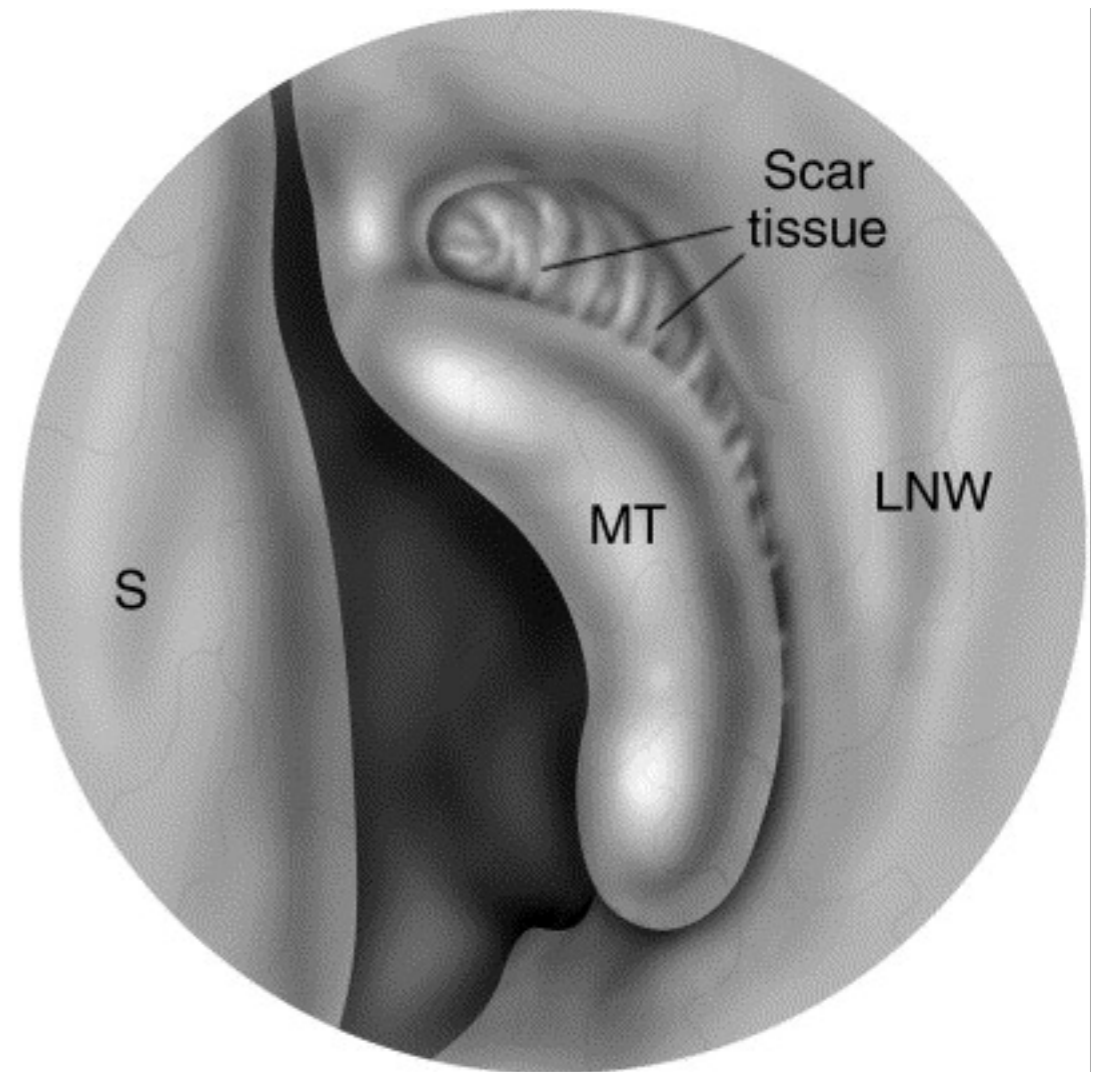


MIDDLE TURBINATE LATERALIZATION PREVENTION MEASURES



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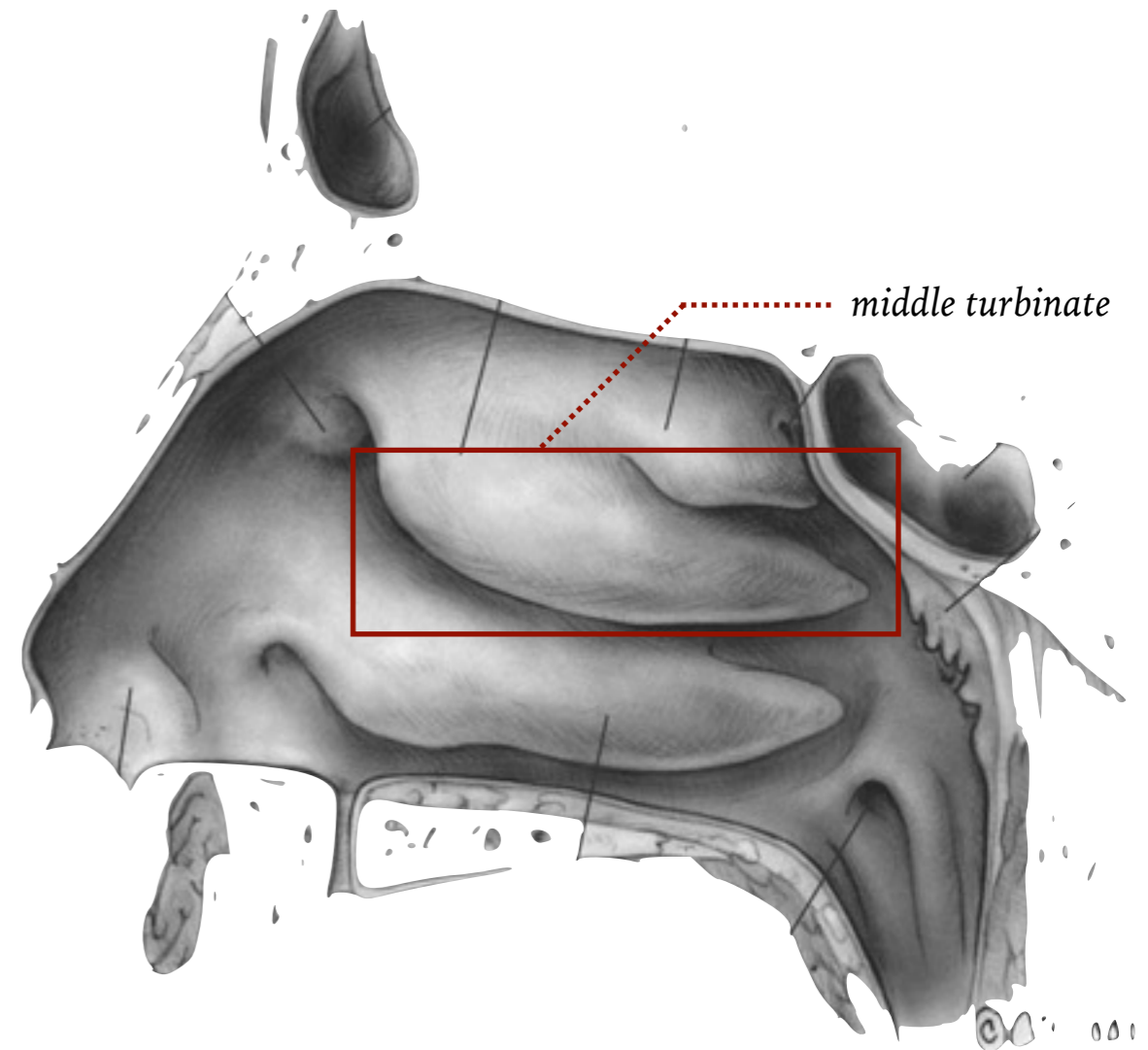
*KSUF Rhinology Round
Amal Binhazza'a*

ROAD MAP

- Basic anatomy .
- Surgical importance .
- Management options for medilization .

BASIC ANATOMY

- Embryologically derived from the ethmoid bone.
- It is covered by ciliated columnar epithelium.
- Lies medial to several important sinus structures: the anterior ethmoid air cells, the maxillary sinus the nasofrontal duct .
- Structurally, the MT can be divided into three segments.

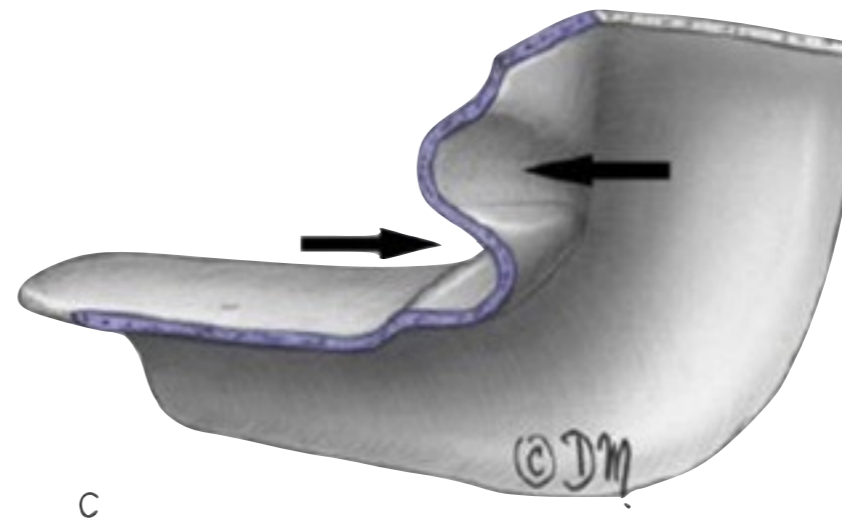
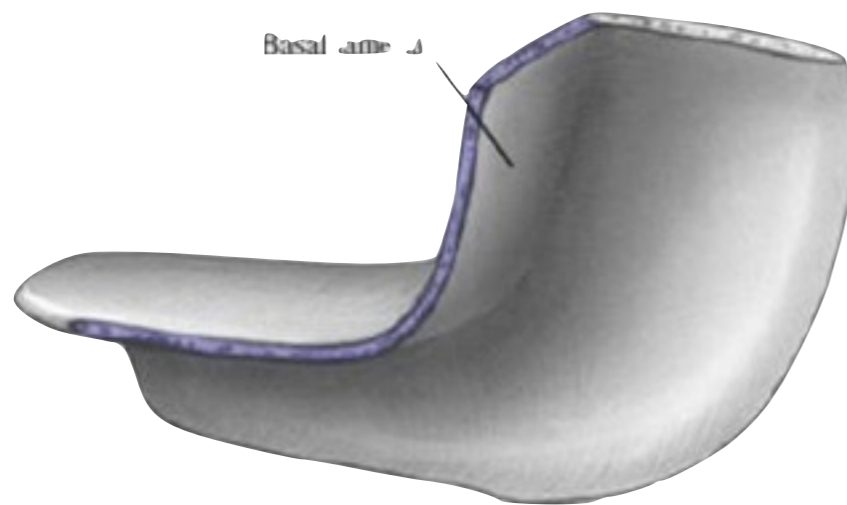


BASIC ANATOMY



Anterior Posterior

Two horizontal arrows pointing in opposite directions, one to the left and one to the right, indicating the anterior-posterior axis.



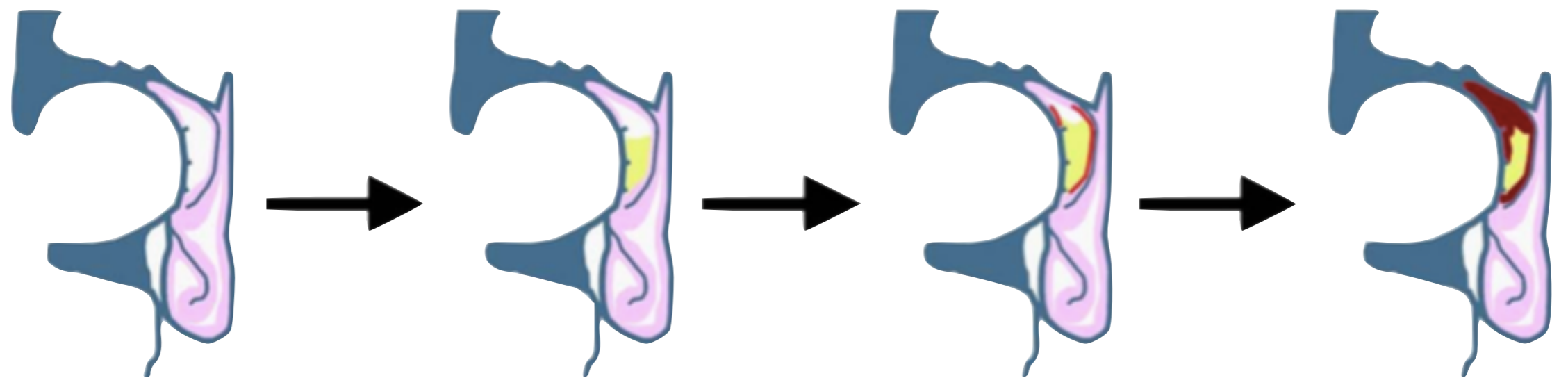
SURGICAL IMPORTANCE

- Vital landmark in revision surgery (landmark for the skull base, frontal recess, and orbit).
- The anterior-superior portion of the MT, an important surgical landmark, forms the medial boundary of the frontal recess.
- Second portion mark the anterior from posterior ethmoidal sinuses .

MIDDLE TURBINATE LATERALIZATION

- One of the most common complication post ESS is lateralization of the middle turbinate (MT), with the formation of synechia to the lateral nasal wall.
- Reported in 1% to 27% of patients.
- Risk factor for MTL :
 - ❖ It is not unusual for the mucosal surface of the MT to become traumatized during the course of ESS.
 - ❖ resection of the horizontal portion of the basal lamella can result in an unstable MT.
- Synechia formation can lead to outflow tract obstruction from the ethmoid cavity and ultimately will require additional surgery.

MTL



MANAGEMENT OPTIONS FOR MEDICALIZATION

- Middle meatal packing , stenting or spacer .
- Controlled synechia formation .
- Suture medialization of the MT to the nasal septum.
- Middle turbinate reaction .

PACKING & SPACER

- Numerous packing materials have been evaluated including FloSeal, Merocel, Gelfoam, fibrin glue, hyaluronic acid, and mitomycin C .

Hyaluronic acid

- ❖ No particular advantage to hyaluronic acid (HA) (MeroGel) over either Merocel packing for 5–7 days, no treatment, or Gelfilm in terms of clinically significant synechia.
- ❖ A conflicting study with this to find a decrease in the amount of synechia caused by HA relative to no treatment.

PACKING & SPACER

MMC

No study able to find a statistically significant difference versus untreated controls.

FloSeal

FloSeal causes no more adhesions than untreated controls.

Fibrin glue and platelet gel

are comparable in adhesion rate to Merocel .



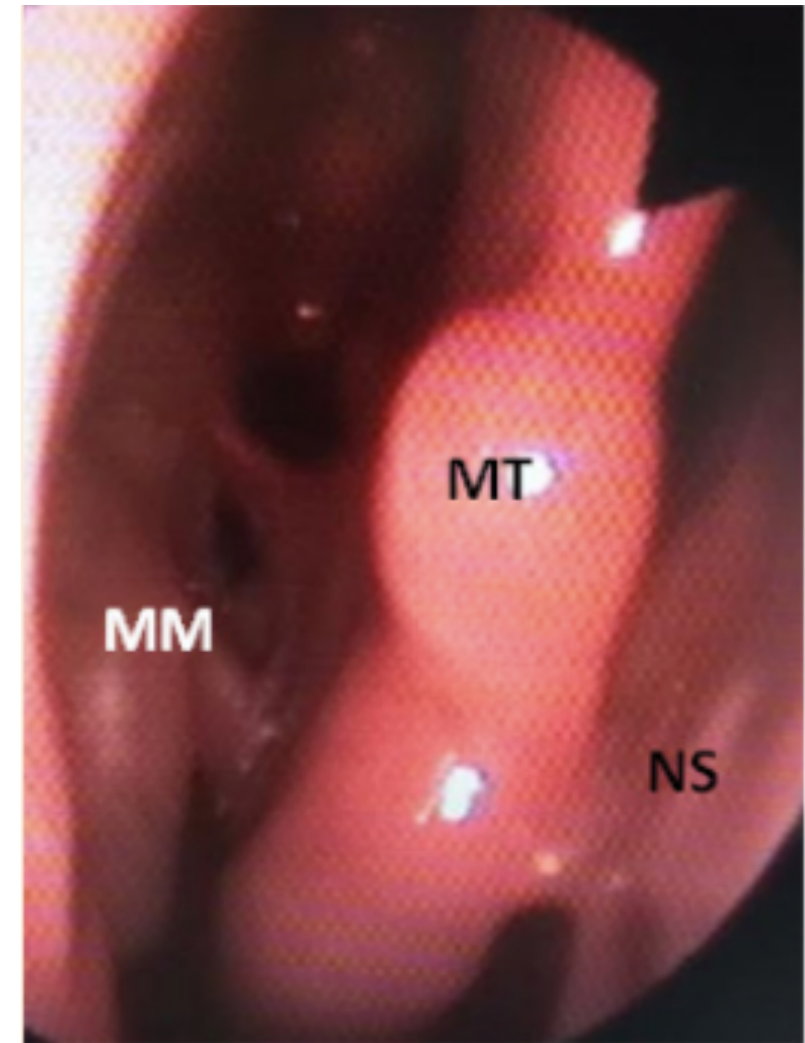
Should packing be placed at all?

CONTROLLED THERAPEUTIC SYNECHIA

➤ Shown to be effective in prevention of lateralization in as many as 88% of patients .

➤ Bolgeraization :

- ❖ consists in the performance of mucosal abrasion on the medial aspect of the anteroinferior portion of the middle turbinate and, on the adjacent nasal septal mucosa .
- ❖ requires postoperative nasal packing for up to 10 days .



CONTROLLED THERAPEUTIC SYNECHIA

Friedman and Schalch :

- using the microdebrider to create the mucosal irritation on both the septum and turbinate.
- Following the denuding of the mucosa, bovine serum albumin tissue adhesive (BioGlue) applied to the region .
- The 2 surfaces then pressed together with temporary nasal packing for 3 minutes.

CONTROLLED THERAPEUTIC SYNECHIA

Kuppersmith and Atkins :

- Used a bioresorbable implant (L-lactide-co-glycolide) used to medialize the middle turbinate.
- The implant is placed between the septum and middle turbinate either during surgery to optimize access or at the conclusion of the surgery to prevent lateralization and synechia formation.
- The implant removed 2 weeks later .

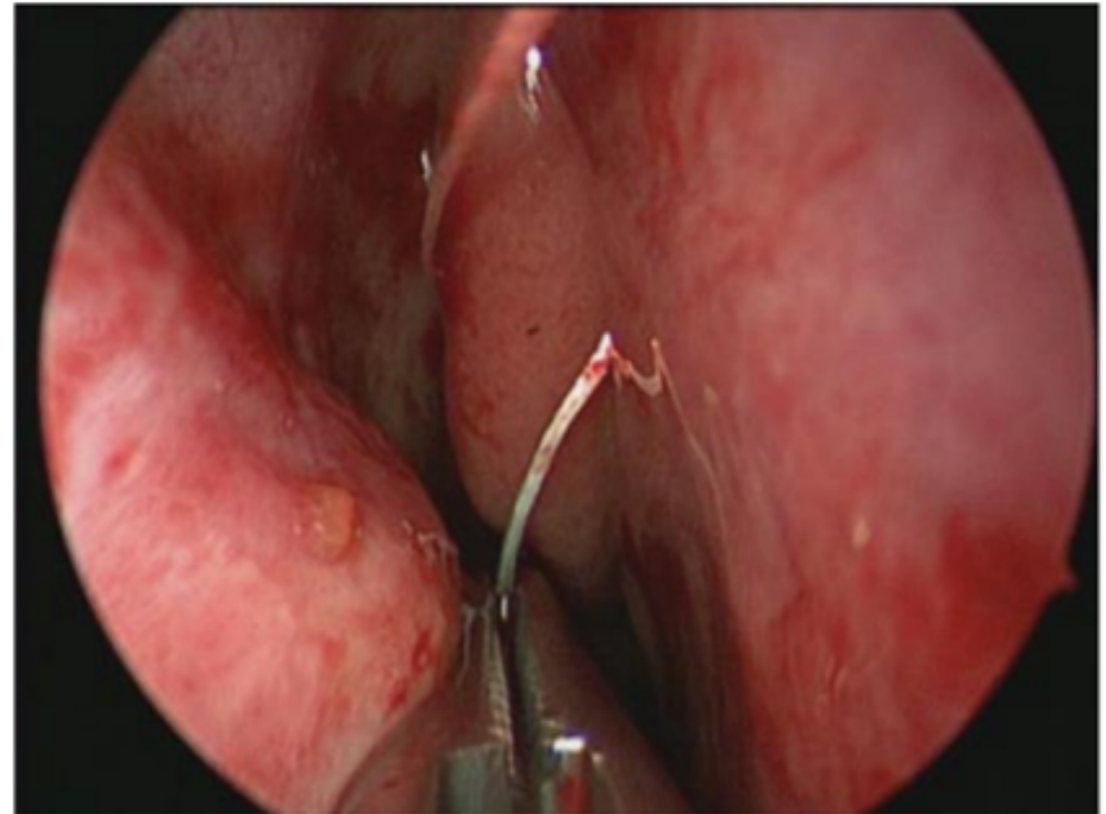
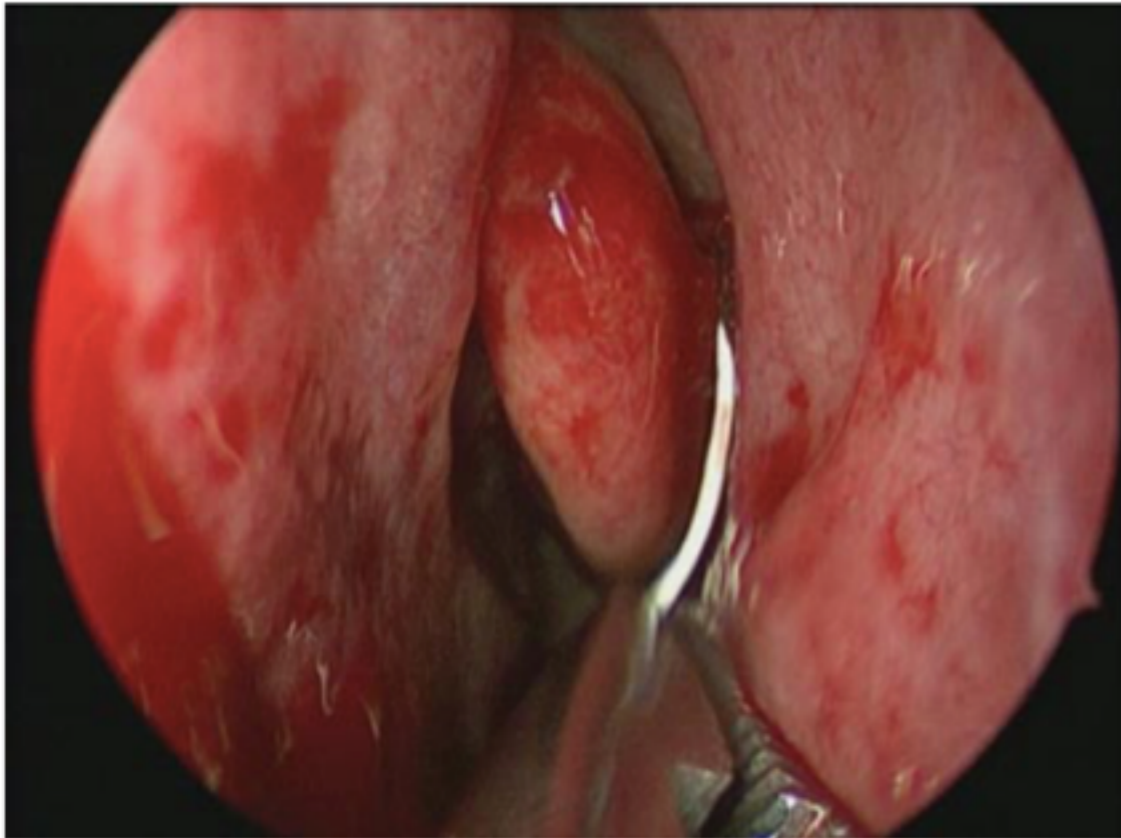
CONTROLLED THERAPEUTIC SYNECHIA

Technique	Technical difficulty	Intraoperative access	Nasal packing	Planned synechiae
Bolger	Low	Low	Present	Present
Friedman	Moderate	Low	None	Present
Kuppersmith	Moderate	Low	Present	None

SUTURE CONCHOPEXY

- Considered most definitive method to prevent lateralization with 90-92% success rate .
- Using a 4-0 resorbable suture (eg. Vicryl™, Polisorb™...) with the needle partially straightened that allows easy passage through the tissue.

TECHNIQUE

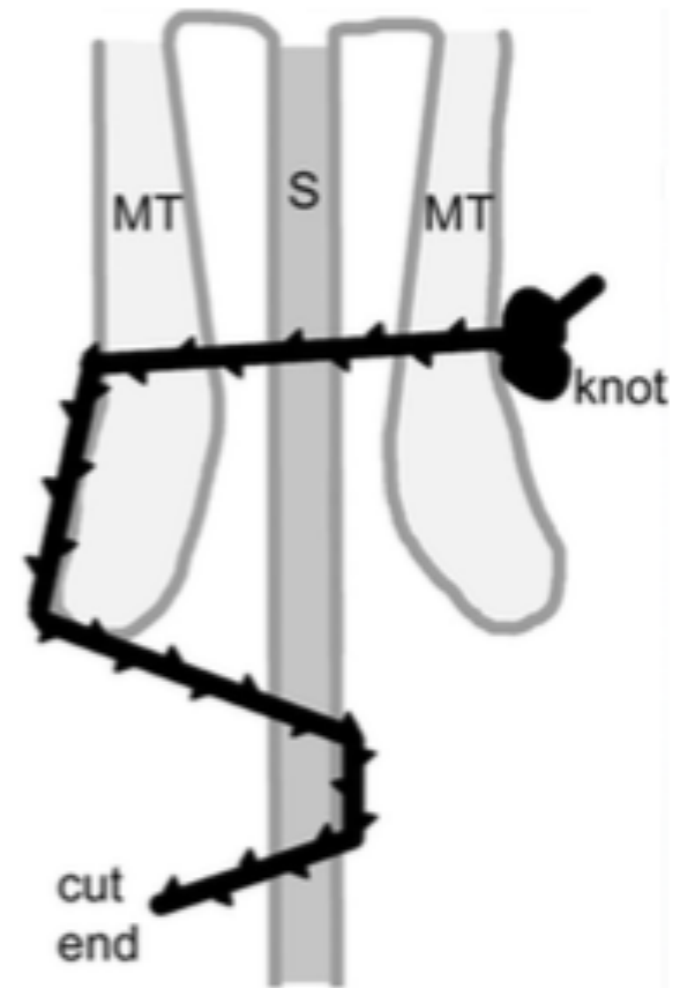
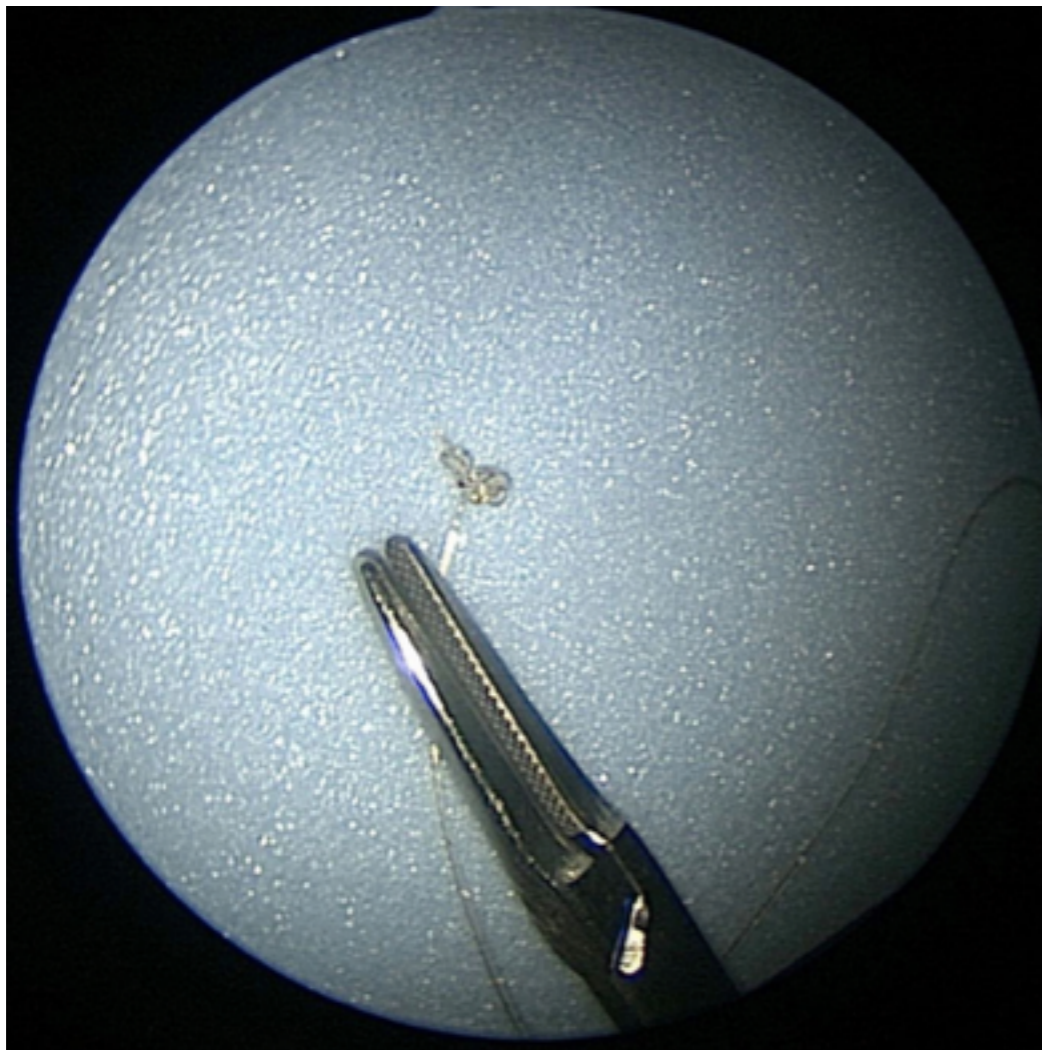


SUTURE CONCHOPEXY

In a retrospective review of suture medicalization :

- N=85 patients.
- The adhesions occurring in only 10% of patients (4 of the 157 MT) developed synechiae substantial enough to become clinically significant.
- They concluded that the development of clinically significant adhesions following medicalization of the middle turbinate :
 - ❖ Uncommon
 - ❖ the technique should be considered as an alternative to packing or stenting.

KNOT-FREE SUTURE MEDIALIZATION OF THE MIDDLE TURBINATE



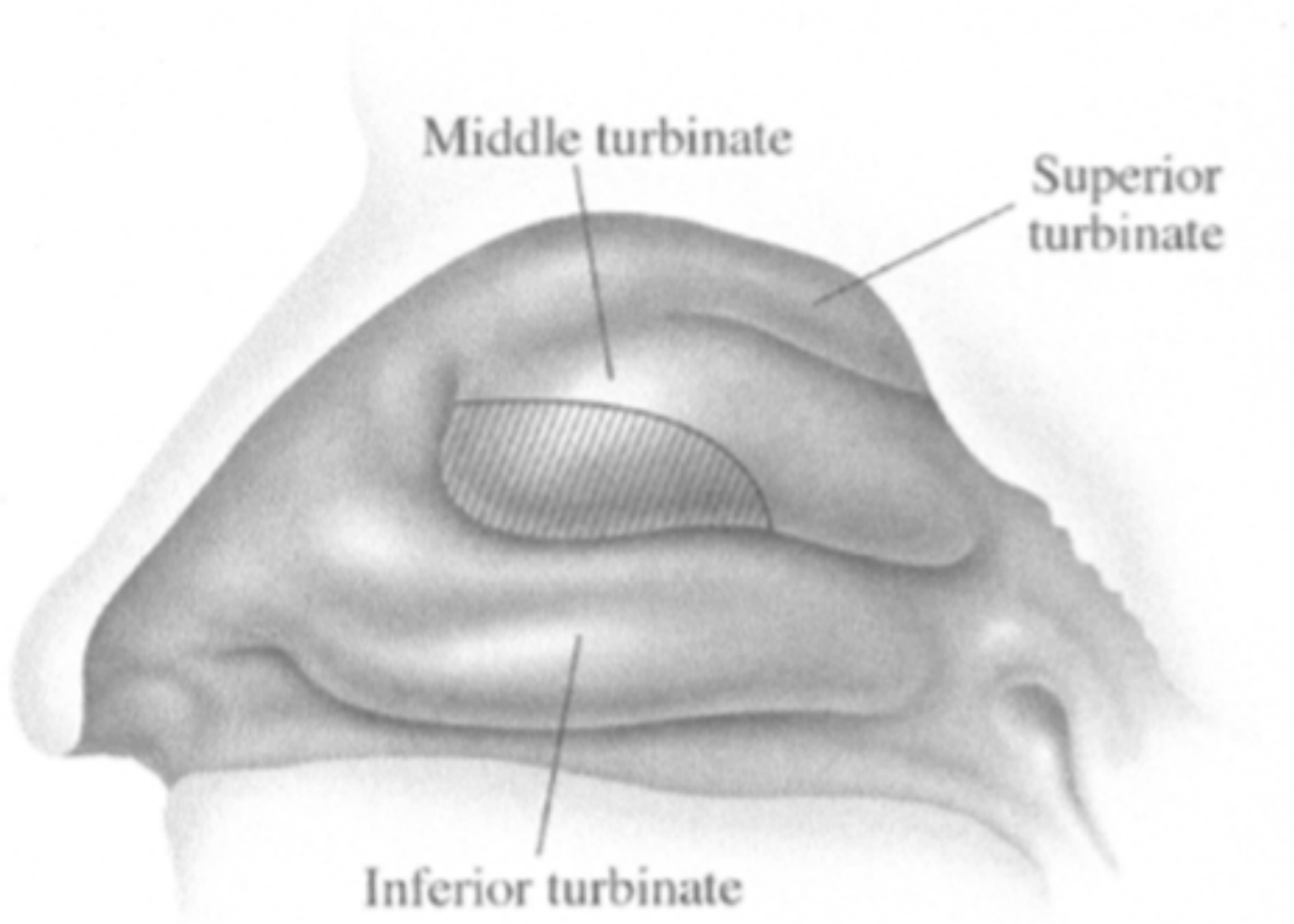
RESULTS

- This technique shortens and simplifies the process .
- It has equal efficacy compared to traditional suture medialization techniques .

SUTURE CONCHOPEXY AND OLFACTION

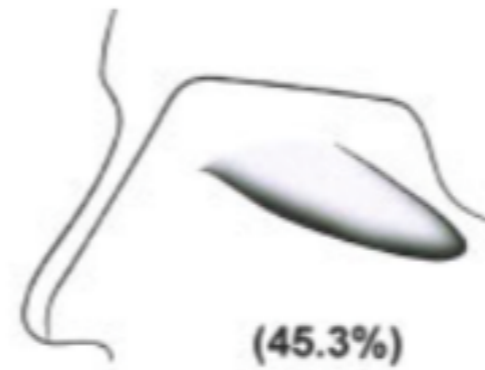
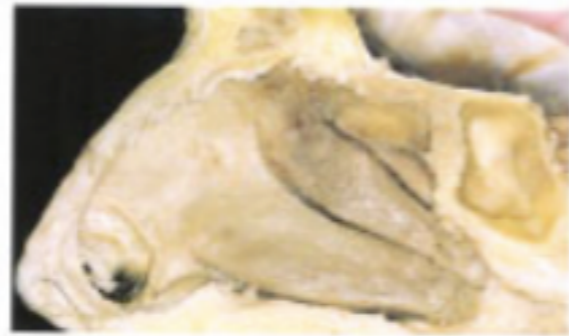
- The olfactory neuroepithelium lies superior in the groove between the MT and septum, concerns have been raised as to the effect of this maneuver on olfaction.
- n= 153 patients .
- Objective assessment of olfactory function, using the University of Pennsylvania Smell Identification performed before and, on average, 6 months after ESS .
- Testing showed a mild improvement (mean UPSIT increase from 35 to 36; p 0.0001) in olfactory function after surgery when compared with preoperative assessment .
- In conclusion, the study showed MT suture medialization does not impair olfactory function.

MTR

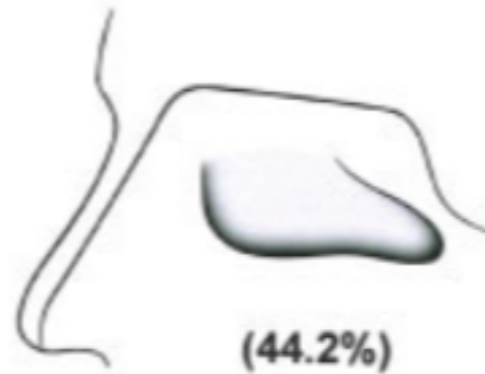


MT CLASSIFICATION

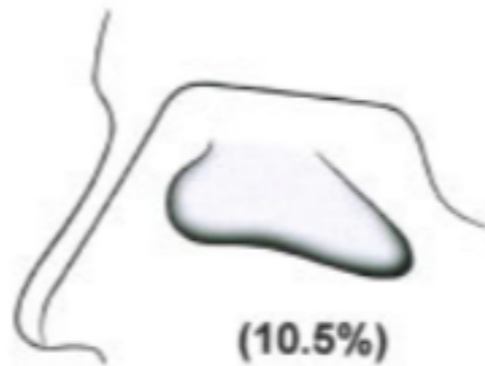
Type 1



Type 2



Type 3



MTR

- This technique has been scrutinized over the years because of the functional importance of the MT in humidifying inspired air and creating laminar airflow.
- Aggressive MT resection may make patients more prone to iatrogenic atrophic rhinitis, and the MT remnant may still lateralize and obstruct the nasofrontal recess.

IS MTL A COMPLICATION OF SINUS SURGERY OR IS IT JUST A HARMLESS SEQUELAE?

➤ MTL and Postoperative Symptoms

No significant association between MTL and any of the symptom scores .

➤ MTL and Revision Surgery

The results showed a lower proportion of patients undergoing revision surgery in the nonlateralized group.

➤ No association between MTL

- ❖ Preoperative clinical variables (including sex, asthma, polyp status, primary vs. revision surgery).
- ❖ Specific operative interventions (including septoplasty and concha bullosa reduction).

**WHAT IS THE EXPERT
OPINION ?**