

Anterior communicating artery aneurysm angiography

Digital subtraction angiography (DSA) represents the [gold standard](#) in aneurysm detection, location, and surgical planning. Since the advent and continuous improvements in [computed tomography angiography](#) (CTA), it has supplemented and at times replaced DSA for surgical planning of aneurysms. CTA has shown to adequately predict surgical anatomy around the [anterior communicating artery aneurysm](#).

Essential to evaluate contralateral carotid, to determine if both [ACAs](#) fill the aneurysm. If the aneurysm fills with one side only, it is desirable to inject the other side while cross compressing the side that fills the aneurysm to see if the collateral flow is present. Also, determine if either carotid fills both ACAs, or if each ACA fills from the ipsilateral carotid injection (may permit [trapping](#)). If additional views are needed to better demonstrate aneurysm. Try oblique 25° away from injection side, center beam 3-4 cm above the lateral aspect of the ipsilateral orbital rim, orient x-ray tube in [Towne's view](#). A submental vertex view may also visualize the area but the image may be degraded by a large amount of interposed bone.

With improvements in [computed tomography angiography](#) and [digital subtraction angiography](#), the assessment of certain morphologic traits of [anterior communicating artery aneurysms](#) (ACoAA) has drawn great attention. The determination of specific factors associated with rupture would provide much-needed guidance for the treatment of unruptured intracranial aneurysms, such as surgical clipping or endovascular coiling. Morphologic factors include, but are not limited to, aneurysm size, number, shape, [aneurysm dome](#) direction, neck/dome ratio, and the relationship of the aneurysm to the surrounding vessels. However, the results of previous investigations concerning morphologic parameters have yielded inconsistent results.

A review presents and analyzes the literature on the morphology of ACoAAs and the risk of rupture.

This literature review reveals that the strongest predictors of ACoAA rupture are size ratio, the direction of the dome, and fenestration. These were the only factors that were either unanimously or near-unanimously found to be predictive of rupture across multiple studies.

The [size ratio](#), direction of the dome, and fenestration should be examined most meticulously when deciding when to treat an ACoAA ¹⁾.

In order to study the cerebral angiographic findings of the hypoplasia of the A1 of the anterior cerebral artery, and the abnormal blood circulation in the anterior part of the circle of Willis, 485 patients who had had at least bilateral carotid angiography and complete data were selected, out of 1,000 patients with cerebral aneurysms to whom intracranial direct surgery had been done from June 1961 to September 1975. Patients with multiple cerebral aneurysms were excluded in this study. Seventy six patients were selected as controls. 1. Cerebral angiography revealed that hypoplasia of the A1 of the anterior cerebral artery is much more frequent in patients with aneurysms of the

anterior communicating artery than in those with aneurysms of other intracranial arteries. It was observed in 145 of the 213 patients with aneurysms of the anterior communicating artery (68.1%). As for the hypoplasia of the A1, the angiographic findings corresponded to the surgical findings in 86.9% of all the patients. The incidence of hypoplasia of the left and right A1 portions was higher in patients with aneurysms of the anterior communicating artery than in those with aneurysms of other intracranial arteries. The incidence was about 3 times higher on the right side than on the left side. 2. It was considered that the abnormal blood circulation was observed in the anterior part of the circle of Willis in 155 patients, including 145 with angiographic findings of hypoplasia of a unilateral A1 and 10 with anomalies of the anterior communicating artery or A1 of anterior cerebral artery other than hypoplasia, out of 213 patients with aneurysms of the anterior communicating artery (72.8%). 3. The above findings are considered important for a diagnosis of an aneurysm of the anterior communicating artery and for a surgical approach ²⁾.

1)

Cai W, Hu C, Gong J, Lan Q. Anterior Communicating Artery Aneurysm Morphology and the Risk of Rupture. *World Neurosurg*. 2018 Jan;109:119-126. doi: 10.1016/j.wneu.2017.09.118. Epub 2017 Sep 27. Review. PubMed PMID: 28958928.

2)

Kwak R, Ohi T, Niizuma H, Suzuki J. [Hemodynamics in the anterior part of the circle of Willis in patients with the anterior communicating artery aneurysm—a study by cerebral angiography (author's transl)]. *No Shinkei Geka*. 1978 Nov;6(11):1065-9. Japanese. PubMed PMID: 724066.

From:
<https://neurosurgerywiki.com/wiki/> - Neurosurgery Wiki

Permanent link:
https://neurosurgerywiki.com/wiki/doku.php?id=anterior_communicating_artery_aneurysm_angiography

Last update: 2024/06/07 02:56

