Case Report and Technical Notes

Arteriovenous Fistula after Removal of Meningioma*

Case Report

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There have been a number of reports of traumatic or iatrogenic arteriovenous fistulas3,6,7,11 and, of course, many studies of meningiomas. We have found no report, however, of a case in which both were present in the same intracranial area at the same time. We are reporting such a case.

Case Report

First Admission. This 47-year-old Negro woman was first admitted to the Neurosurgery Service at Barnes Hospital on November 4, 1958. At that time there was a 6-month history of progressive neurological deficit characterized by personality changes, headache, vomiting, confusion, lethargy, global dysphasia, a spastic right hemiparesis, nonfocal seizures, and progressive nonpulsating proptosis with bilateral papilledema. A firm nontender fullness was present in the left temporal region. There were no cephalic, orbital, or neck bruits. The remainder of the physical examination was normal.

A slow dysrhythmia in the left temporoparietal region was present in the EEG. Plain skull films indicated marked hyperostosis and thickening of the left sphenoid wing. A left carotid arteriogram showed a large left frontotemporal mass with opening of the carotid siphon, medial and upward displacement of the left middle cerebral artery, and vascular stain in a lesion along the sphenoid wing (Fig. 1).

Operation. With the use of hypothermia

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and urea, a left frontotemporal craniotomy was performed on November 6. The temporalis muscle was involved by tumor associated with marked hyperostosis and thickening of the greater and lesser sphenoid wing. A major intracapsular removal of the tumor was accomplished. The operating surgeon felt that none of the important branches of the middle cerebral artery had been sacrificed. The partial dural closure included the use of gelfilm to cover the deficit created by the tumor removal. Microscopic examination of the surgical specimen revealed fibroblastic meningioma in the temporal muscle and marrow spaces of the bone. There were no mitotic figures.

Postoperative Course. The patient’s postoperative course was unusually benign, characterized by rapid and dramatic improvement. At the time of her discharge her mental status was normal and she was fully ambulatory, although there was hyperreflexia and very mild weakness of the right leg.

Second Admission. On October 31, 1965, the patient was readmitted to the hospital after suffering progressive loss of vision and proptosis of the left eye for 8 months. Intermittent headache and a firm nontender left temporal mass had developed. She also had a limp in the right leg.

The blood pressure was 140/90, pulse 88. She was alert, cooperative, oriented, and ambulatory. A firm, nontender, nonpulsating 5×5 cm mass was palpable in the left temporal region. Again, there were no cephalic, orbital, or cervical bruits. The left eye was proptosed without conjunctival changes. Funduscopic examination showed old scarring bilaterally and a slight pale left optic disc. Corneal and facial sensation was intact, and there was no motor or sensory deficit.

Left common carotid injections showed
immediate filling of a large vein (8 mm in diameter) in the left coronal area draining into the superior sagittal sinus. A brush-like group of vessels in the left pterional region was supplied by the external and internal carotid arteries. The right carotid arteriogram was considered normal except for vascular supply to the tumor in the form of small vessels from the anterior communicating artery region (Figs. 2, 3, and 4).

Second Operation. On November 3, under general endotracheal anesthesia, the left external carotid artery was ligated, and a secondary left frontotemporal craniotomy was performed with excision of recurrent sphenoid wing and orbital roof meningioma. There was tumor in the temporalis muscle and zygomatic fossa which extended from the floor of the middle fossa and pterional region. There was a large cystic area in the region of the anterior portion of the middle fossa but no gross tumor in the parenchymal portion of the brain. Near the superior margin of the dura excised at the first operation there was a meningocortical cicatrix. Above this region of dural adherence a large "red" vein containing arterial blood was visible. The middle cerebral artery was

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**Fig. 1.** Preoperative (1958) left carotid arteriograms show displacement of the anterior cerebral artery to the right and elevation and medial displacement of the left middle cerebral artery. Lateral view (left) and anteroposterior view (right).

**Fig. 2.** Preoperative (1965) right carotid arteriograms, lateral view (left) and anteroposterior view (right). In the AP view, there are prominent arterial vessels arising from the region of the anterior communicating artery coursing to the tumor along the left sphenoid wing.