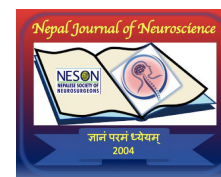


A Rare Case of Azygous Anterior Cerebral Artery Saccular Aneurysm and Supraclinoid Internal Carotid Artery Aneurysm: A Case Report

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Date of Submission: 13th July 2026

Date of Acceptance: 24th August 2026

Date of Publication: 15th September 2026

Abstract

An azygous Anterior Cerebral Artery is a rare anatomical anomaly with an occurrence incidence of 1.1%. saccular aneurysm arising for Azygous Anterior Cerebral Artery with Supraclinoid Internal Carotid Artery aneurysm is reported less in the literature. We report a case of azygous Anterior Cerebral Artery saccular aneurysm with supraclinoid Internal Carotid Artery aneurysm clipped micro surgically in a single setting raising a single bone flap. This study aims to create understanding among neurosurgeons about the single setting clipping of multiple aneurysms through different approaches.

Keywords: Azygous anterior cerebral artery, Intracranial Aneurysms, Supraclinoid internal carotid artery, Microsurgical clipping, Single Bone flap

Introduction

Awareness of cerebrovascular anatomic variations and the clinicopathologic entities associated with them play a key role in deciphering the pathophysiologic basis of various neurovascular disorders and ultimately devising a management plan. Azygous anterior cerebral artery (ACA) is a rare anatomical variant of ACA with a reported incidence of 0.1–0.5%.¹⁻⁵ The occurrence at our center is 0.44% over a decade and a half. The altered flow dynamics subjects the anterior vascular territory to hemodynamic stress and thus leads to an increase in the incidence of distal ACA aneurysms in such patients, with estimated figures ranging from 13 to 71%.³⁻⁵ Although, in such cases distal end of azygous ACA is the most common site for aneurysm formation⁴, other regions of anterior circulation can also be predisposed to aneurysm formation, especially when associated with other anatomic variations. Medical literature has a handful of cases of azygous ACA with associated saccular aneurysm at distal ACA,

but to our knowledge, this is one of the few reported cases of an azygous ACA aneurysm and Internal Carotid Artery (ICA) aneurysms, both clipped in a single setting raising a single bone flap. This study aims to help young neurosurgeons to understand the single setting microsurgical clipping of multiple aneurysms through two different approaches.

Case:

A 51 years female presented to our emergency department with history of fall from the stairs following blackout few hours prior to presentation. At the time of presentation, she was conscious. There were no signs of focal neurological deficits. Noncontrast CT images showed thick bilateral Sylvian SAH (Fig. 1). CT angiography depicted a saccular aneurysm in the supraclinoid segment of the right ICA, in association with azygous ACA aneurysm (Fig. 2). Her rest biochemical and lab values were within normal limits. ECHO cardiography was done as patient had history of hypertension for 7 years and was under medication. The patient was taken up for surgery following all the reports were permitting to surgery. A single staged Bicoronal incision and Right Fronto-Temporal Craniectomy with interhemispheric approach to microsurgical clipping of azygous ACA aneurysm and Pterional approach to clipping of right supraclinoid ICA aneurysm was done. The bone flap was removed due to fear of post operative brain swelling. Wide GP duroplasty was done. Yasargil titanium aneurysm clips were used curved one on the ACA and right angle fenestrated on the ICA aneurysm (Fig 3). Patient was discharged on 15th post operative day after the stitches were taken out. Titanium mesh cranioplasty was done on the 3 months follow up (fig 4) Patient is neurologically intact on 9 months follow up.

Access this article online

Website: <https://www.nepjol.info/index.php/NJN>

DOI: <https://doi.org/10.3126/njn.v23i3.88123>

HOW TO CITE

Thapa, A. J. (n.d.). A Rare Case of Azygous Anterior Cerebral Artery Saccular Aneurysm and Supraclinoid Internal Carotid Artery -Aneurysm: A Case Report.. NJNS. 2026;23(3):70-72

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ISSN: 1813-1948 (Print), 1813-1956 (Online)



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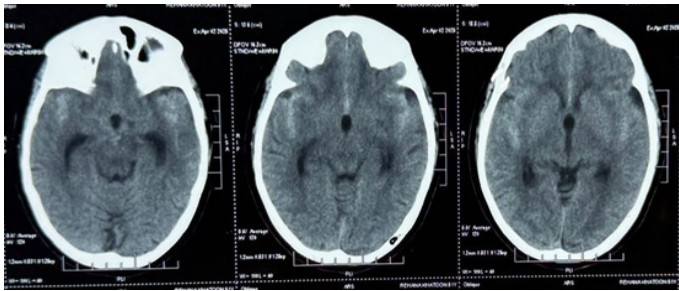


Figure 1: Computed Tomography axial images showing bilateral sylvian fissure and interhemispheric SAH

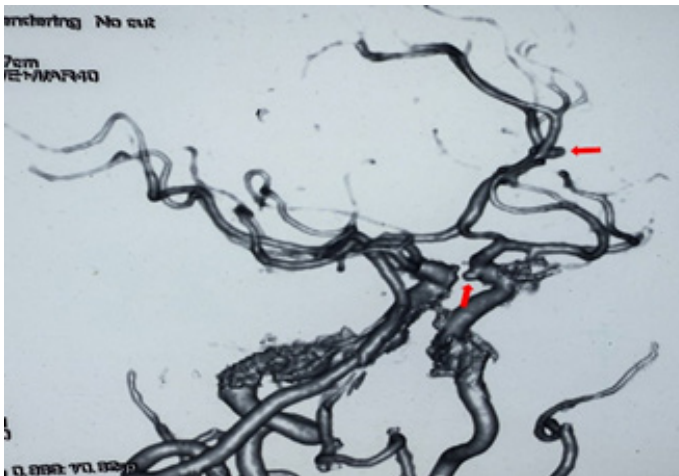


Figure 2: CT angiography 3D reconstruction showing 2 saccular aneurysms (red arrow).

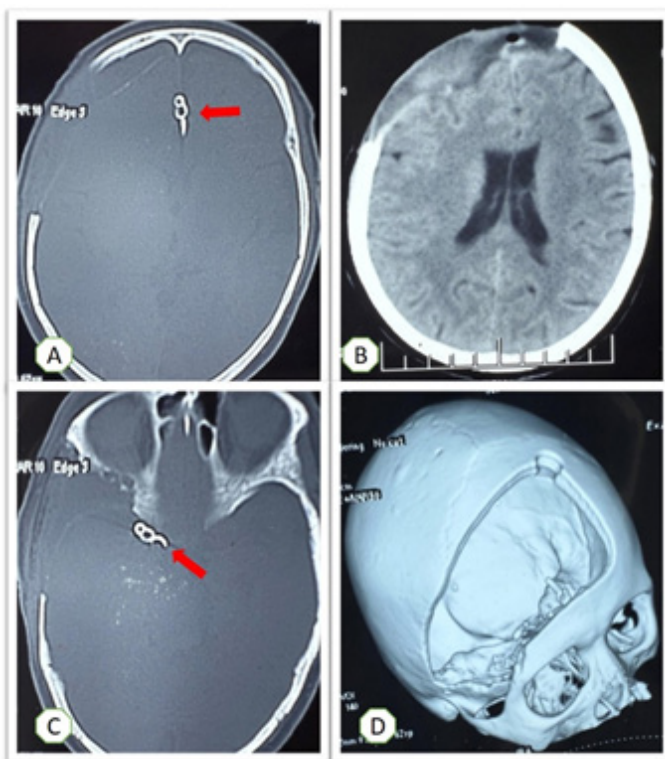


Figure 3: Postoperative CT images showing (A) and (C) Clips (red arrows). Axial brain window with craniectomy defect (B) and 3D reconstruction showing craniectomy defect (D)

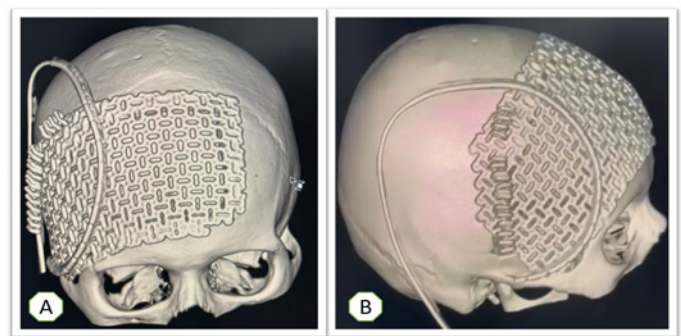


Figure 4: CT 3D bone reconstruction showing Titanium Mesh Cranioplasty

Discussion

Wilders in the year 1885, described the fusion of the 2 anterior cerebral arteries (ACA) as arteria termatica also calling it azygous artery of the pericallosal artery. The azygous ACA is a very rare anatomic variation with very low incidence of 0-5%.¹⁻³ The occurrence of azygous ACA aneurysm at our center is 0.44% over a decade and a half which is similar to the studies priorly published. The Azygous ACA in humans is associated with various alternation in hemodynamics especially in the frontal lobe leading to agenesis of corpus callosum, hydranencephaly, AVMs, Aneurysms, septum pellucidal defects, etc. In our case report we have encountered an azygous ACA aneurysm along with Rt supraclinoid ICA aneurysm which may or may not be directly related to the azygous ACA. According to Baptista, the classification of distal ACA anatomical variations into three main types: (1) azygous anterior cerebral artery, in which a single midline anterior cerebral artery is formed by joining of bilateral A1 segments, with the absence of anterior communicating segment and runs in the interhemispheric fissure, supplying the territories of both cerebral hemispheres; (2) bihemispheric ACA, in which though there are two ACAs one is dominant and supplies the contralateral cerebral hemisphere as well; and (3) triplicate ACA, in which there is a median corpus callosal artery besides the normal paired distal ACAs.⁶ According to Lasajaunias et al, a true azygous ACA does not divide but the “fused” variant of azygous bifurcates into separate distal ACAs along its course over the corpus callosum which was similar to what was seen in our case report.⁷

The management of azygous ACA aneurysm in our case was done by microsurgical clipping through interhemispheric approach which is similar to the management in many of the reported cases.¹⁻⁵ Endovascular coiling of azygos ACA aneurysm has been reported in few cases.⁸ When there is azygous ACA single vessel supplies the bilateral medial cerebral hemispheres and temporary clipping of proximal azygous ACA may result in infarcts on both the sides. So temporary clips were avoided in our case at the proximal azygous ACA. The right supraclinoid ICA aneurysm was also clipped in the same setting through Pterional approach, during the clipping proximal ICA control was taken with the use of temporary clips. This is the first reported case of microsurgical clipping of azygous ACA aneurysm and ICA aneurysm in a single setting with a single bone flap. Bicoronal incision was given and right Fronto-Temporal craniectomy crossing the midline was done. The azygous ACA aneurysm was clipped through interhemispheric approach and the ICA through

Pterional approach. The patient had no neurological deficits following the surgery. The objective of this study was to provide basic understandings among neurosurgeons towards the single setting clipping of multiple aneurysms through two different approaches. Detailed workout and revisiting the anatomy of the skull base is the key to minimal complications, brain retraction and good postoperative recovery.

Conclusion

The occurrence of azygous ACA aneurysm is rare but yet is encountered so careful examining of the angiography to avoid missing is must. Temporary clips should be cautiously applied as the single vessel is supplying both the cerebral hemispheres. The microsurgical clipping of Azygous ACA aneurysm and ICA aneurysm can be achieved in a single setting with a single bone flap.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors

References

1. Baykal S, Ceylan S, Dinç H, Soylev E, Usul H, Akturk F. Aneurysm of an azygos anterior cerebral artery: report of two cases and review of the literature. *Neurosurg Rev.* 1996;19(1):57-9. doi: 10.1007/BF00346613. PMID: 8738368.
2. Ghanta RK, Kesanakurthy MV, Vemuri VN. Aneurysm of azygos anterior cerebral artery: A report of two cases. *Asian J Neurosurg.* 2016 Jul-Sep;11(3):312. doi: 10.4103/1793-5482.145363. PMID: 27366270; PMCID: PMC4849312.
3. Huh JS, Park SK, Shin JJ, Kim TH. Saccular aneurysm of the azygos anterior cerebral artery: three case reports. *J Korean Neurosurg Soc.* 2007 Oct;42(4):342-5. doi: 10.3340/jkns.2007.42.4.342. Epub 2007 Oct 20. PMID: 19096567; PMCID: PMC2588199.
4. González Zavala PA, Falcón Molina JE, Lozano Guzmán I, Abdo Toro MA, Téllez Medina I, García López R, Salazar Ramírez ZE, Sandoval Ramírez CJ. Anterior Interhemispheric Approach for the Surgical Treatment of Azygos Anterior Cerebral Artery Aneurysms: A Case Series. *Cureus.* 2024 Apr 23;16(4):e58808. doi: 10.7759/cureus.58808. PMID: 38784372; PMCID: PMC1112445.
5. Auguste KI, Ware ML, Lawton MT. Nonsaccular aneurysms of the azygos anterior cerebral artery. *Neurosurg Focus.* 2004 Nov 15;17(5):E12. doi: 10.3171/foc.2004.17.5.12. PMID: 15633977.
6. Baptista AG. Studies on the arteries of the brain. II. The Anterior Cerebral Artery: some anatomic features and their clinical implications. *Neurology.* 1963 Oct;13:825-35. doi: 10.1212/wnl.13.10.825. PMID: 14066997.
7. Lasjaunias P, et al. *Surgical neuro-angiography*: Berlin-Springer; 2000.
8. Sarikaya B, Oksuz E, Deniz FE, Firat MM. Endovascular treatment of a ruptured aneurysm at a very rare location. Distal azygos anterior cerebral artery. *Interv Neuroradiol.* 2008 Dec 29;14(4):457-60. doi: 10.1177/159101990801400413. Epub 2009 Jan 5. PMID: 20557747; PMCID: PMC3313815.
9. Kanemoto Y, Tanaka Y, Nonaka M, Hironaka Y. Giant aneurysm of the azygos anterior cerebral artery--case report. *Neurol Med Chir (Tokyo).* 2000 Sep;40(9):472-5. doi: 10.2176/nmc.40.472. PMID: 11021080.
10. Jagetia A, Kumar PN, Sinha S, Sharma A. Saccular bilobed aneurysm of an azygos anterior cerebral artery. *J Clin Neurosci.* 2007 Aug;14(8):777-9. doi: 10.1016/j.jocn.2006.02.005. PMID: 17577525.
11. Mahakul DJ, A rare case of azygous ACA with bilateral ICA aneurysm and distal ACA aneurysm. *Interdisciplinary Neurosurgery, Volume 27, 2022,101327, ISSN 2214-7519, https://doi.org/10.1016/j.inat.2021.101327.*