

Proposing a Validated Clinical App for Predicting Unfavorable Outcomes in Patients Undergoing Craniotomy for Excision of Acoustic Neuroma

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Introduction

With benchmarking of outcomes becoming increasingly critical in a setting of accountable healthcare, we propose a validated clinical apparatus (interactive risk-calculator) to predict outcomes following craniotomy for acoustic neuroma (AN) excision.

Methods

An observational, cohort study involving patients in the HCUP NIS database undergoing craniotomy for AN excision.

Outcome endpoints: Discharge disposition, LOS, charges, and post-operative complications (cardiac; neurological; venous-thromboembolism, facial nerve palsy; hydrocephalus).

Exposures: Demographics (age, sex, race, insurance, socioeconomic status); Hospital characteristics (bedsize, region); Comorbidities (Stroke, seizure disorder, NF-2, sensorineural hearing loss, CAD, hypertension, VHD, coagulopathy, anemia, hypercholesterolemia, COPD, DM, hyponatremia, & obesity)

Results

2,983 patients underwent craniotomy for AN excision at over 200 centers. Mean age: 49.71±13.30 years, and 54% were female, 80% Caucasian. Private insurance covered 75%, Medicare 13.5% and Medicaid 5.5%. 30% patients were operated in the South, 29% in the West, 24% in Midwest and 17% in the Northeast. Forest plots depicting risk of exposure variables on outcomes are plotted (Figure 1-3). An interactive-calculator is developed with an ability to predict outcomes (Figure 4)

Conclusions

Our study provides individualized estimates of the risks of postoperative complications. The developed and validated clinical apparatus could potentially aid in risk-stratification, shared-decision making, strengthening referral patterns, and pre-surgical counselling for complex cases.

Learning Objectives

By going through the presented app, the participants should be able to:

- 1.) Experience the ability to predict outcomes in patients undergoing surgery for with acoustic neuroma on a hand-held device.
- 2.) Imbibe clinical decision making using predictive models and tools in complex cases and even using it for referring patients that preoperatively could be assessed to incur poor outcome post-surgery and use alternative treatment methods (eg. gamma knife where indicated).

References