Disadvantages of Minimal Techniques for Surgical Management of Chronic Rhinosinusitis

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Purpose of Review

- Compare efficiency of functional endoscopic sinus surgery (FESS) and minimal invasive sinus technique (MIST)

  - MIST (since 1996) → cure even severe pathologic disease with conservative approach – “threshold surgery”
  - FESS (since mid-1980s) → current gold standard surgery of CRS
Surgical Technique

- **MIST:** transition space surgery, **goal:** reestablishment of ventilation and drainage through natural sinus ostia, without touching the larger sinuses. Even massive pathologic mucosal change will reverse with reestablishment of normal drainage.

- The only stepwise intranasal intervention!
- **Procedure:** local anesthesia → remove uncinate process → (remove posterior wall of the agger nasi cell in addressing frontal recess) → remove ethmoidal bulla
- **Embodiment of functional concepts!**
- **Advantages:** less mucosal stripping, less complications of bone exposure, minimized mucosal scarring, improve disease resolution, quick to perform, minimal postoperative care.
FESS VS. MIST

- Ventilation of sinuses
- Delivery of topical medications
- Management of persistent disease
- Anatomic variations
- Subjective and objective efficacy
Ventilation of Sinuses

- Hypoxia unlikely sole trigger for inflammatory

- End-stage CRS manifest as hypertrophic nasal mucosa and nasal polyposis
  - Allergic inflammation and nonallergic inflammation
  - Fungal colonization – recruitment of eosinophils
  - *S. aureus* act as superantigen – IgE
  - Elevated cysteiny1 leukotriene level, GM-CSF, IL-3, IL-5

- Simple ventilation of MIST alone is inadequate to treat severe CRS!
Delivery of Topical Medications

- **Delivery mechanism of topical medications**
  - Nasal lavage (amphotericin B), nebulized form (I.V. antibiotic)

- **Efficacy of topical preparations**
  - Ability of drugs to reach the diseased mucosa

- **Penetration: FESS > MIST > nonoperated**
  - Post-op. sinus opening (FESS > MIST)

- **FESS allows topical medications to reach diseased mucosa within the paranasal sinuses!**
Management of Persistent Disease

- **Thick eosinophilic mucin with fungi, eosinophils** (Chronic gram-negative infections, allergic fungal sinusitis) → perpetuate the inflammatory cascade and influence underlying condition of mucosa
  - Debridement & irrigation: FESS > MIST

- **Bone of diseased sinus:**
  - Extensive inflammatory spread through Haversian systems
  - Potential source of infection and inflammation
  - MIST: left potential source for disease persistence

- **FESS is a better procedure for the management of persistent infection and inflammation in CRS!**
Anatomic Variations

- **Limitation of MIST**
  - Treat minimal disease localized to the maxillary sinus and/or anterior ethmoid cells
  - **Technical problems:** mucosal stripping; major orbital, skull base, and intracranial injuries

- **FESS accounts for anatomic variations complicating sinus surgery!**
Subjective & Objective Efficacy

**Subjective outcomes:**
- Short-term improvement: FESS (97.5 %, 18 months) = MIST
- Long-term results (7.8 years) FESS: 98.4 % / MIST: -

**Objective outcomes:**
- Endoscopic examination (18 months)

**FESS alone has demonstrated short- and long-term subjective and objective efficacy!**
Conclusion

- FESS has shown true subjective and objective efficacy in conjunction with appropriate medical therapy.

- FESS
- MIST
Thank You for Attention!