Comparison of canine fossa trephination to trans-nasal removal of simulated fungal debris from the maxillary sinus

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Introduction

We measured practical measures that would impact both operative outcomes (retention of sinus debris) and economic measures (time in operating theater and microdebrider blade utilization). This study found that both approaches appear to leave a small amount of material after attempted removal. For TN - staff faster than trainee (323.4 vs 272.4, p=0.21)

Methods

- Cadaveric maxillary sinuses were filled with simulated AFS debris
- Compared endoscopic removal techniques:
  - Transnasal (TN) approach through maxillary antrostomy
  - Canine fossa trephination approach
- Progressed from 0 to 40, 90, and 120 degree blades until complete as possible removal
- Both techniques were performed on the same sinus to permit paired analysis
- CT scans were performed after TN and CFT to compare extent of removal

RESULTS:

- Operative Time for Debris Removal
  - Trainee surgeon: CFT approach was faster than TN (320.4 vs 458.8, p=0.017)
  - Staff rhinologist: CFT approach again significantly faster than TN (330.4 vs 272.4, p=0.021)
  - For TN - staff faster than trainee (398.8 vs 438.51, p=0.755)

- Amount of Debris Removed
  - CFT approach left less debris than TN approach (388.0 vs 238.5, p=0.015)
  - Both approaches appear to leave a small amount of material after attempted removal

- Clogging of Microdebrider
  - Our analysis with an AFS analog showed that the straight blade clogged at least once in 20% of cases
  - Efforts to improve the structure and function of microdebrider blades is necessary

Conclusion

Canine fossa trephination approach appears to have a faster learning curve and results in minimal long term sequelae. For CFT - no difference in times left some debris behind may be responsible for similar clinical outcomes in some studies. Reinforces the need to thoroughly irrigate this sinus at the end of surgical debridement, regardless of the approach.

References