

Surgery of Recurrent Intra Cranial Aneurysms After Neck Clipping

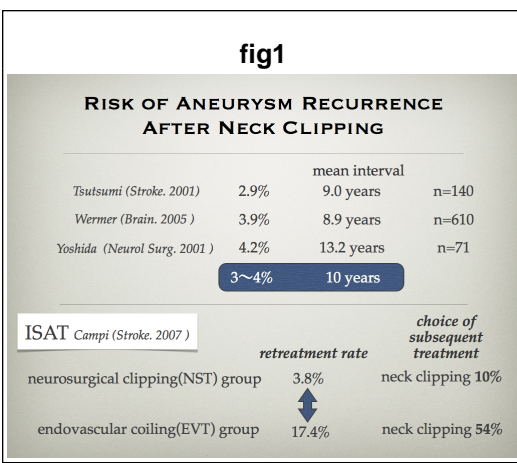
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Introduction

Neck clipping is an established treatment for intracranial aneurysm, but is associated with a low but not negligible risk of aneurysm recurrence(Fig1). Results from the International Subarachnoid Aneurysm Trial (ISAT) found that retreatment rates were lower for neurosurgical than for endovascular treatment, but surgery for regrowth of previously clipped aneurysms is very difficult. Therefore, neck clipping was selected for only 10% of neurologically treated patients as second-line treatment(Fig1). We have assessed the features of recurrent, previously clipped aneurysms and assessed their surgical outcomes.



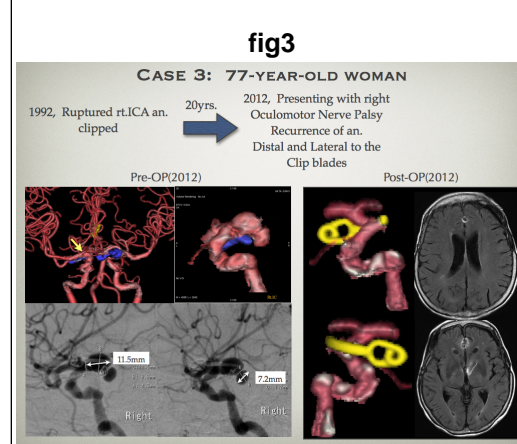
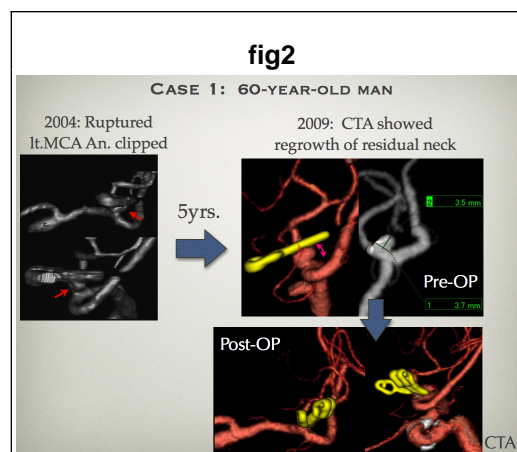
Methods

Of the 1805 patients in our hospital who underwent neck clipping of an intracranial aneurysm from 1990 to 2012, eight patients had recurrent intracranial aneurysm. Outcomes of these patients were analyzed.

Results

The elapsed times between the first clipping and retreatment ranged from 5 to 32 years (mean, 14.0 years). The aneurysms were located in the middle cerebral artery and internal carotid artery-posterior communicating artery. All eight recurrences were distal to the clip blades. We were able to expose the entire length of each previous clip and remove it without rupturing the aneurysm. Clipping was successfully completed without surgical complications in all eight patients.(table)

no	age	sex	site	interval (yrs.)	size	SAH		result
						initial	retreatment	
1	60	M	lt.MCA	5	3.7	+	-	GR
2	75	F	rt.MCA	32	7.6	+	-	GR
3	77	F	rt.ICA	20	12	+	-	GR
4	62	M	rt.MCA	13	12	+	-	GR
5	69	F	rt.IC-PC	21	2	+	-	GR
6	71	M	lt.MCA	7	4.2	+	-	GR
7	55	F	lt.IC-PC	9	4	-	-	GR
8	47	F	rt.IC-PC	5	3.3	-	+	GR



Conclusions

Since complete obliteration of the aneurysm neck is important, especially the part far from the operator, multiple clips were needed during retreatment, despite a single straight clip being used in the initial operation. Treatment for regrowth of previously clipped aneurysms is technically very difficult, with sharp dissection around the aneurysm being essential. Moreover, the previous clip should be removed to ensure complete obliteration of the aneurysm and to spare the perforating arteries.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) describe the importance of sharp dissection and previous clip removal for total exposure of recurrent aneurysm; 2) discuss patterns of aneurysm recurrence and how to apply the clip; and 3) describe the effectiveness of total exposure of the aneurysm to spare perforating arteries and to completely obliterate the aneurysmal neck.