Complex intracranial aneurysm treatment

Complex intracranial aneurysms remain challenging to treat using standard microsurgical or endovascular techniques. These aneurysms often require a combination of deconstructive and reconstructive procedures, such as parent artery occlusion, flow alteration, and blind-alley formation with or without bypass surgery, for effective and enduring therapeutic effects. It is important to determine the type of bypass based on the site of occlusion of the patent artery, anatomical features of the distal vessels, and expected adequate blood flow. Togashi and Shimizu described the “Standards,” “Advances,” and “Controversies” in the context of a microsurgical treatment strategy for complex intracranial aneurysms. “Standards” include a combination of frequent and commonly used procedures that have been gathering a certain consensus on their effectiveness. “Advances” include infrequent, demanding, and/or uncertain surgical procedures that are currently under debate. Finally, “Controversies” discuss a number of unsolved issues [1].

Endovascular treatment

They may require stent-assisted coiling, either as primary stenting or combined with the balloon remodeling technique (BRT).

Primary BRT followed by Stent-assisted coiling may be associated with fewer residual aneurysms at 12 to 18 months as compared to stent-assisted coiling alone.

Bypass surgery

The revascularization technique has remained to be indispensable for complex intracranial aneurysms.

Regardless of the graft type, the middle cerebral artery pressure (MCAP) ratio (MCAPR) was associated with low-flow related ischemic complications (LRICs), which were related to late neurological worsening (NW) in patients with complex ICA aneurysms treated by EC-IC high-flow bypass graft [2].

Proper use of bypass surgery is imperative in preserving the parent artery and its major perforators. The internal maxillary artery, used as a donor in a bypass, is an effective method due to its shorter distance from the recipient vessels and relatively large diameter with resulting higher flow rate [3].

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3)

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