

Complex and Giant aneurysms of anterior circulation

Tetsuo KANNO

*Fujita Health University, Japan,
Address: 1-98, Dengakugakubo Kutsukake-cho,
Toyoake Aichi 470-1192, JAPAN,
TEL: +91-562-93-9253,
FAX: +91-562-93-3118,
E-mail: tkanno@fujita-hu.ac.jp*

Aneurysm >2.5 cm is considered Giant. Apart from Size; presence of thrombus, atherosclerosed wall, perforator or branch arising from the aneurysm, dome of the aneurysm embedded in a parenchyma, partially coiled or previously clipped aneurysm are the factors which make the aneurysm complex

In spite of the tremendous advances in imaging technology, microsurgical techniques, and endovascular modalities; Giant and complex aneurysms of anterior circulation are still a challenge for a neurosurgeon.

Strategy of management of complex and Giant aneurysm of anterior circulation is different. Pre operative imaging includes 3D CT angiography and MR angiography, while 3 D DSA in selected cases. Selection of modality; whether endovascular, surgical or combined, is based on the detailed analysis of pre operative images and discussion with endovascular team.

We use standard pterional craniotomy for most of the cases with anterior circulation aneurysms at circle of Willis and Orbitozygomatic craniotomy in selected cases. Measures like, extradural clinoideotomy, utilization of Dolenc approach for proximal control are applied when needed.

Meticulous microsurgical dissection, wide splitting of Sylvian fissure, patient arachnoid dissection, achieving proximal and distal control and aneurysm dissection are standard practice.

Selection of proper clip and proper technique of clip application are of significance. Multiple clip techniques such as March clip technique, Tandem clip technique, neck reconstruction are essential tools.

Endoscope assistance is of important to evaluate blind corners and confirmation of complete obliteration of aneurysm. We also use Doppler to confirm complete exclusion of aneurysm.

Alternative strategies are useful in selected cases and includes; utilization of Hypothermia and cardiac arrest which provides more time as well as slacken the aneurysm and if needed aneurysm can be opened, thrombus removed and neck reconstruction can be done. Aneurysm, which is unclippable, is wrapped.

Combined modality with endovascular treatment is also an important tool in selected cases. Options would be: proximal temporary balloon occlusion, endovascular suction decompression, surgical bypass with endovascular vessel occlusion or trapping of aneurysm and partial clipping to occlude and narrow the neck and complete obliteration by coiling.

Conclusion. Giant and complex aneurysms of anterior circulation are a challenge for a cerebrovascular surgeon. With proper selection of approach, proper application of microsurgical technique and utilization of endovascular and surgical combination modalities these aneurysms can be managed with better outcome.

Combined Microsurgical and Endovascular modalities for Complex Intracranial Aneurysms

**Yoko Kato, Chen Lukui, Hirotoshi Sano,
Takeya Watabe, Sadayoshi Watanabe,
Tetsuo Kanno**

*Fujita Health University, Japan,
Address: 1-98, Dengakugakubo Kutsukake-cho,
Toyoake Aichi 470-1192, JAPAN.
TEL: +91-562-93-9253,
FAX: +91-562-93-3118,
E-mail: neuron7@fujita-hu.ac.jp*

OBJECTIVE. A limited series of patients with aneurysms were reviewed retrospectively to analyze strategies for integrating microsurgical and endovascular techniques in the management of complex, surgically incurable aneurysms.

METHODS. Since 1997, Nine patients were managed with a multimodality approach comprising a total of 4 different combinations: 1) coiling after intentional reconstruction of aneurysm neck (n=4); 2) coiling of recurrent aneurysm after clipping (n=1); 3) coiling of aneurysm and parent artery after bypass procedures (n=1); 4) clipping of aneurysm after attempted and incomplete coiling (n=3);

RESULTS. Among 9 aneurysms treated with combined therapy, 6 aneurysms were large or giant in size and 7 had fusiform, dissecting or multilobulated morphology. Complete angiographic obliteration was achieved in 8 aneurysms (88.9%). Overall, 8 patients (88.9%) had good outcomes (Glasgow Outcome Scale score of 4 or 5; mean follow-up, 43 mo). 1 patient died possibly due to accompanying silent basilar tip aneurysm rupturing. There were no treatment-associated mortality or severe morbidity occurring.

CONCLUSION. As for complex, surgically incurable aneurysms, endovascular coiling should be artistically combined with microsurgical clipping and revascularization. Among combined strategies, the intentional reconstruction of aneurysm neck followed by coil embolization, and clipping after attempted and incomplete coiling should be more than often encouraged for those complex aneurysms.

Surgery in Brain AVMs

Yoko Kato, Minoru Yoneda, Hirotoshi Sano

*Department of Neurosurgery,
Fujita Health University, Japan,
Address: 1-98, Dengakugakubo Kutsukake-cho,
Toyoake Aichi 470-1192, JAPAN,
TEL: +91-562-93-9253,
FAX: +91-562-93-3118,
E-mail: neuron7@fujita-hu.ac.jp*

INTRODUCTION. AVM excision is a challenge for a neurosurgeon. There is always a high risk of intra operative bleeding. It is not only because of the abnormal vessels in the AVM, but also due to the change in hemodynamics of the surrounding brain. As the surgery proceeds, surrounding brain become more hyperemic and may start bleeding.

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