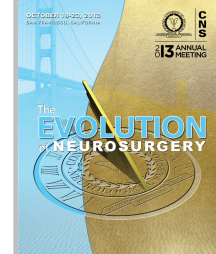


# National In-Hospital Complication Rates Associated with Hemispherectomy in Over 1600 Patients from 1988 to 2010

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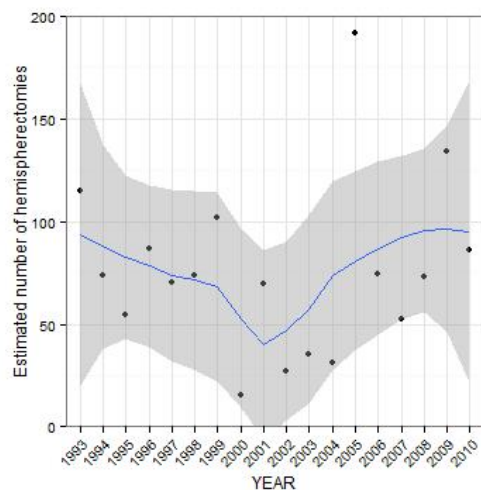
## Introduction

Anatomic and functional hemispherectomies are technically challenging procedures that are performed relatively infrequently. The literature is limited by small sample sizes and single institution data. We used the Nationwide Inpatient Sample (NIS) database to report a large population of hemispherectomy patients and associated in-hospital complication rates over an 18 year period.

## Methods

Between 1988 and 2010, the NIS database identified 304 pediatric patients that underwent hemispherectomy (extrapolating to a total of 1610 patients using the NIS weighting scheme). Descriptive statistics were calculated for patient and hospital characteristics and stratified by the presence of perioperative complications. We fit logistic regression models for each variable with perioperative complications as the binary outcome. A new variable for hospital size was created based on tertiles of discharge numbers amongst included hospitals. The ICD-9-CM procedure code (01.52) does not differentiate between anatomic and functional hemispherectomies.

## Nationwide Trends in Hemispherectomy



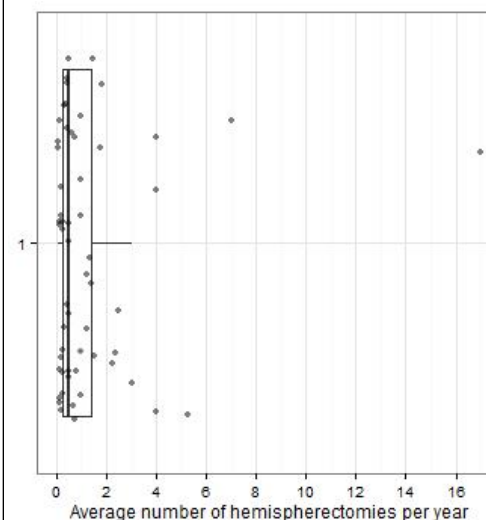
Estimated data from 1992 to 2010 with associated standard deviation

## Complication Rates Associated with Hemispherectomy

Surgical Complication	
Complication	Number (%)
Transfusion	478 (30)
Hydrocephalus	132 (8)
Postoperative hematoma/stroke	128 (8)
Status epilepticus	36 (2)
Mortality	33 (2)
Hospital Complication	
Meningitis	153 (10)
Adverse Pulmonary Event	129 (8)
Urinary Tract Infection	117 (7)
Pneumonia	42 (3)
Miscellaneous*	25 (2)

\* Diagnoses including central line associated bloodstream infection, septicemia, deep venous

## Average Hemispherectomy Volume per Year 1998-2010



## Distribution of Average Hemispherectomy Procedures Per Year Per Hospital

Minimum No.	1 <sup>st</sup> Quartile	Median	Mean	3 <sup>rd</sup> Quartile	Maximum No.
0.067	0.250	0.500	1.380	1.380	17

## Patient Characteristics Stratified by Presence or Absence of Complication

	No Complications (%)	No Complications (%)	Complications (%)	Complications (%)	Odds Ratio (CI)	p-value
Age (mean [SD])	5.47	0.59	6.14	0.27	1.03 (0.98, 1.08)	0.283
Female	322.00	45.89	414.00	45.48	0.98 (0.65, 1.46)	0.939
White	381.00	54.43	484.00	53.21	...	...
Black	4.00	0.62	46.00	5.01	8.29 (0.89, 77.08)	0.071
Hispanic	97.00	13.78	106.00	11.65	0.86 (0.38, 1.99)	0.735
Other Race	36.00	5.17	49.00	5.34	1.06 (0.4, 2.77)	0.911
Missing Race	187.00	26.01	226.00	24.79	0.98 (0.49, 1.92)	0.94

## Results

The mean age of the extrapolated sample was 5.9 years, 46% were female, and 54% were white. Overall, 683 patients (42%) encountered a complication, 28% were related to surgery while 15% occurred during the hospitalization. The most common postoperative complication was blood transfusion requirement (30%), followed by meningitis (10%), hydrocephalus (8%), postoperative intracranial bleeding (7%) and adverse pulmonary event (8%). Thirty-three patients (2%) died.

## Conclusions

This is the largest study to date examining hemispherectomy patients and associated in-hospital complication rates. The NIS database has the benefit of sampling patients across multiple institutions and over long time periods. This is especially advantageous when evaluating infrequently performed surgeries such as hemispherectomy.

## References

Moosa AN, Gupta A, Jehi L, et al. Longitudinal seizure outcome and prognostic predictors after hemispherectomy in 170 children. *Neurology*. 2013 Jan 15;80.  
Lew SM, Matthews AE, Hartman AL, et al. Posthemispherectomy hydrocephalus: results of a comprehensive, multiinstitutional review. *Epilepsia*. 2013 Feb;54.