



Trends in the Treatment of Aneurysms by Surgeons Trained in Both Open and Endovascular Techniques

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Introduction

Treatment of cerebral aneurysms was initially performed exclusively with open techniques by surgeons. With introduction of endovascular techniques, this changed with many endovascular procedures initially performed by radiology specialists. In recent years, neurosurgeons have adopted endovascular techniques, and some perform both endovascular and open surgical treatment of aneurysms. The aim of this study was to assess trends of treatment of intracranial aneurysms relative to surgeons trained with both open and endovascular techniques.

Methods

The Nationwide Inpatient Sample (NIS) was acquired and cases of aneurysm treatment with clip ligation (ICD-9 39.51) or endovascular embolization (ICD-9 39.72) for ruptured (ICD-9 430.0) or unruptured (ICD-9 437.3) aneurysms as primary procedure or diagnosis were isolated. For each year (2004-2009), cases were dichotomized based on whether the identified physician performed other cases of both endovascular embolization and clip ligation (dual trained surgeons), or only one or the other (specialists). Only surgeons in the database who treated at least two aneurysms per year were included. Percentages of cases performed by dual trained surgeons were compared for each year and compared with Chi-square statistics.

Results

A majority of cases were performed by surgeons trained with both open and endovascular techniques (dual trained surgeons). Aneurysms were treated more frequently ($p < 0.0001$) by dual trained surgeons in 2009 (68% of all cases) compared to 5 years prior (60%). This trend was evident for both ruptured ($p < 0.0001$) and unruptured ($p < 0.0001$) open cases, but not endovascular ruptured ($p = 0.0743$) or unruptured ($p = 0.0979$) cases. On average, incidence of in-hospital stroke or death were similar for patients treated by dual trained surgeons (10%) or specialists (9%)($p = 0.2161$).

Learning Objectives

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

- 1) Discuss trends in open and endovascular treatments of intracerebral aneurysms by dual-trained surgeons and specialists.
- 2) Discuss rates of in-hospital stroke and death for patients with intracerebral aneurysms treated by dual trained surgeons and specialists.

Conclusions

Obliteration of cerebral aneurysms is being performed more frequently by dual trained surgeons, rather than specialists.