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Surgeon Academic Impact is Associated with Clinical Outcomes After Clipping of Ruptured Intracranial Aneurysms

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Introduction

Recent studies have shown that patient outcomes following intracranial aneurysm treatment at teaching hospitals are superior to those at non-teaching centers. The aim of this study is to evaluate the association between the surgeon's academic productivity and clinical outcomes following clipping of ruptured intracranial aneurysms.

Methods

We performed a secondary analysis of 3567 patients who underwent clipping of ruptured intracranial aneurysms in the randomized trials of tirilazad mesylate from 1990 to 1997. These trials included 162 centers and 156 surgeons from 21 countries. Primary and secondary outcomes were: Glasgow outcome scale score and mortality, respectively. Total publications, H-index, and graduate degrees were used as academic indicators for each surgeon. The association between outcomes and academic factors were assessed using a hierarchical logistic regression analysis, adjusting for patient covariates.

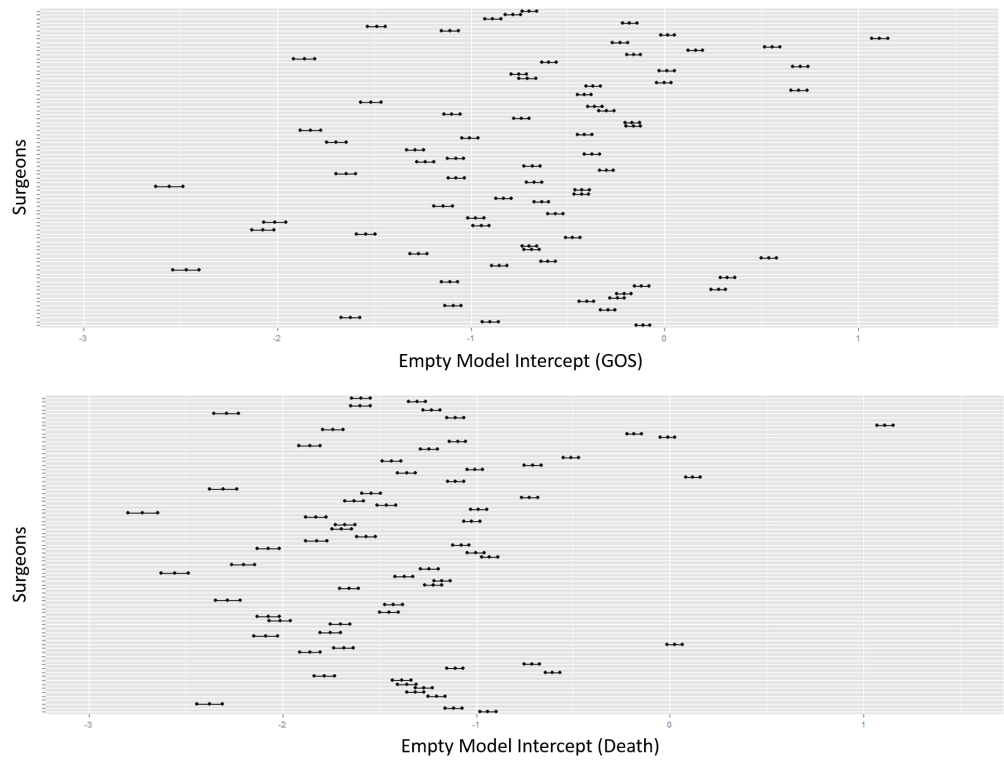
Results

Academic profiles were available for 147 surgeons, treating a total of 3307 patients. Most surgeons were from the USA (62, 42%), Canada (18, 12%), and Germany (15, 10%). On univariate analysis, the H-index correlated with better functional outcomes and lower mortality rates. In the multivariate model, patients under the care of surgeons with higher H-indices demonstrated improved neurological outcomes ($p = 0.01$) compared to surgeons with lower H -indices, without any significant difference in mortality. None of the other academic indicators were significantly associated with outcomes.

Conclusions

Although prognostication following surgery for ruptured intracranial aneurysms primarily depends on clinical and radiological factors, the academic impact of the operating neurosurgeon may explain some heterogeneity in surgical outcomes for patients who present similarly.

Fig. Heterogeneity in empty model intercept.



Heterogeneity by surgeons in Glasgow Outcome Scale (GOS) (top plot), and mortality (bottom plot).

Learning Objectives

By the conclusion of this session, participants should be able to recognize the effects of surgeon-dependent factors such as surgical experience or academic impact on heterogeneity of outcomes following intracranial aneurysm treatment.

References

1. Lai PM, Lin N, Du R. Effect of teaching hospital status on outcome of aneurysm treatment. World Neurosurg. Sep-Oct 2014;82(3-4):380-385.