**Endoscope-assisted Microsurgery for Cerebral Aneurysms**

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**Abstract**

A total of 66 patients with intracranial aneurysms were endoscopically assisted treated during a 3 years period. Among those were five individuals with giant aneurysms and 27 patients with aneurysms of the posterior circulation. The endoscope was used only for checking the anatomical structures surround the aneurysms in 16 cases. In 43 patients the aneurysm sac was also dissected under endoscopical control. Even the clipping procedure was performed in seven cases exclusively under endoscopical observation. Only one prematual rupture occurred intraoperatively during preparation of a basilar tip aneurysm. Postoperatively three individuals with aneurysms located in the posterior circulation were temporarily neurologically impaired, and one patient with a basilar tip aneurysm suffered from a surgical related hemiparesis. The use of an endoscope in aneurysm surgery improves the visualization of the aneurysm itself and the surrounding anatomical structures. This minimizes the retraction of the nervous structures and leads to a reduced morbidity.

Key words: cerebral aneurysm, endoscope, microsurgery

**Introduction**

Today's modern neurosurgery operations without microscope seem to be almost impossible. The same progress may very well occur in the development of minimal invasive neurosurgery through the application of the endoscope. Some neurosurgical centers use endoscopical approaches in the treatment of intraventricular6-8) and intracranial1,3,10) cysts, or non-communicating hydrocephalus.4,5,9) Rare are publications dealing with endoscope-assisted intracranial aneurysm microsurgery.2)

**Materials and Methods**

From 1994 to June 1997 a total of 66 patients with intracranial aneurysms were endoscopically assisted treated at the neurosurgical department at the University of Mainz, Germany. Among those were five individuals with giant aneurysms (2 middle cerebral artery, 2 basilar artery [BA], and 1 anterior communicating artery) and 27 patients with aneurysms of the posterior circulation (9 superior cerebellar artery, 14 BA tip, 3 P1/P2, and 1 anterior inferior cerebellar artery). Approaches to the posterior circulation aneurysms were: transventricular in two, supraorbital in 16, subtemporal in six, and pterional in three. In five of 13 patients with multiple aneurysms the endoscopically assisted clipping was performed via a contralateral approach. Exclusively rigid endoscopes of various manufacturers with 0°, 30°, or 70° lenses were used.

**Results**

In 16 cases the endoscope was used to check the surrounding anatomical structures. In addition to the preparation under the microscope in 43 patients the aneurysm sac was also dissected under endoscopical control. Even the clipping procedure was performed in seven cases exclusively under endoscopical observation.

One premature rupture occurred intraoperatively during preparation of a BA tip aneurysm. Postoperative angiography in two patients indicated an only incomplete clipping of the aneurysm's neck necessitating a second operation. Three individuals with aneurysms located in the posterior circulation temporarily suffered from a postoperative unilateral cranial nerve palsy. One patient with BA tip aneurysm showed a surgical related hemiparesis after the operation.

**Discussion**

The supplementary application of the endoscope in aneurysm surgery is specifically indicated in deep-seated lesions, especially in aneurysms of the...
posterior circulation. The endoscope (especially those with angular lenses) creates a totally new, large operation field behind the existing, often narrow, anatomical windows. During dissection and clipping of the aneurysm neck the surgeon retains better control over the aneurysm itself and the nerves and vessels in the surgical field. This leads to a reduced retraction of the nervous structures and thus to a reduced morbidity. Due to the better control over the aneurysm sac and the minimized retraction fewer intraoperative premature ruptures occur.

References

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