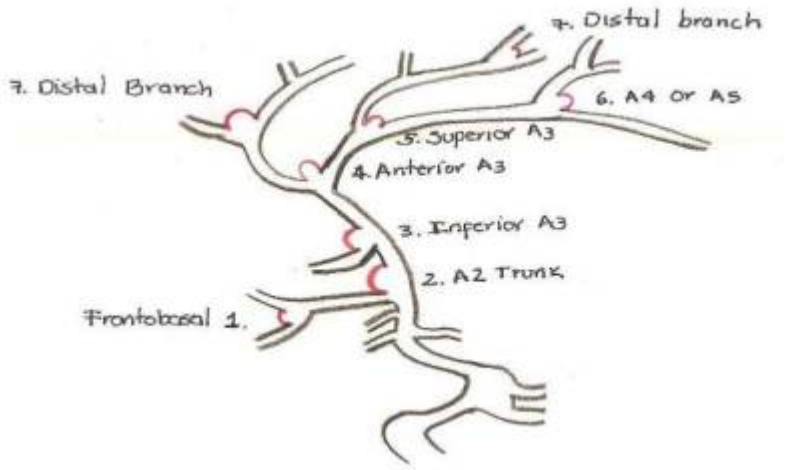
A2 anterior cerebral artery aneurysm



Also named Proximal pericallosal artery aneurysm.

The A2 aneurysms are located between the anterior communicating artery complex and the genu of the corpus callosum on the frontobasal branches.

Epidemiology

They are very rare with an incidence of 0.2-1% of all intracranial aneurysms [1) 2) 3) 4) 5)].

In the Kuopio Cerebral Aneurysm Database of 3005 patients and 4253 IAs, there were 35 patients carrying 35 A2As, forming 1% of all patients with IAs, 0.8% of all IAs, and 3% of all anterior cerebral artery aneurysms. Twenty-one (60%) patients presented with ruptured A2As with ICH in 11 (52%) and IVH in 7 (33%). Nineteen patients (54%) had multiple aneurysms.

A2As are often small, even when ruptured, with relatively wide base, and they are frequently associated with ICHs of IVHs.

Data suggest that A2As rupture at smaller size than IAs in general. The challenge is to select appropriate approach, locate the aneurysm deep inside the interhemispheric fissure, and to clip the neck adequately without obstructing branching arteries at the base. Unruptured A2As also need microneurosurgical clipping even when they are small [6)].

see Fusiform A2 anterior cerebral artery aneurysm.

The unilateral interhemispheric approach is a well-known operative technique for distal anterior cerebral artery aneurysms (DACA). However, this approach presents several risks, such as postoperative venous infarction due to occasional sacrifice of the parasagittal bridging vein or postoperative frontal lobe damage due to retraction force. To overcome these risks, Cho et al., used a bifrontal craniotomy with a straight dural incision and cutting of the superior sagittal sinus (SSS). This method helps to overcome the shortcomings of the prior unilateral approach.

They retrospectively reviewed 61 aneurysm patients (42 unruptured- and 19 ruptured- A2 aneurysm and A3 aneurysm) who received clipping surgery through bifrontal interhemispheric approach between March 2007 and December 2017. This included 35 A2 aneurysms and 27 A3 aneurysms, and the mean size of the aneurysms was 5.45 mm. The modified bifrontal interhemispheric approach involved three steps: bifrontal craniotomy of the centrobasal portion of the frontal bone, ligation and division of the anterior one third of the superior sagittal sinus, and approaching the aneurysm via the interhemispheric space. All patients underwent computed tomography (CT) scans on the third and seventh postoperative days for the evaluation of brain retraction damage or venous infarction.

Of patients with ruptured aneurysms, 79% had a favorable outcome (Glasgow Outcome Scale 4 or 5) 6 months after primary subarachnoid hemorrhage and all patients with unruptured aneurysms had favorable outcomes. The surgical outcome was strongly related to the preoperative neurologic grade of Hunt and Hess (H-H). Three patients had poor outcomes due to their poor H-H grade on admission (Grade III: 2, IV: 1). In follow up CT scans, venous infarction did not occur in any of our 61 patients.

The modified bifrontal interhemispheric approach might be a safe and effective method for treating A2,3 aneurysm with relatively good clinical outcome and no surgery-related complications [7].

References

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