Microsurgical Treatment of 1250 Consecutive Unruptured Intracranial Aneurysms: A Critical Analysis of our Worst Complications

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Introduction

With a growing understanding of the natural history of unruptured intracranial aneurysms (IAs) and as endovascular techniques improve, it has become clear that the role of open microsurgery in the treatment of such aneurysms will depend heavily on surgical morbidity and mortality rates. We present a critical analysis of our most serious complications in a large consecutive series of patients undergoing microsurgery for an unruptured IA.

Methods

We retrospectively reviewed the records of all patients who had undergone surgical repair of a saccular IA by a single neurosurgeon from July, 1997 until October, 2011. Ruptured IAs were excluded from review.

Results

Of 3766 aneurysms treated during this period, 1012 patients underwent microsurgical repair of 1250 unruptured IAs. Microsurgical aneurysm neck clipping was possible in most cases, although distal revascularization with proximal occlusion was employed in many of the more complicated aneurysms. Major complications occurred in 11 patients (1.1%), and 3 patients died (0.30%). At 6 month follow-up, 4 patients (0.40%) were left with a new focal neurological deficit related to surgery.

Conclusions

Despite the growing role of endovascular therapy in the management of IAs and the diminishing number of unruptured IAs being treated with open microsurgery, it is possible to achieve acceptable results in terms of surgical complication rates when unruptured IAs are repaired surgically. The most serious complications encountered in our consecutive, unselected series of unruptured IAs and lessons learned from them are presented and analyzed in detail in this report.

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Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the risks and complications of microsurgery for intracranial aneurysms, 2) Discussthe role of microsurgery in current management of brain aneurysms, 3) Identify those cases at highest risk for surgical complications for whom endovascular therapy should be strongly considered.