Insular long perforating arteries

These arteries, originating from M2 or M2-M3 junction of the middle cerebral artery, penetrate into the posterior insula and superior limiting sulcus to supply the motor fibers of the corona radiata and possibly the corticospinal tract. This location encompasses the zone II of the Berger Sanai classification of insular gliomas (the area above the line of the sylvian fissure and plane passing through the foramen of Monro) [1)].

Such long perforating arteries have a larger section (0.3-0.5 mm), as compared to other perforating arteries with less functional relevance. Nevertheless, it could be difficult to identify such long perforators during surgery and it could be recommended to avoid injuries to any “large” perforating artery penetrating into the posterior insular area.

Recently, Iwasaki et al. [1] have adopted an interesting approach to the problem in a report of two cases. These Authors confirm the necessity to identify very carefully all perforating arteries at the posterior insular-opercular segment of the MCA. A temporary clip was then applied to perforating arteries along with continuous MEPs recording. If the MEP amplitude was decreased by greater than 50% fromthe baseline, blood flow insufficiency to the descending motor pathway was suspected. If no significant change was recorded after 10 minutes, the artery could be sacrificed.

ICG videoangiography was used to check the temporary occlusion of such perforators. This approach is appealing, but perforators can be as small as 0.3 according to the study by and the temporary occlusion cannot be easy, with a risk of vasospasm or irreversible injury to the perforator [2)].

1)
Sanai N, Polley MY, Berger MS (2010) Insular glioma resection: assessment of patient morbidity, survival, and tumor progression. J Neurosurg 112:1-9
2)
Iwasaki M, Kumabe T, Saito R, Kanamori M, Yamashita Y, Sonoda Y, Tominaga T (2014) Preservation of the long insular artery to prevent postoperative motor deficits after resection of insulo-opercular glioma: technical case reports. Neurol Med Chir (Tokyo) 54:321-326