Skull Base Injury
Skull Base Injury

- **Incidence**
  - Should be <1% risk of CSF leak for ESS

- **Treatment**
  - If during surgery, immediate repair with mucosal graft with/without bone graft
Skull Base Injury

Danger Areas

- Lateral lamella of the cribriform plate
- Middle turbinate attachment
- Posterior ethmoid roof
- Entering sphenoid too high
- Frontal recess
- Too posterior when entering frontal sinus
Recognition of Skull Base Injury

- Washout sign (clean area in a blood-stained field)
- Bone violation
- Excessive bleeding at skull base
Preoperative disease severity at sites of subsequent skull base defects after endoscopic sinus surgery.


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Amount of Disease at Subsequent Skull Base Defect Site

- No Disease: 63%
- Minimal Disease: 29%
- Complete Opacification: 8%
Case 1

Baseline

Pre-repair
Case 2

Baseline                  Pre-repair
Risk of SB Injury
Thickness of non-diseased tissue

- Minimal mucosal disease
  - Thin mucosa
  - Strips more easily
    - Possibly exposing skull base

- Thin, non-osteitic bone
  - More easily damaged
  - Provides less resistance to manipulation
  - More transparent
    - Mistaken for another ethmoid cell
Pneumocephalus

- Presents postoperatively after a forceful activity
  - Sneeze, cough, strain, vomit
- Headache
- Mental status change
Preventable Complications
Poor Judgement or Technique
Complications
Poor patient and procedure choice
Complications

Synechiae

Result of:

- Mucosal trauma
- Middle turbinate destabilization
- Inadequate access

Solution:

- Atraumatic technique
- Mucosal preservation
- Middle turbinate medialization
Frontal Mucocele from Middle Turbinate Lateralization
Conclusions

- Complications happen
- Surgeon needs to be able to:
  - Avoid
  - Recognize
  - Treat to resolve or minimize morbidity
THANK YOU