



Assessing risk of severe complications after endoscopic trans-nasal trans-sphenoidal (TNTS) surgery: A comparison of frailty, ASA and comorbidity scores

Jordan M Sukys MD¹, Roy Jiang BS², R. Peter Manes MD FACS¹

¹Dept. of Surgery, Div. of Otolaryngology, Yale School of Medicine, New Haven, CT

²Yale School of Medicine, New Haven, CT

Background/Hypothesis

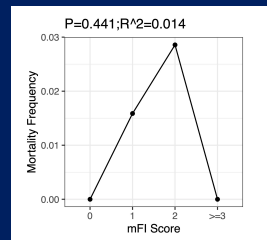
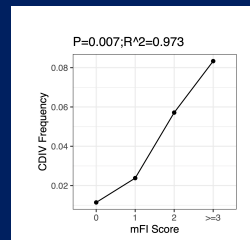
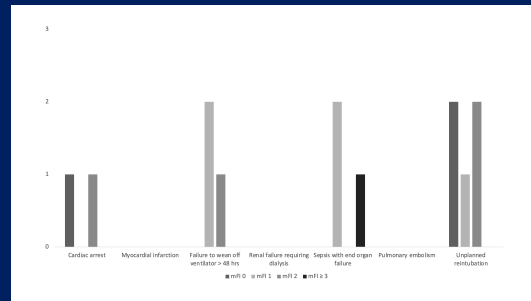
Endoscopic trans-nasal trans-sphenoidal approaches to the sella (TNTS) are well-tolerated procedures^{1,2}. Though rare, complications can be severe due to duration and location of surgery^{3,4}. TNTS is often performed in older patients, but age is not a reliable predictor of complication rates⁵. Frailty has been demonstrated to correlate with worse clinical outcomes following TNTS⁶, but comprehensive risk stratification is still needed for aging patients who undergo TNTS. We hypothesize that frailty, ASA and comorbidity scores are positively correlated with severe complication rates following TNTS surgery

Methods

We performed a retrospective review of the American College of Surgeons National Surgical Quality Improvement Project (ACS-NSQIP) database identifying adults who underwent TNTS between 2010-2013. Clavien-Dindo grade IV complications and mortality were analyzed for association with ASA, mFI and CCI scores. Univariate and multivariate regression analysis were performed.

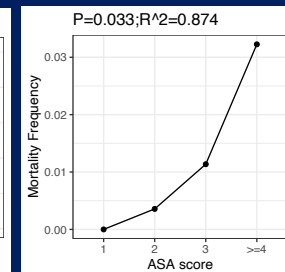
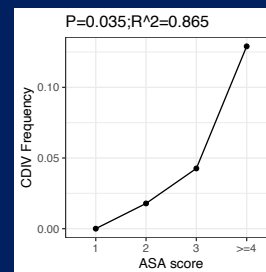
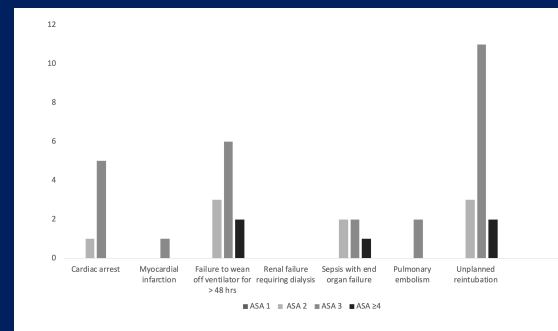
Results

- 680 subjects identified underwent TNTS between 2010-2013
 - Detected 41 instances of CDIV complications (6%), 6 instances of mortality (0.9%)



- mFI scores were significantly correlated with CDIV complications, ($p=0.007$), but not mortality ($p=0.44$), on univariate analysis
 - CCI was not significantly associated with CDIV complications or mortality on univariate analysis

Results



- ASA was significantly associated with both CDIV complications ($p=0.04$) and mortality ($p=0.03$) on univariate analysis
 - ASA score (OR 2.96, $p<0.01$) and operation duration (OR 1.01, $p<0.01$) were both significantly associated with CDIV complications on multivariate analysis while controlling for mFI

Conclusions

1. Severe complications occur at a clinically meaningful rate and should be discussed with patients considered for TNTS
2. Frailty is associated with increased ICU-level complication rates, while ASA is associated with increased mortality rates and predictive of ICU-level complication rates. CCI is not associated with severe complications following TNTS
3. Surgeons should consider mFI and strongly consider ASA scores when discussing severe complication risk after TNTS with patients and colleagues

References

1. Jho HD et al.. Endoscopic endonasal transsphenoidal surgery: Experience with 50 patients. *J Neurosurg.* 1997.
2. Rudnik A, et al. Endoscopic transnasal transsphenoidal treatment of pathology of the sellar region. *Minim Invasive Neurosurg.* 2005.
3. Ammirati M et al. Short-term outcome of endoscopic versus microscopic pituitary adenoma surgery: A systematic review and meta-analysis. *J Neurol Neurosurg Psychiatry.* 2013.
4. Wang F et al. Endoscopic endonasal transsphenoidal surgery of 1,166 pituitary adenomas. *Surg Endosc.* 2015.
5. Tardivo V et al. Surgical management of pituitary adenomas: does age matter? *Pituitary.* 2020.
6. Asemota AO et al. Impact of frailty on short-term outcomes in patients undergoing transsphenoidal pituitary surgery. *J Neurosurg.* 2020.