

Results of Surgery for Low-grade Brain Arteriovenous Malformation Resection by EarlyCareer Neurosurgeons: An Observational Study

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Introduction

Background: For sustainability of AVM surgery, results from early career cerebrovascular neurosurgeons (ECCNs) must be acceptably safe. Objective: To determine whether, ECCNs performance of SPC A resection can be acceptably safe.

Methods

ECCNs completing a cerebrovascular Fellowship (2004-2015) with the last author were included. Inclusion of the ECCN cases occurred if they: had a prospective database of all AVM cases since commencing independent practice; were the primary surgeon on SPC A; and had made the significant management decisions. All SPC A surgical cases from the beginning of ECCN's independent surgical practice to a maximum of eight years. An adverse outcome was considered a complication of surgery leading to a new permanent neurological deficit with a last modified Rankin Scale score >1. A cumulative summation (Cusum) plot examined the performance of each surgery. The highest acceptable level of adverse outcomes for the Cusum was 3.3%, derived from the upper 95% CI of the last author's reported series.

Learning Objectives

Results of brain avm surgery for grades 1 and 2. Fellowship training is helpful in achieving good results. Techniques of brain avm resection will be reviewed.

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Results

6 ECCNs contributed 110 cases for analysis. The median number of SPC A cases operated by each ECCN was 16.5 (range 4-40). Preoperative embolization was performed in 5 (4.5%). The incidence of adverse outcomes was 1.8% (95%CI: <0.01-6.8%). At no point during the accumulated series did the combined cohort become unacceptable by the Cusum plot.

Conclusions

ECCNs with appropriate training appointed to largevolume cerebrovascular centers can achieve results for surgery for SPC A that are not appreciably worse than those published from high-volume neurosurgeons. Surgical techniques can codified, be learned and applied for good results early in a one's career, justify continuing surgical care.