Complex aneurysm

see Complex internal carotid artery aneurysm

see Complex middle cerebral artery aneurysm

The revascularization technique, including bypass created using the external carotid artery (ECA), radial artery (RA), and M2 portion of middle cerebral artery (MCA), has remained indispensable for treatment of complex aneurysms.

It remains unknown whether diameters of the RA, superficial temporal artery (STA), and C2 portion of the internal carotid artery (ICA) and intraoperative MCA blood pressure have influences on the outcome and the symptomatic watershed infarction (WI).

Treatment

There is an increasing tendency to refer only complex aneurysms for microsurgery. The formation of new neurosurgeons dedicated to open vascular neurosurgery becomes challenging in a situation in which complex aneurysms must be dealt with early in the career, raising questions about the safety of the learning curve.

Vieira et al. analyzed the characteristics and surgical results of the first 300 consecutively treated patients after subarachnoid hemorrhage by a single neurosurgeon. The incidence of surgical complications and clinical outcomes during the learning curve were analyzed, looking for critical periods regarding patient safety. Microsurgical operative times were also studied.

Results: A high frequency of wide-necked aneurysms was observed (70.3%), and, as a result, large (> 10 mm), MCA and paraclinoid aneurysms were overrepresented. A statistically significant correlation between surgical experience and clinical outcomes was observed, with progressive surgical experience resulting in a lower incidence of unfavorable outcomes. We also observed a higher frequency of major surgical complications, unfavorable clinical outcomes, and lower complete occlusion rates among the first 40 patients. Microsurgical operative times progressively and significantly decreased during the learning curve.

Conclusions: We observed a high prevalence of wide-necked aneurysms. Young neurosurgeons must be trained and prepared to deal with these aneurysms early in their careers. Although we observed a decrease in unfavorable results with cumulative surgical experience, the first 40 cases were associated with higher rates of major surgical complications, worse clinical outcomes, and lower complete occlusion rates, indicating that this period may be more critical to patient safety [1].

1)
Vieira E, Guimarães TC, Pontes ECA, Silva ACV, Carneiro MC, Netto AU, Pereira L, Cezar AB Jr, Faquini I, Almeida NS, Griz MFL, Azevedo-Filho HRC. Initial experience in the microsurgical treatment of ruptured brain aneurysms in the endovascular era: characteristics and safety of the learning curve in the first 300 consecutively treated patients. Acta Neurochir (Wien). 2022 Mar 3. doi: 10.1007/s00701-022-05165-2. Epub ahead of print. PMID: 35239013.