Anterior inferior cerebellar artery aneurysm surgery

Baranoski et al. described a series of AICA bypasses to treat 4 AICA aneurysms and 3 vertebral artery/AICA occlusions.

They used 7 types of bypasses to revascularize the AICA territory. Bypass types included extracranial-to-intracranial (EC-IC) bypass without an interpositional graft, EC-IC with an interpositional graft, in situ bypass, reanastomosis, reimplantation, intracranial-to-intracranial bypass with interpositional graft, and combination bypasses. In particular, we performed the following 7 bypasses: OA-a3 AICA, OA-RAG-a3 AICA, p3 PICA-a3 AICA, a2 AICA reanastomosis, V4 VA-a3 AICA, V3 VA-SVG-a3 AICA, and a combined OA-a3 AICA bypass and p3 PICA reanastomosis. AICA revascularization allows for the safe treatment of AICA aneurysms and other posterior circulation pathologies without compromising perfusion of the AICA territories.

All 7 AICA bypasses are feasible for application to AICA aneurysms and ischemic disease. Their experience with the 7-bypass framework demonstrates the utility of the framework as a decision-making tool and the breadth of bypass innovation possible in this anatomically challenging region.

A video reports a novel bypass for a ruptured, fusiform distal AICA aneurysm. A 51-yr-old woman with newly diagnosed acquired immunodeficiency syndrome presented to the hospital with meningitis and experienced an acute neurological decline while admitted. Neuroimaging revealed a fusiform left a2-AICA aneurysm, thought to be mycotic with diffuse subarachnoid and intraventricular hemorrhage (Hunt-Hess Grade-IV). The occipital artery was harvested as an alternative donor in the myocutaneous flap using a hockey-stick incision. An extended retrosigmoid approach exposed the infectious aneurysm. After aneurysm excision, an a2-AICA-a2-AICA end-to-end reanastomosis was performed in between and deep to the vestibulocochlear nerves superiorly and the glossopharyngeal nerve inferiorly. Indocyanine green videoangiography and postoperative angiogram confirmed bypass patency. Postoperatively, she developed epidural and subdural hematomas due to human immunodeficiency virus-associated coagulopathy and/or increased aspirin sensitivity, requiring reoperation. The patient made a complete recovery at late follow-up. AICA reanastomosis is an elegant intracranial-intracranial bypass for treating distal AICA aneurysms. To our knowledge, this is the first report of AICA reanastomosis in the proximal a2-AICA (lateral pontine) segment. This technique has been reported in the literature for distally located aneurysms (a3-AICA).4 Microanastomosis for more medial AICA aneurysms must be performed deep to the lower cranial nerves. OA to a3-AICA bypass is an alternative in cases where primary reanastomosis is not technically feasible.

Bambakidis et al. describe a case of treatment involving a large BA-AICA aneurysm approached via exposure of the presigmoid dura using a retromastoid suboccipital craniectomy and partial petrosectomy. Treatment of these lesions requires detailed knowledge of the anatomy, and an anatomical overview of the AICA with its arterial loops and significant branches is presented, including a discussion of the internal auditory artery, recurrent perforating arteries, subarcuate artery, and cerebellosubarcuate artery. The authors discuss the various surgical approaches (retromastoid, far lateral, subtemporal, and transclival) with appropriate illustrations, citing the advantages and
disadvantages in accessing these AICA lesions in relation to these approaches. The complications of these different surgical techniques and possible clinical effects of parent artery occlusion during AICA surgery are highlighted.  

Aneurysms arising from the midbasilar trunk are not common, and surgical management of these aneurysms remains a difficult challenge to neurosurgeons because of its anatomic characteristics. A patient with a ruptured aneurysm arising from the basilar artery at the origin of the anterior inferior cerebellar artery and projecting to the right and upward. The aneurysm was successfully treated by a subtemporal transpetrosal approach in an acute stage.  

Subtemporal Approach for AICA Aneurysm Clipping

Distal anterior inferior cerebellar artery (AICA) pseudoaneurysms are very rare lesions. Although cases have been previously reported, only a few have been reported as a result of vestibular schwannoma (VS) radiation, none have been reported as a result of VS resection, and only one has been reported as treated with parent vessel occlusion (PVO) with n-butyl cyanoacrylate (nBCA).

References


