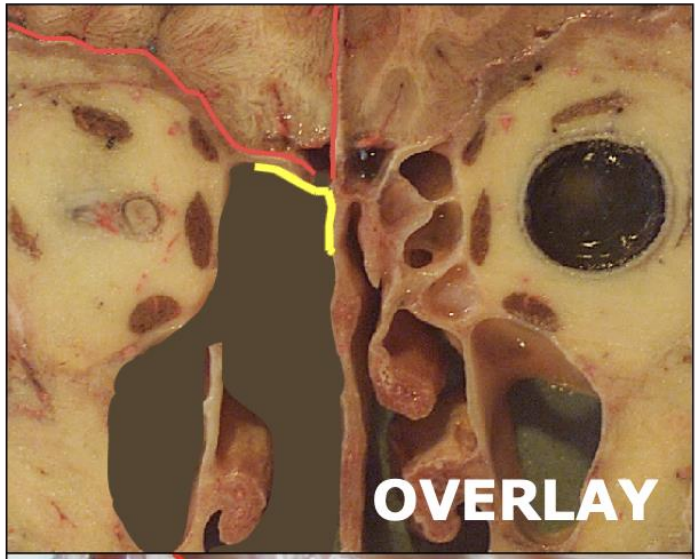
www.TheEarNoseThroatDoctor.com

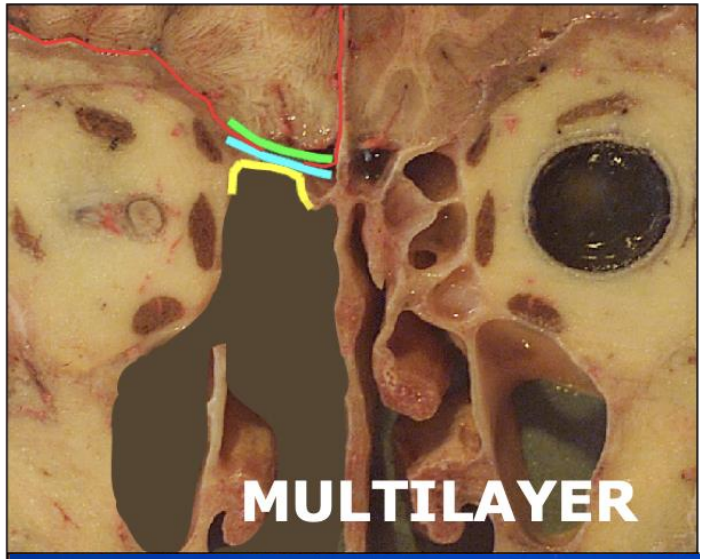
Tallaght University Hospital

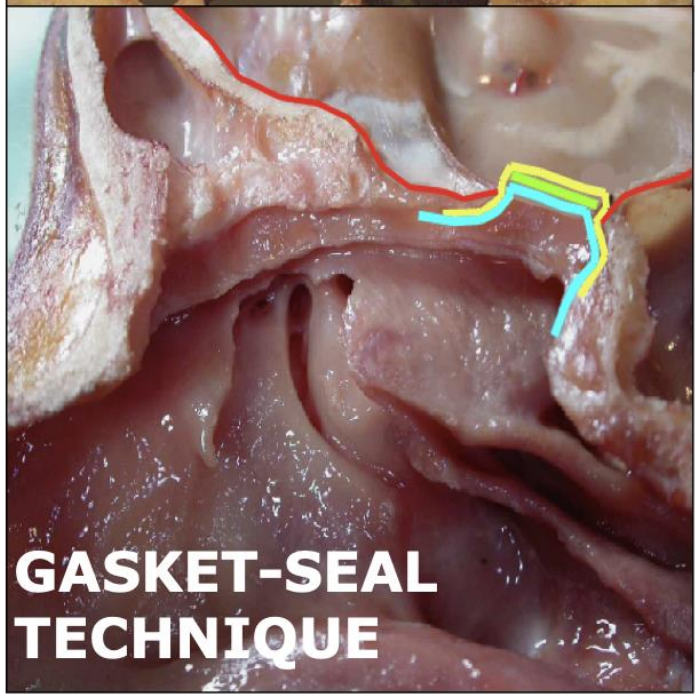
Complications begets complications

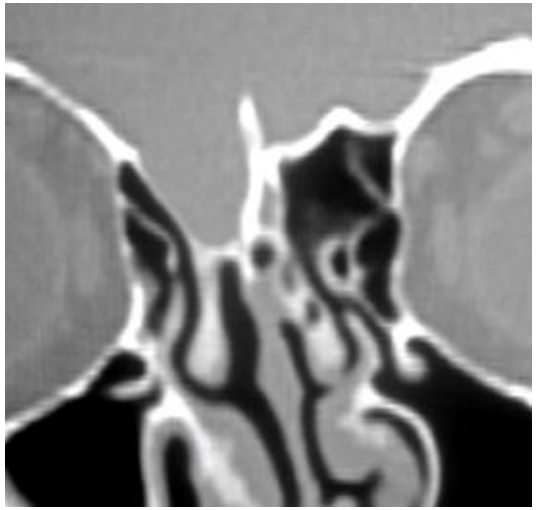
Think before you act!!!

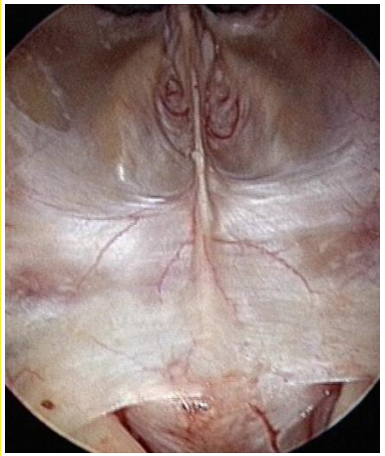
OPTIONS: free grafting techniques









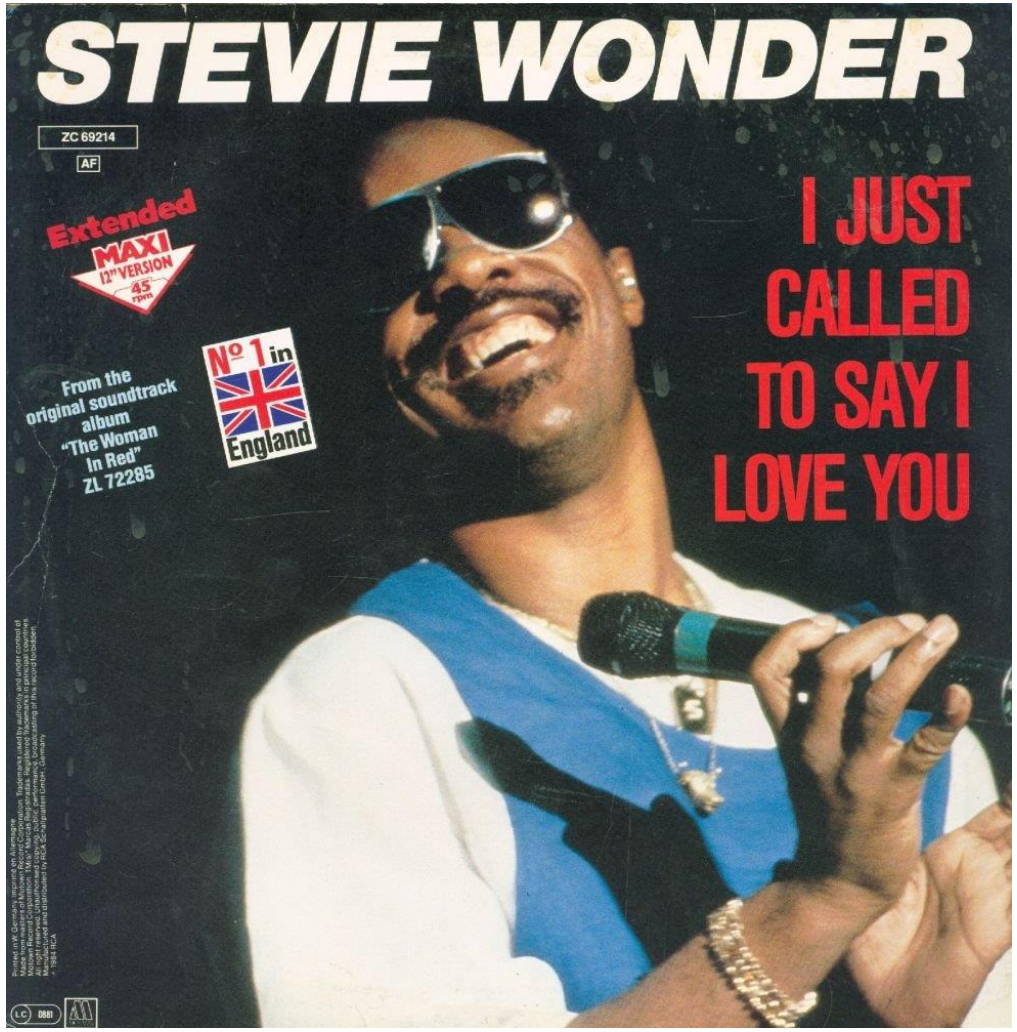


www.TheEarNoseThroatDoctor.com

Tallaght University Hospital

Orbital Hematoma

- **Removal of nasal packing**
- **Check visual acuity(Red color),Fundus and intraocular pressure(retina can tolerate ischaemia up to 90 min).**
- **IV acetazolamide,Mannitol and topical timolol 0.6%.**
- **Mega dose steroid (**intravenous methylprednisolone 30 mg/kg over 15 minutes followed by an infusion of 5.4 mg/kg per hour for 48 hours from the first day of trauma. As patients showed improvement on their clinical findings within that 48 hours, they were placed on rapid oral taper doses of prednisone lasting 2 weeks.**).**
- **Lateral canthotomy and Cantholysis.**
- **+/_ Orbital decompression.**


STEVIE WONDER
ZC 69214
AF
Extended
MAXI
12" VERSION
45 rpm
I JUST CALLED TO SAY I LOVE YOU
From the original soundtrack album "The Woman In Red" ZL 72285
No 1 in England

Take home messages

Be an anatomist before being a surgeon

Be patient, keep in mind your personal learning curve

Don’t be scared by critical structures, but identify them

Use proper instrumentation specific for every procedure

Always get oriented

SHAHA’S APHORISM

There are only 2 kind of surgeons reporting no complications:

1) those who lie

2) those who do not operate

2024

2015

www.TheEarNoseThroatDoctor.com

SAVE THE DATE!

15th-19th September 2026

RhinoSul Conference

Master Dissection course in Rhinology

5th Conference
8th Dissection course

Tallaght University Hospital

thank you

www.TheEarNoseThroatDoctor.com

Tallaght University Hospital