Automated, compliant, high-flow common carotid to middle cerebral artery bypass

Technical note

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Abstract:

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The authors describe the use of the Cardica C-Port xA Distal Anastomosis System to perform an automated, high-flow extracranial–intracranial bypass. The C-Port system has been developed and tested in coronary artery bypass surgery for rapid distal coronary artery anastomoses. Air-powered, it performs an automated end-to-side anastomosis within seconds by nearly simultaneously making an arteriotomy and inserting 13 microclips into the graft and recipient vessel. Intracranial use of the device was first simulated in a cadaver prepared for microsurgical anatomical dissection.

The authors used this system in a 43-year-old man who sustained a subarachnoid hemorrhage after being assaulted and was found to have a traumatic pseudoaneurysm of the proximal intracranial internal carotid artery. The aneurysm appeared to be enlarging on serial imaging studies and it was anticipated that a bypass would probably be needed to treat the lesion. An end-to-side bypass was performed with the C-Port system using a saphenous vein conduit extending from the common carotid artery to the middle cerebral artery. The bypass was demonstrated to be patent on intraoperative and postoperative arteriography. The patient had a temporary hyperperfusion syndrome and subsequently made a good neurological recovery.

The C-Port system facilitates the performance of a high-flow extracranial–intracranial bypass with short periods of temporary arterial occlusion. Because of the size and configuration of the device, its use is not feasible in all anatomical situations that require a high-flow bypass; however it is a useful addition to the armamentarium of the neurovascular surgeon. (DOI: 10.3171/JNS/2008/109/9/0559)

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