Minimum transpetrosal approach

Revascularization of the posterior cerebral artery (PCA) can be essential for treating complex intracranial aneurysms in the posterior circulation, and it is considered technically challenging. To help decrease the difficulty of this technique, Kimura et al. developed the minimum transpetrosal approach (MTPA).

The technical nuances of the MTPA were innovated by cadaver head dissections and an actual clinical case.

Four sides of the formalin-fixed cadaver heads were used to investigate if the posterior cerebral artery could be exposed with this minimum retraction of the temporal lobe in the subtemporal approach and the minimum transpetrosal approach (MTPA). By using the MTPA, 1 patient harboring a ruptured PCA aneurysm underwent superficial temporal artery to posterior cerebral artery bypass followed by isolation of the aneurysm.

In the cadaver head dissections, they noticed that the PCAs were difficult to expose with gentle retraction of the temporal lobe in the subtemporal approach. By performing an additional retrolabyrinthine mastoidectomy, performed as the MTPA, all 4 PCAs were easily exposed in the 4 wide surgical fields. The maximum widths of the surgical fields above and below the PCA could be successfully measured in 2 cases, which were 13.3 mm and 11.2 mm, respectively (mean, 12.3 mm). Additionally, in the actual live surgery using MTPA, the PCAs were relative easy to expose with a surgical field wide enough to perform PCA bypass, which was performed without complication.

The MTPA may be the most favorable approach for PCA bypass that can be performed easily with minimal temporal lobe retraction [1].

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Kimura H, Taniguchi M, Koyama J, Fujimoto Y, Hosoda K, Kohmura E. Minimum Transpetrosal Retrolabyrinthine Approach for Revascularization of Posterior Cerebral Artery: Operative Nuance. Neurosurgery. 2015 Oct 16. [Epub ahead of print] PubMed PMID: 26479705.