



Ruptured Anterior Inferior Cerebellar Artery Aneurysm

Masaru Honda* and Takeo Anda

Department of Neurosurgery, Shunan Memorial Hospital, Japan

*Corresponding author: Masaru Honda, Department of Neurosurgery, Shunan Memorial Hospital, 1-10-1 Ikunoyaminami, Kudamatsu City, Yamaguchi 744-0033 Japan, Tel: +81-833-45-3330, Fax: +81-833-45-3335, E-mail: dahon1007@yahoo.co.jp

Keywords

Aneurysm, Anterior inferior cerebellar artery

A 85-year-old woman was accepted to our institute with complaints of a headache and vomiting after vertigo and left ear tinnitus. Computed tomography (CT) revealed subarachnoid hemorrhage (Figure 1).

CT angiography identified an aneurysm at meatal loop of the left anterior inferior cerebellar artery (AICA) (Figure 2). A surgical trapping of aneurysm was performed via retrosigmoid craniectomy. The aneurysm was covered by thinned acoustic nerve and clot was found on the surface of the aneurysm, which penetrated the nerve (Figure 3). Trapping was successfully performed (Figure 4). Postoperative course was uneventful except for left ear hearing loss.

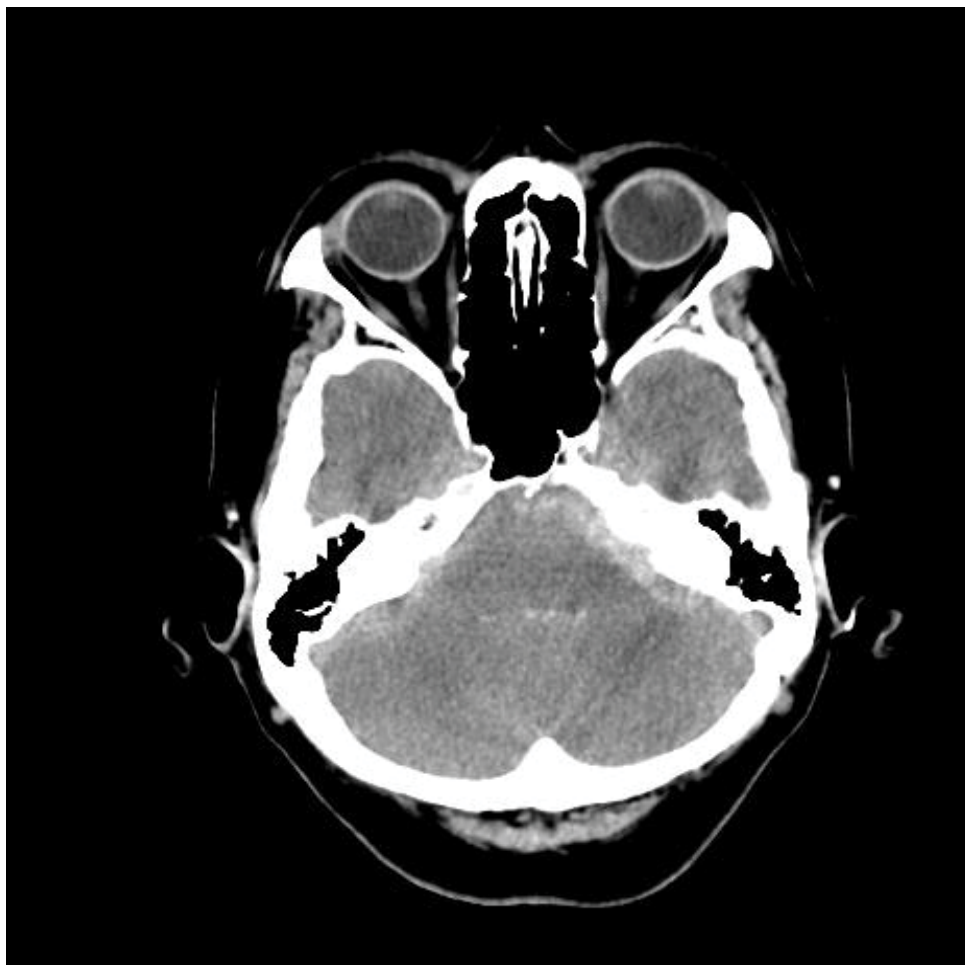


Figure 1: Axial computed tomography scan revealed thick subarachnoid hemorrhage in the left cerebellopontine angle. Lt.: Left; Rt.: Right

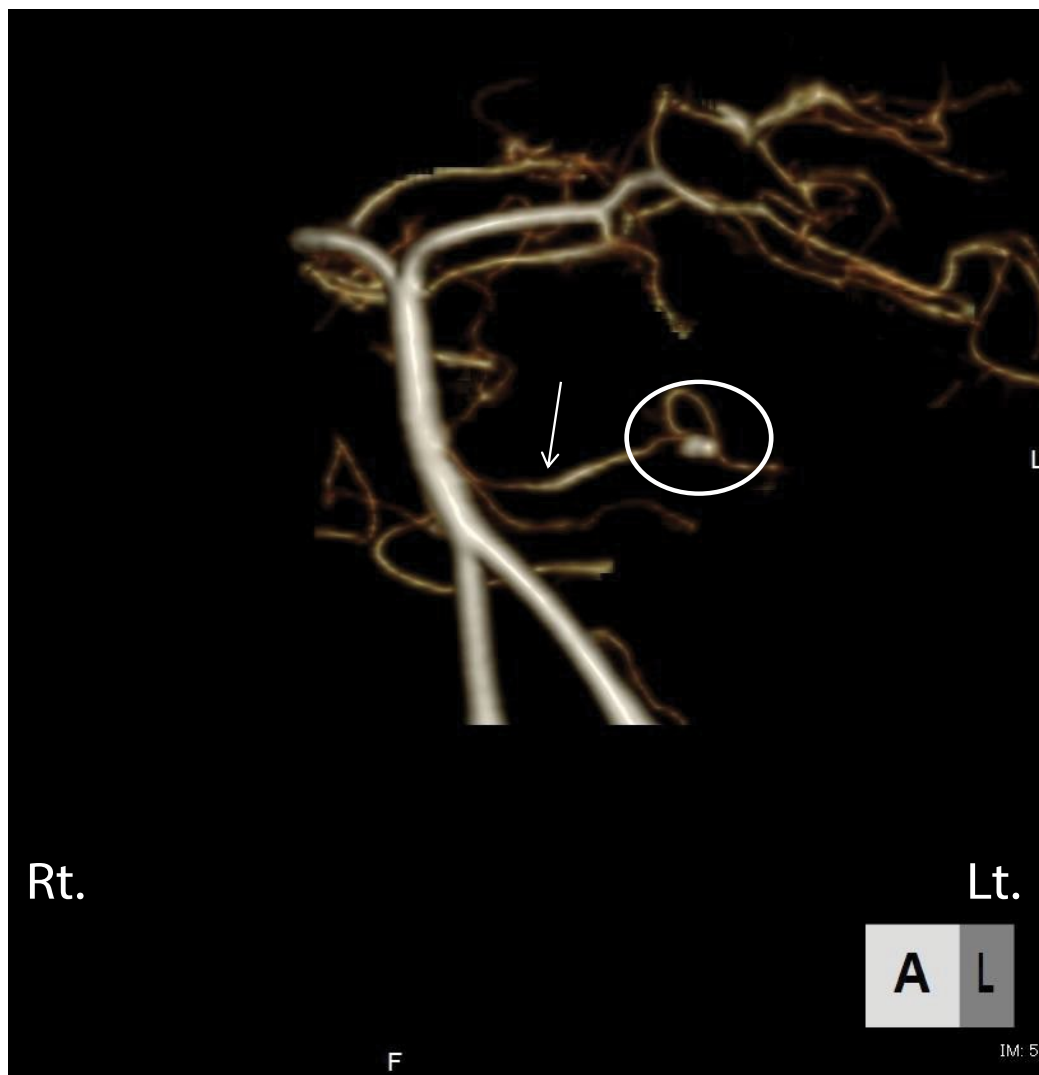


Figure 2: Computed tomography angiography revealed an aneurysm (circle) at the meatal loop of the left anterior inferior cerebellar artery (arrow). Lt.: Left; Rt.: Right

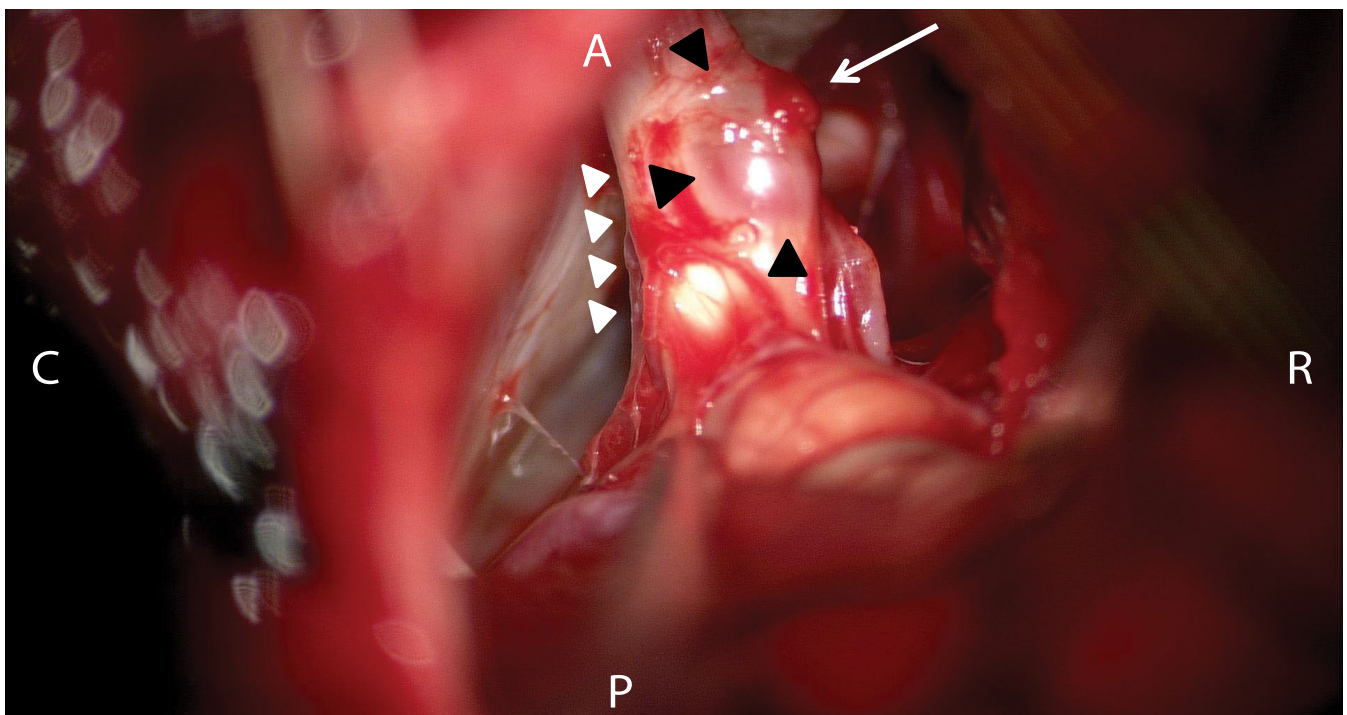


Figure 3: Intraoperative microscopic photograph showed that the aneurysm (black arrow heads) located at the ventral side of thinned left acoustic nerve (white arrow heads). A red clot indicates rupture point of the aneurysm (arrow). A: anterior; C: caudal; P: posterior; R: rostral

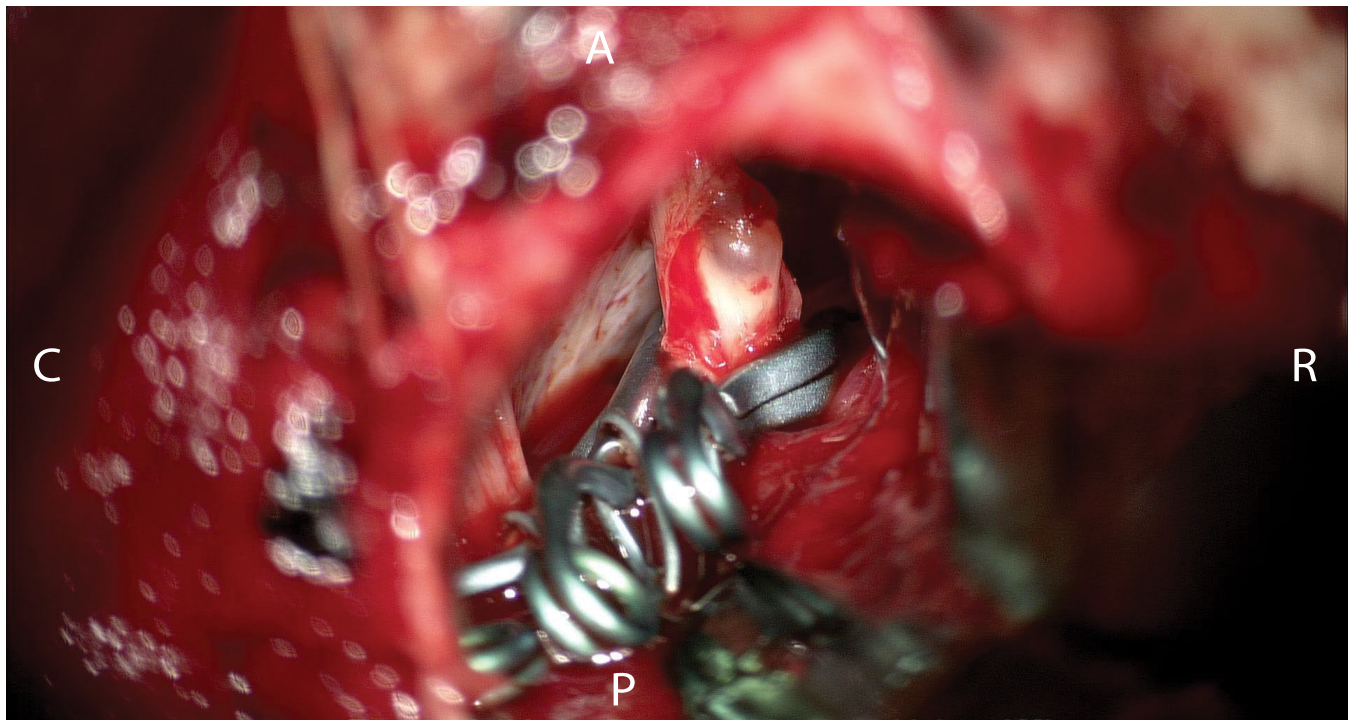


Figure 4: The aneurysm was successfully trapped and the aneurysm got discolored through the acoustic nerve.

Anterior inferior cerebellar artery aneurysms are reported to be 0.025-0.5% of all intracranial aneurysms even in the radiological device-developed era. (Table 1) [1-22]. They are female and middle-age dominant without laterality [2,4,5]. 80% of patients suffered subarachnoid hemorrhage [2,4,5,6-15]. The aneurysm most occurs around the meatal segment, the most curved structure of AICA [1-22]. AICA and other posterior fossa arteries develop from reticular network of arteries and contain many curvatures [3,5,7-11,13-22]. Thus, vertebral artery dominance and hemodynamic stress affect these structures and accelerate aneurysm or other vascular anomaly formation, and vice versa. Surgical clipping, trapping with

or without occipital artery bypass and endovascular therapy have been performed. It seems inevitable to cause hearing disturbance after surgery because it is difficult to identify and spare the internal auditory artery [2-4,8-11]. On the contrary, cerebellar infarction is not severe, due to collateral flow from adjacent arteries [1-22]. To keep good postoperative prognosis, electrophysiological monitoring and intraoperative indocyanine green angiography are mandatory. We believe direct surgery has advantages for blood clots removal, which prevents ventricular drainage or ventriculo-peritoneal shunting. Endovascular treatment is developing but is still reserved for special cases [17-22].

Table 1: Summary of reported cases of distal anterior cerebellar artery aneurysms

Authors	Cases	Location	Treatment	GOS	Complications
Gi, et al. 2007 [6]	72f	Loop	OA-PICA trapping	4	VIII palsy
	53m	Loop	Clipping	4	VIII palsy
Mizushima, et al. 1999 [4]	55 f	Loop	Clipping	5	None
Banczerowski, et al. 1996 [7]	49 f	Intrameatus	Clipping	4	VIII palsy
Kubota, et al. 2015 [3]	71 m	VIIIIn	Clipping	4	VIII palsy
Zotta, et al. 2011 [8]	55 f	Intrameatus	Clipping	4	VII/ VIII palsy
Bambakidis, et al. 2009 [1]	58 f	Anterior branch	Trapping	5	Transient VI/VII palsy
Sun, et al. 2009 [9]	35 f	Loop	Clipping	5	Transient VII palsy pneumonia
	68 f	Intrameatus		1	
Hikichi, et al. 2014 [10]	61 f	Distal anterior pontine segment	Resection	5	Transient VII/VIII palsy
Sarkar, et al. 2004 [11]	60 m	VIIIIn	Trapping	4	VII/VIII palsy
Saito, et al. 2008 [12]	20f	Loop	Clip	5	none

	31f	Dorsolateral	Resection	5	
	64f	Loop	Autopsy	1	
Kondoh, et al. 2003 [13]	77 m	Loop VIIIIn	Trapping	4	Mild dysarthria
Honda, et al. 1994 [2]	62 f	VIIIIn	Clipping	4	VIII palsy
Fujimura, et al. 2012 [14]	77 f	intrameatus	OA-PICA & trapping	4	VIII palsy
Figueiredo, et al. 2009 [15]	45 f	loop	Trapping	5	none
Gonzalez, et al. 2004 4/34 cases [17]	54m	Not precisely	Clipping	2	Motor deficit
Yamakawa, et al. 2004 [16]	64 f	Loop	Clipping	4	VII/VIII palsy
Tokimura, et al. 2012 [5]		5 meatal Segment			
9/4112 cases		3 postmeatal	5 clipping	Four 5	
20 to 80 years		1 premeatal	2 trapping	Three 4	Not precisely
7 female 2 male		segment	1 IVR	Two 2	mentioned
Maekawa, et al. 2003 [18]	56 m	Choroidal	IVR	5	Cerebellar infarction
Kang, et al. 2007 [19]	41 m	Caudal trunk	IVR	5	Cerebellar infarction
Oh, et al. 2014 [20]	42 f	Postmeatal			deafness
		segment	IVR	4	
Ishii, et al. 2010 [21]	73 f	Loop distal	IVR	5	none
Fukushima, et al. 2009 [22]	15 f		OA-PICA & IVR		
		Anterior			none
		Pontine		5	
		segment			

GOS: Glasgow Outcome Scale; f: female; m: male; OA-PICA: occipital artery-posterior inferior cerebellar artery anastomosis; IVR: interventional radiotherapy.

References

- Bambakidis NC, Manjila S, Dashti S, Tarr R, Megerian CA (2009) Management of anterior inferior cerebellar artery aneurysms: an illustrative case and review of literature. *Neurosurg Focus* 26: E6.
- Honda Y, Tanaka R, Kameyama S (1994) Ruptured distal anterior inferior cerebellar artery aneurysm--case report. *Neurol Med Chir (Tokyo)* 34: 763-767.
- Kubota H, Sanada Y, Nagatsuka K, Kato A (2015) A case of angiographically occult, distal small anterior inferior cerebellar artery aneurysm *Surg Neurol Int* 6: 97.
- Mizushima H, Kobayashi N, Yoshiharu S, Kazuo H, Dohi K, et al. (1999) Aneurysm of the distal anterior inferior cerebellar artery at the medial branch: a case report and review of the literature. *Surg Neurol* 52: 137-142.
- Tokimura H, Ishigami T, Yamahata H, Yonezawa H, Yokoyama S, et al. (2012) Clinical presentation and treatment of distal anterior inferior cerebellar artery aneurysms. *Neurosurg Rev* 35: 497-503.
- Gi H, Inoha S, Uno J, Ikai Y, Koga H, et al. (2007) [Four cases of direct surgery for anterior inferior cerebellar artery aneurysms]. *No Shinkei Geka* 35: 571-578.
- Banczerowski P, Sipos L, Vajda J (1996) Aneurysm of the internal auditory artery: our experience and review of the literature. *Acta Neurochir (Wien)* 138: 1157-1162.
- Zotta DC, Stati G, De Paulis D, Galzio RJ (2011) Intrameatal aneurysm of the anterior inferior cerebellar artery. *J Clin Neurosci* 18: 561-563.
- Sun Y, Wrede KH, Chen Z, Bao Y, Ling F (2009) Ruptured intrameatal AICA aneurysms--a report of two cases and review of the literature. *Acta Neurochir (Wien)* 151: 1525-1530.
- Hikichi K, Ishikawa T, Moroi J, Miyata H (2014) [Ruptured aneurysm at the anomalous arterial wall of the distal anterior inferior cerebellar artery: a case report]. *No Shinkei Geka* 42: 41-46.
- Sarkar A, Link MJ (2004) Distal anterior inferior cerebellar artery aneurysm masquerading as a cerebellopontine angle tumor: case report and review of literature. *Skull Base* 14: 101-106.
- Saito A, Nishino A, Suzuki I, Suzuki H, Utsunomiya A, et al. (2008) Subarachnoid hemorrhage caused by rupture of a distal anterior inferior cerebellar artery aneurysm--three case reports. *Neurol Med Chir (Tokyo)* 48: 506-511.
- Kondoh T, Kurihara E, Kohmura E (2003) Distal anterior inferior cerebellar artery aneurysm occult on magnetic resonance angiography one month prior to rupture--case report. *Neurol Med Chir (Tokyo)* 43: 345-348.
- Fujimura M, Inoue T, Shimizu H, Tominaga T (2012) Occipital artery-anterior inferior cerebellar artery bypass with microsurgical trapping for exclusively intra-meatal anterior inferior cerebellar artery aneurysm manifesting as subarachnoid hemorrhage. Case report. *Neurol Med Chir (Tokyo)* 52: 435-438.
- Figueiredo EG, Paiva WS, Teixeira MJ (2009) A distal AICA aneurysm. *Arq Neuropsiquiatr* 67: 112-114.
- Yamakawa H, Hattori T, Tanigawara T, Sahashi Y, Ohkuma A (2004) Intracanalicular aneurysm at the meatal loop of the distal anterior inferior cerebellar artery: a case report and review of the literature. *Surg Neurol* 61: 82-88.
- Gonzalez LF, Alexander MJ, McDougall CG, Spetzler RF (2004) Anteroinferior cerebellar artery aneurysms: surgical approaches and outcomes--a review of 34 cases. *Neurosurgery* 55: 1025-1035.
- Maekawa M, Awaya S, Fukuda S, Teramoto A (2003) A ruptured choroidal artery aneurysm of the anterior inferior cerebellar artery obliterated via the endovascular approach: case report. *No Shinkei Geka* 31: 523-527.
- Kang HS, Roh HG, Han MH, Koh YC (2007) Successful endovascular occlusion of a ruptured distal anterior inferior cerebellar artery aneurysm of the caudal trunk: case report. *Interv Neuroradiol* 13: 271-276.
- Oh JS, Yoon SM, Shim JJ, Bae HG, Yoon IG (2014) Endovascular treatment for ruptured distal anterior inferior cerebellar artery aneurysm. *J Cerebrovasc Endovasc Neurosurg* 16: 20-25.
- Ishii D, Takechi A, Shinagawa K, Sogabe T (2010) Endovascular treatment for ruptured distal anterior inferior cerebellar artery aneurysm -case report-. *Neurol Med Chir (Tokyo)* 50: 396-399.
- Fukushima S, Hirohata M, Okamoto Y, Yamashita S, Ishida S, et al. (2009) Anterior inferior cerebellar artery dissecting aneurysm in a juvenile: case report. *Neurol Med Chir (Tokyo)* 49: 81-84.