Prognostic Factors for Perioperative Delirium in Head and Neck Cancer Patients: A Multi-National Database Analysis

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ABSTRACT

Delirium is a common postoperative complication in older adults undergoing surgical resection and reconstruction for head and neck cancer and more prevalent in patients with preexisting comorbidities. Postoperative delirium leads to increased costs, complication rates, re-admission rates, in-hospital mortality, and additional distress on the patient and their family. Additionally, there is limited data on the affect specific risk factors have on a patient's likelihood of developing postoperative delirium. This study aims to identify the association of key modifiable risk factors on development of postoperative delirium following head and neck cancer surgery.

SETTING

This study is a retrospective cohort database study conducted using TriNetX. TriNetX is a live, HIPPA-compliant federated cloud electronic health record research network representing pooled data from 125 million patients from 95 healthcare organizations in the United States, Taiwan, Japan, Brazil, and India.

There were 42,248 patients with a history of surgical management for head and neck cancer requiring postoperative hospital admission identified.

TABLE 1

Definition of Delirium as defined by ICD code and name

Delirium Definition	
ICD Code	**Name**
F05	Delirium due to known physiological condition
F10.231	Alcohol dependence with withdrawal delirium
F11.23	Opioid dependence with withdrawal
F15.921	Other stimulant use, unspecified with intoxication delirium
R40.0	Somnolence
R41.0	Disorientation, unspecified

Items that were found to be not significant based on their confidence interval and/or a p-value of <0.05 included: post-procedure fever, history of COVID-19 diagnosis, obstructive sleep apnea, lipidemia, recurrent Mood Disorders, persistent Mood Disorders, and low BMI.

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TABLE 2

Definition of Head and Neck surgery cohort as defined by CPT code and procedure name

Group 1: Surgery	
CPT Code	**Name of Procedure**
21025	Excision of bone; mandible
21045	Excision of malignant tumor of mandible; radical resection
21046	Excision of benign tumor or cyst of mandible, requiring intra-oral osteotomy
21198	Osteotomy, mandible, segmental
21215	Graft, bone; mandible
21244	Reconstruction of mandible, extraoral, with transosteal bone plate
21248	Reconstruction of mandible or maxilla, endosteal implant; partial
38720	Cervical lymphadenectomy (complete)
38724	Cervical lymphadenectomy
41150	Glossectomy; composite procedure with resection floor of mouth and mandibular resection, without radical neck dissection
41155	Glossectomy; composite procedure with resection floor of mouth and mandibular resection, and radical neck dissection
1003897	Reconstruction of mandible or maxilla, endosteal implant
1005785	Maxillectomy
1005819	Laryngectomy
1005824	Partial laryngectomy
1005829	Pharyngolaryngectomy, with radial neck dissection
1014052	Excision of malignant tumor of mandible
1014056	Osteotomy, mandible, segmental

TABLE 3

Definition of Head and Neck cancer cohort as defined by ICD code, diagnosis, and location name

Group 2: Head and Neck Cancer	
ICD Code	**Name**
C00-C14	Malignant neoplasms of lip, oral cavity and pharynx
C00	Lip
C01	Base of tongue
C02	Other and unspecified parts of tongue
C03	Gum
C04	Floor of mouth
C05	Palate
C06	Other and unspecified parts of mouth
C07	Parotid gland
C08	Other and unspecified major salivary glands
C09	Tonsil
C10	Oropharynx
C11	Nasopharynx
C12	Pyriform sinus
C13	Hypopharynx
C14	Other and ill-defined sites in lip, oral cavity and pharynx
C30	Malignant neoplasm of nasal cavity and middle ear
C31	Malignant neoplasm of accessory sinuses
C32	Malignant neoplasm of larynx
O-C31	Accessory sinuses
O-C32	Larynx
C76.0	Malignant neoplasm of head, face and neck
O-C76.0	Head, face or neck, NOS

FIGURE 1

Kaplan-Meier Hazard Ratio for needing psychiatric pharmacological treatment perioperatively using $p<0.05$.

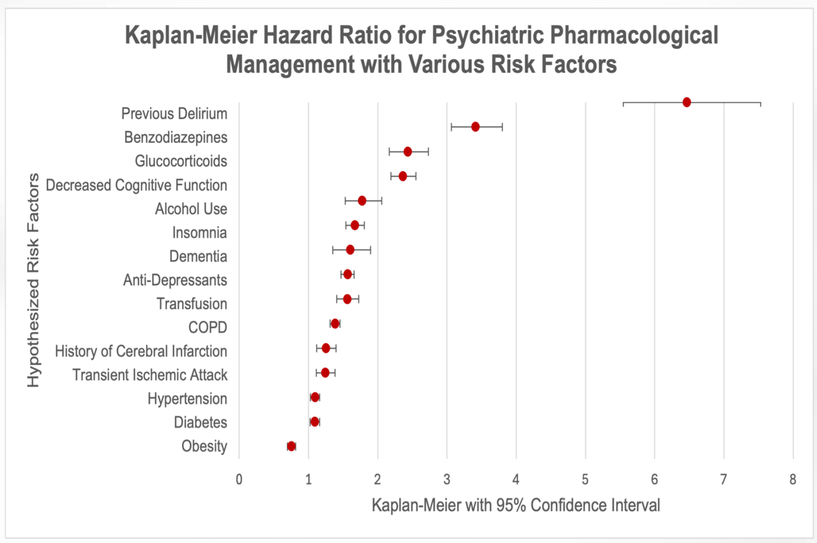


FIGURE 2

Kaplan-Meier Hazard Ratio for needing psychiatric services perioperatively using $p<0.05$.

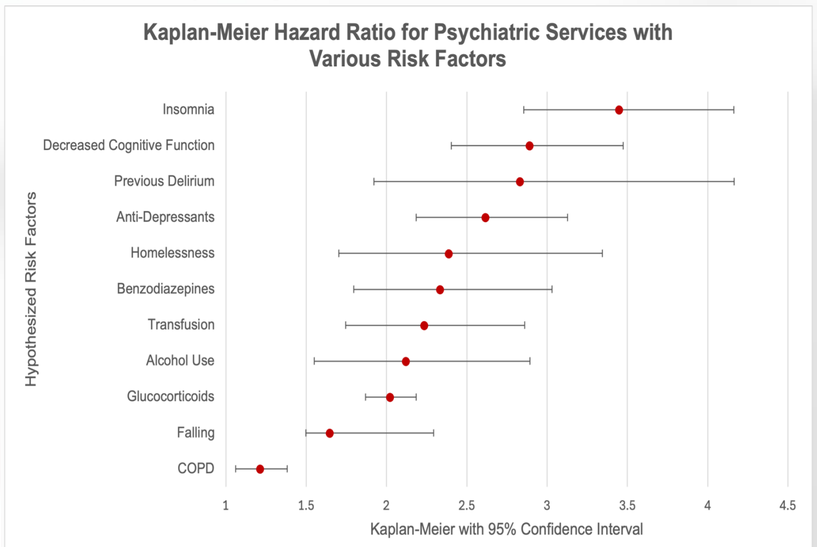
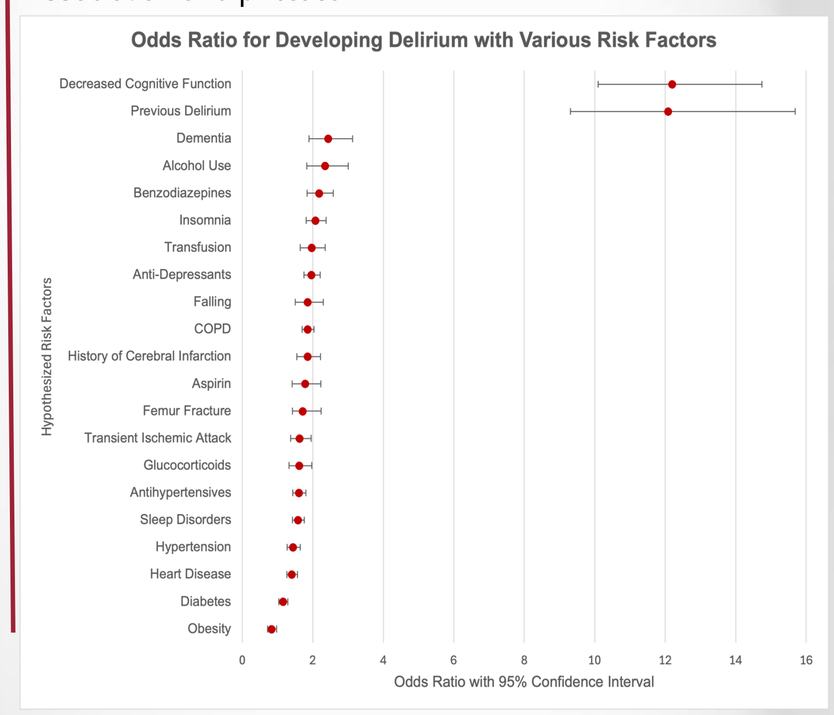


FIGURE 3

Odds Ratio of developing Delirium using Measures of Association and $p<0.05$.



CONCLUSIONS

Postoperative delirium risk is increased in patients with a history of stroke, dementia, or delirium as well as in patients taking antidepressants, benzodiazepines, glucocorticoids, or regularly using alcohol. These results suggest that patients undergoing head and neck cancer surgery may benefit from preoperative optimization of their neuropsychiatric health and careful consideration of the need to continue high risk medications. Further studies are needed to clarify how to best optimize neuropsychiatric health to prevent postoperative delirium.

FIGURE 4

Kaplan-Meier log-rank test analyses with 95% confidence intervals, p-value <0.05 for experiencing delirium perioperatively when experiencing various risk factors.