



Unexpected Bilateral Emergence of the Ophthalmic Arteries from the Cavernous Segment of the ICA in a Patient with Multiple Intracranial Aneurysms

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Description

A 65-year-old female was brought to the emergency department with a sudden-onset severe pulsatile headache. On admission, she had a Glasgow Coma Score of 15 points, without neurological deficit or nuchal rigidity. She described her headache as aggravated by straining and bending over. A noncontrast computed tomography showed a right sylvian fissure subarachnoid hemorrhage. Angiography showed a multilobulated, right C7 (Bouthillier Classification) saccular aneurysm, a left C3 blister aneurysm, a left C5 saccular aneurysm, and a left C7 saccular aneurysm that was 2.3 mm in diameter. It also showed that both ophthalmic arteries arose from the C4 internal carotid artery (ICA) segments. The right one arose from the lateral wall of the anterior bend, and the left one from the inferior

wall of the anterior bend. Both arteries entered the orbit through the superior orbital fissure (► **Fig. 1**).

An anomalous origin of the ophthalmic arteries can be found in 2 to 4% of individuals. A bilateral cavernous carotid origin is uncommon. During embryological development, when there is persistence of the primitive ventral ophthalmic artery with regression of the primitive dorsal ophthalmic artery, the main supply for the ophthalmic artery comes from the cavernous segment of the ICA such as in this case^{1–4} (► **Fig. 2**, ► **Supplementary Figs. S1 and S2** [available in the online version]). Some authors^{1,3} believe this to be a misconception, explaining that the cavernous origin of the ophthalmic artery is related to an incomplete separation from the inferolateral trunk as a vestige of the primitive maxillary artery.

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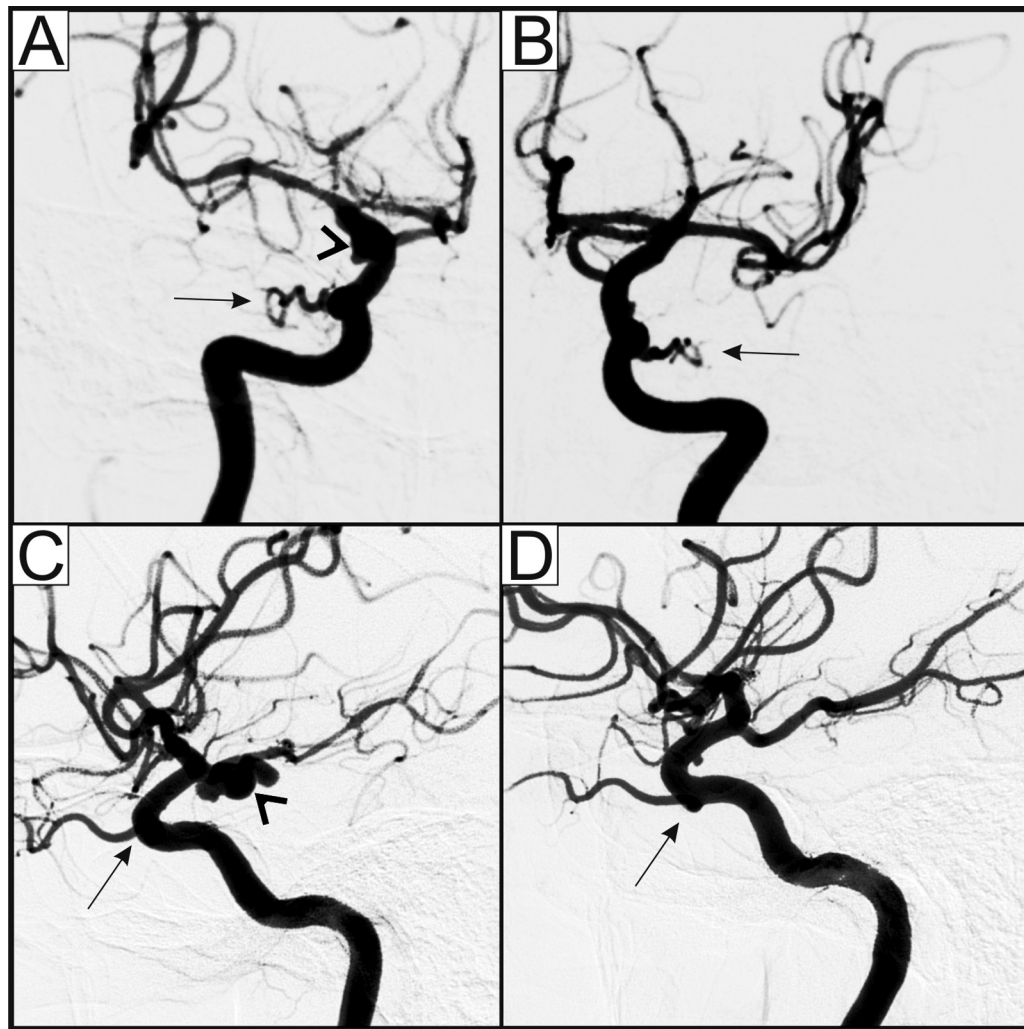


Fig. 1 Digital reconstruction angiography of the patient presented in this case. (A) Anteroposterior (AP) projection of the right internal carotid artery (ICA). (B) Lateral projection of the right ICA. (C) AP projection of the right ICA. Note the lobulated C7 aneurysm (arrowheads) and the emergence of the ophthalmic artery from the anterior wall of the anterior bend of C4 (arrows). (D) Lateral projection of the left ICA. Note the emergence of the ophthalmic artery from the inferior wall of the anterior bend of C4.

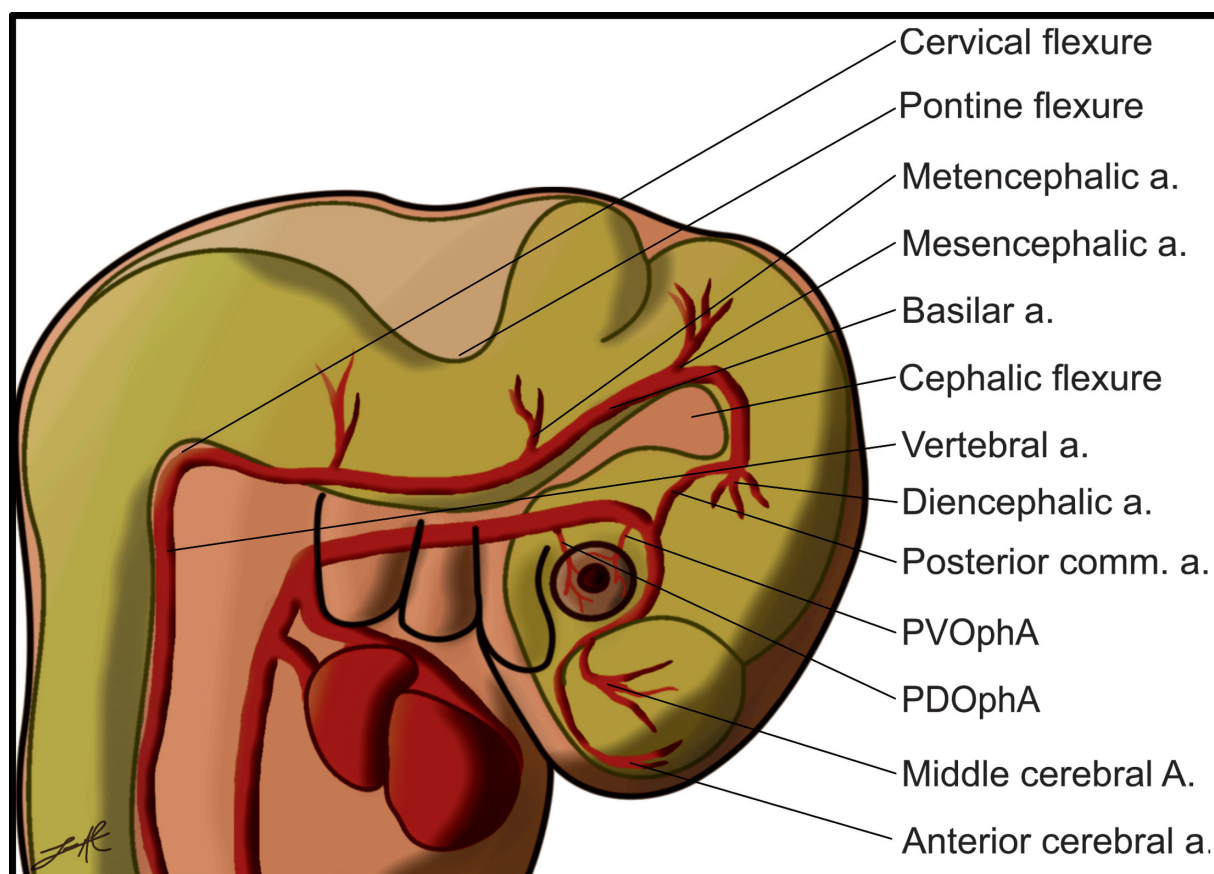


Fig. 2 Illustration of the normal developing cerebral and ophthalmic circulation at crown-rump length of 7 to 12 cm and their cephalocaudal relationship with the eye. The degeneration of the primitive ventral ophthalmic artery (PVOphA) makes the primitive dorsal ophthalmic artery (PDOphA), which enters the orbit through the superior orbital fissure, the main arterial supply of the eye. Modified with permission from: Cork, Robert. The Endowment for Human Development: Carnegie Stage 16–9 (Virtual Human Embryo Project).

Conflict of Interest
None declared.

References

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