Preoperative Hypoalbuminemia as a Predictor of Postoperative Complications After Functional Endoscopic Sinus Surgery: A Propensity-Matched Analysis

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Introduction

- Nutritional assessment is often omitted from preoperative risk stratification in functional endoscopic sinus surgery (FESS)[1].
- **Hypoalbuminemia** is an established **marker of poor nutritional status and predictor of morbidity** across several surgical populations[2,3].
- Evaluating its **association with complication rates following FESS** may identify a modifiable risk factor to further improve outcomes and safety.

Methods

- Retrospective cohort study using the TriNetX database to identify adults undergoing FESS
- Grouped by preoperative albumin: Low (<3.5 g/dL; n = 2,308) vs. Normal (≥3.5 g/dL; n = 9,161)
- Propensity score matching for cardiovascular, metabolic, and other comorbidities → n = 2,233 per cohort
- 30-day healthcare utilization, reoperation, and postoperative complications compared via odds ratios (95% CI)

Results

Demographic and clinical characteristics

Characteristic	Hypoalbuminemia (n = 2,233)	Normal Albumin (n = 2,233)	*P* value
Age at index, mean ± SD (y)	52.6 ± 20.1	52.4 ± 18.9	0.698
Female sex, n (%)	1,013 (45.4%)	1,039 (46.5%)	0.435
Hypertensive disease, n (%)	1,256 (56.2%)	1,285 (57.5%)	0.381
Diabetes mellitus, n (%)	765 (34.4%)	785 (35.2%)	0.530
Ischemic heart disease, n (%)	473 (21.2%)	480 (21.5%)	0.798
Heart failure, n (%)	341 (15.3%)	346 (15.5%)	0.836
Chronic obstructive pulmonary disease, n (%)	255 (11.4%)	286 (12.8%)	0.155
Chronic kidney disease, n (%)	484 (21.7%)	455 (20.4%)	0.287
Overweight/obesity, n (%)	524 (23.5%)	547 (24.5%)	0.420
Tobacco use, n (%)	79 (3.5%)	73 (3.3%)	0.620

Standardized differences for all characteristics shown were <0.05, indicating sufficient balance. Additional matched covariates (race/ethnicity, cardiovascular risk factors including atrial fibrillation) are not listed but were also well balanced after matching.

Healthcare utilization

Outcome	Odds Ratio	95% CI	*P value*
Emergency department visit	**1.42**	1.13–1.78	0.002
Hospital readmission	**2.35**	1.87–2.95	<0.001
Blood transfusion	**2.12**	1.64–2.73	<0.001
30-day reoperation	**2.34**	1.75–3.13	<0.001

Complication rates

Outcome	Odds Ratio	95% CI	*P value*
Pneumonia	**1.88**	1.15–3.07	0.011
Acute kidney failure	**2.99**	1.88–4.74	<0.001
Venous thromboembolism	**3.53**	1.80–6.92	<0.001
Sepsis	**3.93**	2.27–6.82	<0.001
*Epistaxis requiring intervention**	**1.00**	0.63–1.58	1.00

**Epistaxis requiring intervention was observed in 1.7% of patients in each cohort.*

Conclusions

- Preoperative hypoalbuminemia independently predicts **adverse postoperative FESS outcomes**
- Patients with **low albumin saw increased** 30-day **healthcare utilization and rates of medical complications**.
- There may be value in albumin optimization as part of preoperative risk-reduction strategies, particularly in high-risk patients.

References

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