

Predictors of 30-day Outcomes in Octogenarians with Traumatic C2 Fractures Undergoing Surgery

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Introduction

Surgical outcomes following traumatic axis fractures in octogenarians remain in need of systematic characterization to inform management options.

Methods

A cohort of 442 patients 80-years of age or older undergoing cervical spine surgery following traumatic C2 fractures was retrospectively analyzed using the National Sample Program (NSP) of the National Trauma Data Bank from 2003 to 2012. Outcome measures included overall inpatient complications, individual complications of >1% incidence, mortality, hospital length of stay (HLOS), and discharge disposition. Independent variables including preexisting comorbidities were analyzed using multivariable regression to determine their predictive value for each outcome.

Results

In this cohort, mean age was 84.3±2.7-years, 48.6% were male, and 90.5% were Caucasian. Medical comorbidities with incidences >5% included coagulopathy (5.0%), neurological impairment (5.9%), respiratory disease (9.0%), congestive heart failure (CHF, 9.3%), diabetes (14%), and hypertension (55.4%). The predominant mechanism of injury was fall (87.3%). Emergency department (ED) disposition was primarily floor (42.3%) and intensive care unit (ICU, 40.3%).

Overall mortality rate was 9.7%, HLOS was 13.1±9.2-days, 38.5% of patients suffered at least 1 complication and 81.5% of survivors were discharged to a facility other than home. Injury severity score was a predictor of mortality and overall complications. Notably, a history of coagulopathy was a predictor of mortality (OR=4.02, 95% CI [1.07-15.05], p=0.039), overall complications (OR=3.01, 95% CI [1.09-8.32], p=0.034), and specific complications of cardiac arrest (OR=8.19 [1.06-63.54], p=0.044) and kidney injury/renal failure (OR=10.36 [2.13-50.38], p=0.004). Admission to ICU vs. floor was a predictor of overall complications (OR=2.01 [1.23-3.27], p=0.005) and pneumonia (OR=4.65 [1.91-11.30], p=0.001), and admission to telemetry vs. floor were predictors of unplanned intubation (OR=7.76 [1.24-48.49], p=0.028).

Conclusions

In this cohort of patients from the NSP, injury severity and history of coagulopathy were risk factors for increased mortality and complications. Octogenarians admitted to ICU and/or telemetry may warrant heightened surveillance for the development of medical complications.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Recognize preoperative factors in octogenarians with C2 fractures that warrant consideration in clinical decisionmaking and goals of care discussions.
- 2) Characterize the morbidity profile and outcomes in octogenarians with traumatic C2 fractures undergoing surgery, with focus on risk factors of individual complications.
- 3) Recognize the complex approach in managing the care of this unique population.

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