Aneurysm of the occipital artery: development after surgical ligation of the internal carotid artery.

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Aneurysm of the Occipital Artery: Development After Surgical Ligation of the Internal Carotid Artery

Aneurysms of the external carotid artery circulation are extremely rare. The authors report a case of interval development of an occipital artery aneurysm following ligation of the internal carotid artery.

Case Report

A 9-year-old girl originally presented at the age of 4 years with a gradual onset of headache, nausea, and vomiting. Physical examination at that time revealed complete ophthalmoplegia and visual loss in the left eye. Contrast-enhanced CT and subsequent angiography showed the presence of bilateral intrapetrous aneurysms of the internal carotid arteries. The external carotid arterial circulation, including the occipital artery, was normal (Fig. 1A). The left internal carotid artery was then occluded by means of a Crutchfield clamp.

The patient experienced an uneventful clinical course without an intervening episode of documented cerebral trauma. Four years later she had loss of direct and consensual pupillary response to light in the right eye. We suspected that the patient's right carotid aneurysm was enlarging, and elective cerebral angiography was performed. A slight interval increase in the size of the right intrapetrous aneurysm was seen. Interval development of a saccular aneurysm also was shown to involve the distal branch of the left occipital artery (Fig. 1B).

Five months later, the patient complained of severe occipital headaches and postprandial nausea and vomiting. A repeat angiogram showed slight interval enlargement of the occipital artery aneurysm and a bilobed configuration suggestive of partial thrombosis (Fig. 1C). These findings, in conjunction with the clinical picture, prompted surgical removal of the aneurysm. The pathologic specimen is shown in Figure 2. The wall of the aneurysm consisted of reduplicated fibrous tissue. Marked intimal proliferation was also present.

Discussion

Most aneurysms of the external carotid artery are seen in the superficial branches of the temporal artery. Aneurysms rarely are seen in the lingual, superior thyroid, and middle meningeal branches of the external carotid artery [1–3]. Most develop after blunt trauma; other etiologic factors include infection, arthritis, congenital wall weakness, and neoplastic diseases. Balsys and Cross [4] described a

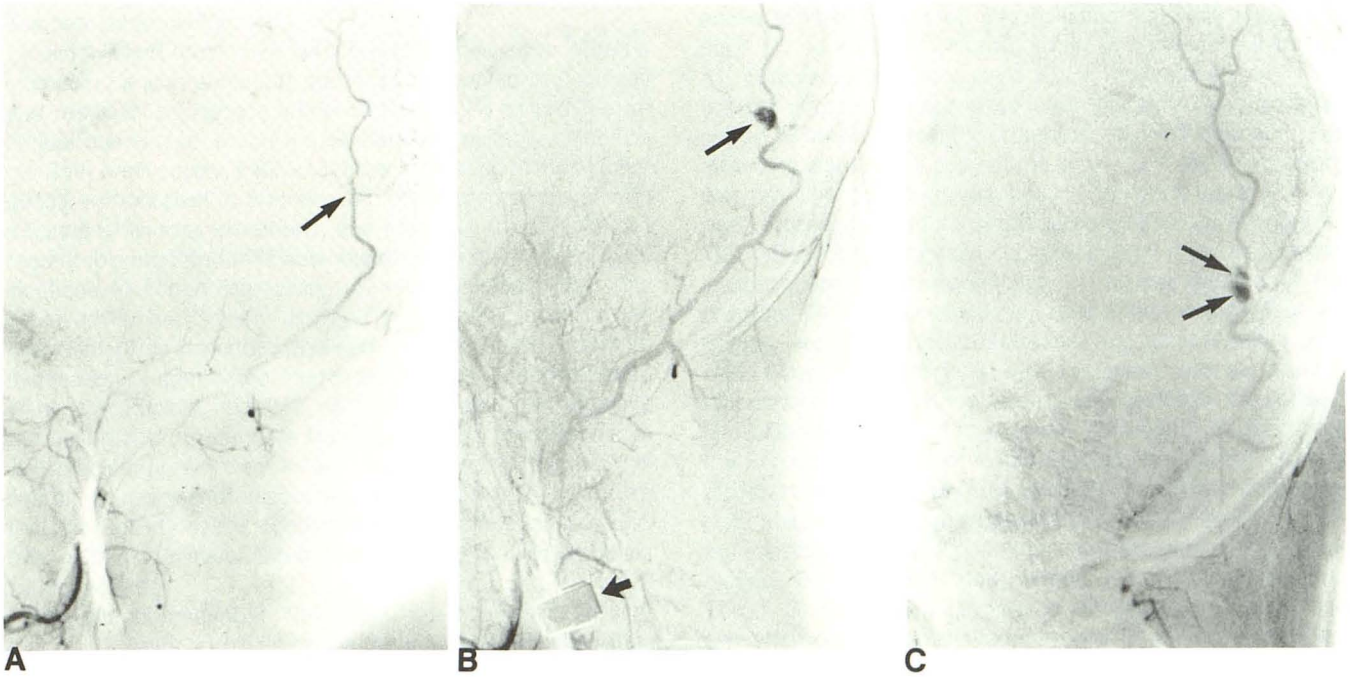

Fig. 1.—Left external carotid arteriogram, lateral projections.
***A*, Normal occipital artery circulation (*arrow*).**
***B*, 4 years later, a saccular aneurysm has developed in distal portion of same occipital artery (*thin arrow*). Crutchfield clamp is noted to occlude left carotid artery (*thick arrow*).**
***C*, 5 months later, there has been slight enlargement of aneurysm showing bilobed configuration (*arrows*).**

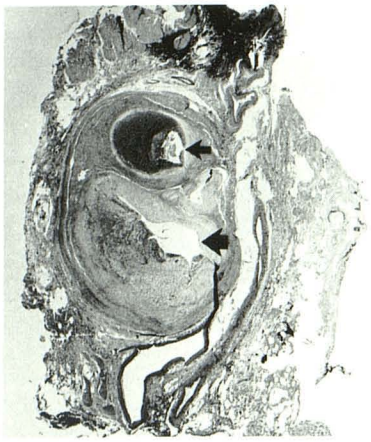

Fig. 2.—Pathologic specimen of aneurysm displays larger, partially patent parent lumen (*large arrow*) and second, smaller lumen almost completely occluded by blood and organizing fibrous tissue (*small arrow*). (H and E ×200)

case of the formation of multiple aneurysms in the external carotid arterial circulation after embolization of an arteriovenous malformation. They implicated either inflammatory response or embolic infarction as a cause for the aneurysms' formation.

We could not find any previous description of aneurysmal formation involving the occipital branch of the external carotid artery. Without a history of head trauma in our patient, an exact cause cannot be ascribed to its interval formation. We speculate that altered hemodynamic stresses involving the left external carotid artery ensued after ligation of the left internal carotid artery. In light of her previously documented giant aneurysms of the internal carotid arteries, a congenital weakness or gap in the tunica media of the occipital artery could have predisposed this patient to this aneurysmal formation.

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