Comparison of Total Hospitalization Cost Between Pipeline Stenting and Clipping of Unruptured Ophthalmic Aneurysms

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Introduction

Both pipeline stenting and surgical clipping are commonly used to treat ophthalmic aneurysms. In the neurosurgical literature, although cost comparison analyses between aneurysms treated with coiling versus stent-assisted coiling versus surgical clipping are available, there is no study comparing total hospital cost between pipeline stenting and clipping. At our institution, ophthalmic aneurysms are the only ones treated with both pipeline stenting and clipping, depending on surgeon preference and expertise. The present study compares total hospital cost between pipeline stenting and clipping of unruptured ophthalmic aneurysms at our institution.

Methods

Since the implementation of EPIC in November 2011, a retrospective review identified all patients who underwent pipeline stenting or clipping of unruptured ophthalmic aneurysms at our institution. The lengths of stay and hospital costs were compared between the two groups. A logistic regression analysis, adjusting for age, size of aneurysm and history of smoking, was used to compare total hospital cost and length of stay between the two groups.

Table 1: Demographics, clinical characteristics and outcomes in patients undergoing intervention for management of unruptured ophthalmic artery aneurysms (N=16)

Characteristics	Overall	Clipping (N=3)	Endovascular (N=13)	P value
Age (mean± SD), yrs	57.38 ± 10.88	56.33 ± 0.58	57.62 ± 12.15	0.861
Female gender, n(%)	13 (100.0)	3 (100.0)	13 (100.0)	1.000
Race, n(%)				
Caucasian	12 (75.0)	01 (33.3)	11 (84.6)	0.083
African-American	4 (25.0)	2 (66.7)	2 (15.4)	0.083
Smokers, n(%)	6 (37.5)	01 (33.3)	5 (38.5)	1.000
Laterality, n(%)				
Right Left	6 (37.5)	2 (66.7)	4 (30.8)	0.518
Previous intervention for aneurysm, n(%)	3 (18.8)	0 (0.0)	3 (23.1)	1.000
Aneurysm size (mean± SD), mm	6.05 ± 3.2	4.7±1.5	6.4 ± 3.4	0.433
Complications	2 (12.5)	1 (33.3)	1 (7.7)	0.350
Outcomes				
LOS (mean± SD), days	3.25 ± 2.77	7.33 ± 4.93	2.31 ± 0.63	**0.004**
Hospital charges, US$	55,647.6 ± 18,539.8	45,338.8 ± 27,515.8	58,026.5 ± 16,455.0	0.301

Results

A total of 16 patients with unruptured ophthalmic aneurysms underwent pipeline stenting or clipping. Three (18.8%) patients underwent surgical clipping whereas 13 (81.2%) had pipeline stenting. No differences in race (p=0.083), smoking history (p=1.000), laterality (p=0.518), previous history for aneurysm intervention (p=1.000), aneurysm size (p=0.433) and complications (p=0.350) was observed across the two intervention groups. Length of hospital stay was significantly lower in the pipeline stenting group versus the clipping group (2.31 days vs. 7.33 days; p=0.004). There was no difference in total hospital cost between the two groups (US$45,339 vs. US$58,027; P=0.301).

Conclusions

There was no difference in total hospital cost between pipeline stenting and clipping of unruptured ophthalmic aneurysms, most likely due to the significantly lower length of hospital stay in the pipeline group.

Learning Objectives

Pipeline stenting and clipping are both safe and effective treatment modalities for treatment of enraptured ophthalmic aneurysms

The length of stay is significantly lower for patients undergoing pipeline stenting versus clipping

There is no difference in total hospital cost between pipeline stenting and clipping