Interhemispheric Approach to Anterior Communicating Artery Aneurysm

The interhemispheric approach has been selected for clipping of the anterior communicating artery aneurysm located high above the sphenoidal plate, and in a posterior direction.

However, this approach is sometimes complicated with postoperative hemorrhagic infarction due to excessive brain retraction combined with damages of the cortical bridging veins.

There are some variations for the interhemispheric approach including bifrontal, unifrontal, basal interhemispheric, and transcrista galli interfalcine approaches.

Anterior interhemispheric approach: contraindicated for anteriorly pointing aneurysms as the dome is approached first and proximal control cannot be obtained.

Case series

The interhemispheric approach (IHA) provides an excellent surgical corridor for clipping anterior communicating artery aneurysms (AcoAAs). However, an important disadvantage of the approach is obtaining proximal control at A1 in the last stage of dissection, especially in anterior or superior projecting AcoAAs and ruptured cases. Wongsuriyanan and Sriamornrattanakul described and evaluated the microsurgical clipping of AcoAAs using the IHA with early A1 exposure.

This was a retrospective descriptive study in patients with AcoAA who received microsurgical clipping through the IHA with early A1 exposure between April 2016 and May 2019. Aneurysm morphology, projection, completeness of clipping, surgical complications, and outcomes were collected from medical records.

Twenty-five patients with AcoAA received microsurgical clipping via the IHA with early A1 exposure. Twenty-three patients (92%) presented with subarachnoid hemorrhage. Intraoperative rupture while dissecting the interhemispheric fissure occurred in 2 cases, for which proximal control via subfrontal route was effectively performed. Of the patients, 100% achieved complete obliteration of their aneurysms. Anosmia after anterior communicating artery aneurysm surgery was detected in 22.7%. In ruptured cases, 16 (88.9%) of the good grade patients achieved a good outcome (Glasgow Outcome Scale scores of 4 and 5) at 3 months after the operation.

The IHA with early A1 is safe and effective for clipping AcoAAs.¹⁾.

Postoperative venous infarction following aneurysm surgery was studied in 48 patients with anterior communicating artery aneurysms operated on through the interhemispheric approach at the acute stage of subarachnoid hemorrhage (SAH). Of 23 patients whose bridging veins were sacrificed during surgery, 11 (47.8%) showed venous infarction in the frontal lobes. In contrast, only one (5.9%) of 17 patients whose bridging veins were preserved developed cerebral edema. None of eight patients who were operated on after Day 11 (the day of SAH was defined as Day 0) showed this complication, although bridging veins were sacrificed in six of them. Venous infarction following acute aneurysm

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surgery tended to occur more frequently in patients of higher SAH grade and/or more advanced age, but these correlations were not significant. However, the correlation between the sacrifice of veins and venous infarction was significant (p < 0.025). Because this potential complication may compromise the benefit of acute aneurysm surgery and cause damage, it is important to preserve the venous system and in some instances to select another surgical approach based on the pattern of venous drainage in the frontal lobe².

Case reports

Senapati et al. described the tricks of IH approach with a case illustration ³⁾.

References

1)

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