

# Endoscope assisted surgery for anterior circulation aneurysm

The ventral endoscopic endonasal approach to the ACoA complex provides excellent vascular visualisation without brain retraction or gyrus rectus resection. However, the limitation in access to the A2 for temporary clip placement may prove to be a significant limitation of this approach <sup>1)</sup>.

In the view of Profeta et al, among the aneurysms of the anterior circulation, the endoscope is particularly useful in those of the internal carotid and the anterior communicating arteries. In many cases of these aneurysms the posterior communicating artery, choroidal artery or one of the distal cerebral arteries is hidden behind the aneurysm dome. Dome retraction is often required in order to see these vascular structures with the microscope. Thus an endoscope with a 30 degrees view angle becomes very useful. The concealed areas are identified without retraction, which prevents the possibility of the aneurysm being ruptured and also reduces the use of temporary clipping. From its early use as a supportive measure that is sometimes useful in surgery for “easy” aneurysms, the endoscope has now become almost indispensable for the “difficult” aneurysms, including the large and giant ones before and after clipping. Thus, the endoscope should be kept ready for use in the operating theatre for any eventuality.

During a 3 year experience, 52 patients with 48 ruptured and 10 unruptured aneurysms of the anterior circulation (including 6 cases of two-fold aneurysms) underwent clipping with endoscope support through a [pterional approach](#). All ruptured aneurysms produced a Hunt and Hess Grade I or II subarachnoid haemorrhage. The endoscope was inserted before and after clipping in order to observe the conditions surrounding the aneurysm and to receive immediate confirmation that clipping had been performed correctly.

In all cases general anatomy visualization was provided by the endoscope, and the correct clip positioning and vessel conditions were easily checked. In 4 cases the endoscope showed that the clip had been positioned incorrectly. Additional clipping was performed in these cases: in 2 cases the clip was re-applied correctly and in another case a clip was added. Only the fourth patient with a large [anterior communicating artery aneurysm](#) died (1.9%) of cerebral infarction. This was due to post-clipping stenosis of one distal cerebral artery in which it was not possible to re-position the clip correctly because of the presence of arteriosclerotic calcific plaque near the aneurysm neck. In 3 cases there was an intraoperative ruptured aneurysm dome that was not caused by the endoscope insertion. No further complications were caused by the endoscope.

In certain cases endoscopic-assisted microsurgery is an exceptional aid to the surgeon and must become part of the operating theatre equipment and kept on hand ready for use. The endoscope is, in our opinion, particularly useful in certain aneurysm localisations (internal carotid artery-anterior communicating artery [ICA-ACOMA] <sup>2)</sup>.

<sup>1)</sup>

Lai LT, Morgan MK, Dalgorf D, Bokhari A, Sacks PL, Sacks R, Harvey RJ. Cadaveric study of the endoscopic endonasal transtubaricular approach to the anterior communicating artery complex. J Clin Neurosci. 2014 May;21(5):827-32. doi: 10.1016/j.jocn.2013.07.034. Epub 2013 Oct 12. PubMed PMID: 24411321.

<sup>2)</sup>

Profeta G, De Falco R, Ambrosio G, Profeta L. Endoscope-assisted microneurosurgery for anterior circulation aneurysms using the angle-type rigid endoscope over a 3-year period. Childs Nerv Syst. 2004 Nov;20(11-12):811-5. Epub 2004 Jun 23. PubMed PMID: 15221249.

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