

## Modified Frailty Index Associates with Outcomes and Survival in Patients who undergo Skull

# Base Surgery for Nasal or Paranasal Sinus Malignancy: A Study of a National Data Base

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**Objective** 

- The modified frailty index (mFI-5) is a validated risk stratification tool that has been used to reliably predict frailty, morbidity, and mortality after surgical procedures, including anterior cranial fossa surgery.
   However, risk stratification for surgery involving skull base resection of sinonasal malignancy has not been previously described beyond 30 days following surgery.
- □We aim to characterize post-operative outcomes in patients undergoing anterior skull base resection of sinonasal malignancy utilizing the mFI-5 instrument.

# **Methods**

Data were queried from the TriNetX United States-Collaborative Health Records Network on patients who underwent skull base

Results

A total of 8,343 patients (2,981 with mFI-5=0; 5,329 with mFI-5=1; 2,485 with mFI-5=2; 730 with mFI-5=3) were included in the final analysis.

## **Complications 2 months post-surgery**

 Higher frailty score was correlated with increasing odds of developing any complication at 2 months postsurgery: 1.68 (p< 0.0001) to 1.921 (p< 0.0001) then</li>
 2.552 (p< 0.0001) for mFI-5=1,2,3, respectively This study included 202 patients (mean age, 35.8 + 16.1 years; 60% male).

# **Complications 6 months post-surgery**

□Higher frailty score was associated with increased odds of mortality 6 months after surgery: 1.331 (p=0.0459),

- surgery.
- □Inclusion criteria included a diagnosis of Malignant neoplasm of the nasal cavity (ICD-10 C30.0), or Malignant neoplasm of the accessory sinuses (ICD-10 C31).
- Patients were categorized into cohorts based on their mFI-5 index score, which included diagnoses of non-dependent functional status, hypertension, obstructive respiratory disease, heart failure, and diabetes mellitus.
- □Each frailty diagnosis contributed a score of 1, with a maximum possible score of 5.
- Propensity-score matching was performed to compare postoperative outcomes across cohorts.
- Outcomes evaluated included survival, meningitis, cerebrospinal fluid (CSF) leak, percutaneous endoscopic gastrostomy (PEG) dependence, tracheostomy dependence, pneumonia, infection (including sinusitis), pulmonary embolism, stroke, and visual disturbance.

□Comparisons were made against the control group (mFI-5 score of

- 1.692 (p=0.0006), and 1.835 (p=0.0055) for mFI =1,2,3 respectively.
- A higher frailty score at 6 months also predicted increased odds of PEG dependence (2.069, 2.167, 2.458), tracheostomy dependence (1.7, 1.848, 2.423), postsurgical infection (1.23, 1.397, 1.455), visual disturbance (1.529, 1.839, 2.219) where (OR mFI-5=1< OR mFI-5=2< OR mFI-5=3).</li>
   Complications 3 years post-surgery
- At 3 years post-surgery, increased frailty predicted increased odds of mortality 1.593 (p< 0.0001), 1.705 (p< 0.0001) and 1.921(p< 0.0001) for mFI =1,2,3 respectively.</li>
- A higher frailty score predicted increased odds of developing a CSF Leak (1.315, 1.568, 2.053), PEG dependence (1.822, 2.287, 2.494), tracheostomy dependence (1.859, 2.135, 2.841), post-surgical infection (1.238, 1.481, 1.631), pneumonia (3.096,

0) at time intervals of 2 months, 6 months, 1 year, and 3 years following surgery.



5.152, 8.681),visual disturbance (1.58, 1.981, 2.582) where (OR mFI-5=1< OR mFI-5=2< OR mFI-5=3).

#### Conclusion

 Greater mFI-5 scores in patients undergoing Skull Base Surgery for Sinonasal Malignancy predicted decreased survival and increased incidence of postoperative infection, CSF leak, PEG dependence, tracheostomy. dependence and visual disturbance and pneumonia.
 In particular at 3 years, patients with an mFI-5=3 had greater odds of decreased survival, meningitis, CSF leak, PEG dependence, tracheostomy dependence, pneumonia, infection.

#### References

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