We report on a patient with an aneurysm of the anterior ethmoidal artery (AEA); the vessel also fed an anterior cranial fossa (ACF) tumor. The aneurysm disappeared early after removal of the tumor. Although Guzman and Grady previously reported on an aneurysm located on an artery feeding a tumor, ours is the first report documenting the spontaneous disappearance of an aneurysm on the tumor feeding vessel after removal of the tumor.

This 51-year-old man was admitted to our hospital for evaluation of a generalized seizure. Magnetic resonance (MR) images demonstrated a large extraaxial tumor in the ACF (Fig. 1). Cerebral angiography demonstrated a tumor blush (Fig. 2). There was no angiographic evidence of an aneurysm of the left carotid artery or the vertebral arteries. The flow of the peripheral ophthalmic artery (OphA) was evaluated using transocular Doppler flow velocimetry imaging. The average flow in the peripheral right OphA was 9.1 cm/second, which was significantly higher than the 2.9-cm/second flow in the peripheral left OphA. We diagnosed the lesions as multiple meningiomas composed of a large olfactory groove meningioma and tumors located at the convexity.

Gross-total removal of the tumors was performed. Histological examination revealed multiple meningothelial meningiomas with no malignancy. Postoperative angiography demonstrated complete disappearance of the right AEA aneurysm (Fig. 3). Postoperatively, the average flow of the peripheral right OphA markedly decreased from 9.1 to 3.2 cm/second.

The AEA, which is an orbital branch of the OphA, runs through the anterior ethmoidal foramen in the ethmoid sinus. Its meningeal branches supply blood to the dura mater of the skull base and are often the feeding vessels of ACF meningiomas. In our case, the early appearance of a large tumor stain on angiography and Doppler imaging confirmed high flow velocity in the arteries feeding the olfactory groove meningioma. We posit that the resulting increase in hemodynamic stress may have contributed to the formation of the aneurysm on the AEA. We assert that in our patient, a decrease in the regional blood flow after tumor extirpation led to thrombosis and spontaneous obliteration of the AEA aneurysm.

References