Anterior communicating artery aneurysm surgery approaches

General information

There are two main types of approaches for anterior communicating artery aneurysms, namely pterional approach and an interhemispheric approach [1) 2)].

A pterional approach is the most common for aneurysm surgery, not only for anterior circulation aneurysms but also for basilar tip aneurysms.

1. pterional approach: see Pterional approach for anterior communicating artery aneurysm

2. subfrontal approach: especially useful for aneurysms pointing superiorly when there is a large amount of frontal blood clot (allows clot removal during approach)

Interhemispheric Approach

see Interhemispheric Approach to Anterior Communicating Artery Aneurysm.

Transcallosal approach

Transcallosal approach

The surgical approach may be difficult because of the complex arterial relationship, perforator preservation, frequent association between aneurysms and AcoA anomaly, and the potential for cognitive dysfunction.

Posterior and superior projections are the most complex to deal with because of the difficult dissection of the perforators and the contralateral A2, respectively. Approaching from the side of the dominant A1 ensures a prompt proximal control. Searching preoperatively for an eventual rotation of the AComA complex and for the location of the A2s can be very helpful for intraoperative orientation [3)].

References

1)
Li JW, Shi CH. Endovascular treatment of complicated ruptured anterior communicating artery aneurysms based on the anatomical features of the anterior communicating artery complex. Neurology India. 2012;60:55–60.
2)
Matsukawa H, Uemura A, Fujii M, Kamo M, Takahashi O, Sumiyoshi S. Morphological and clinical risk factors for the rupture of anterior communicating artery aneurysms. J Neurosurg. 2013;118:978–983.

3)

Pietrantonio A, Trungu S, Delfini R, Raco A. Microsurgical Treatment of Anterior Communicating Artery Aneurysms: A 20-year Single-institution Experience. J Neurol Surg A Cent Eur Neurosurg. 2019 Sep 23. doi: 10.1055/s-0039-1685507. [Epub ahead of print] PubMed PMID: 31546264.