Iatrogenic Carotid Cavernous Fistula
Case Report

M. TAKAHASHI, M.D., F. KILLEFFER, M.D., AND G. WILSON, M.D.
Departments of Radiology and Surgery/Neurosurgery, UCLA School of Medicine,
Los Angeles, California

ALTHOUGH there have been a number of reports of traumatic and spontaneous carotid cavernous fistulas, reports of iatrogenic carotid cavernous fistulas are rare. The purpose of this paper is to describe such a case which developed following an operative procedure.

Case Report

A 39-year-old woman was admitted to the UCLA Hospital 4 months after a transsphenoid hypophysectomy at another hospital. Her preoperative history had included bifrontal headaches, nausea, vomiting, syncopal episodes, blurred vision, recent memory loss, and drowsiness. Findings there included a left homonymous hemianopsia, and x-rays of the skull demonstrated an enlarged sella turcica. A left carotid angiogram suggested a sellar mass but revealed no evidence of carotid cavernous fistula (Fig. 1). A chromophobe adenoma had been partially resected at that time.

During the postoperative period she had continued to have nausea, vomiting, sluggish mental reactions, and visual impairment. Four months after surgery these symptoms became worse and she developed proptosis of the left eye.

Examination. The patient was pale and obese with slow mental reactions. There was moderately severe proptosis of the left globe with active conjunctival injection. There was also a left homonymous hemianopsia, and bilateral pallor of the optic discs. A bruit was heard over both eyes, loudest over the left, and palpable pulsation of the left globe was present. The remainder of the neurologic examination was normal. A bilateral carotid angiogram revealed a carotid-cavernous sinus fistula which was located at the anterior portion of the carotid siphon and drained anteriorly via an enlarged superior ophthalmic vein, inferiorly via the inferior petrosal sinus into the internal jugular vein, and deeply via the lateral mesencephalic vein into the great vein of Galen (Figs. 2 and 3). A pneumoencephalogram demonstrated a large suprasellar mass.

Received for publication August 16, 1968.
Revision received November 6, 1968.
Iatrogenic Carotid Cavernous Fistula

Fig. 2. Left carotid angiograms 6 months after the first operation. Left: Early arterial phase, lateral view. Carotid cavernous fistula is present at the anterior portion of the carotid siphon (1 arrow). The drainage is via an enlarged superior ophthalmic vein (2 arrows), superior petrosal sinus, and the internal jugular vein (3 arrows). Right: Late arterial phase, lateral view. In addition to the draining veins, there is drainage via the lateral mesencephalic vein toward the great vein of Galen (arrow heads). The venous plexus of the neck is seen around the internal jugular vein (3 arrows).

Operation. A craniotomy was performed, and more of the pituitary tumor was removed. A ventriculojugular shunt was constructed, but severe neurological deficit persisted. The patient died 4 months later.

Discussion

Carotid cavernous fistula is an uncommon condition. Sedzimir and Occleshaw reported four carotid cavernous fistulas among 12,000 hospital admissions. They stated that only one fistula occurred in 669 intracranial aneurysms and that three fistulas developed among 1100 patients who had craniofacial injuries. In a series collected by Perret and Nishioik there were 39 carotid cavernous fistulas in 549 cases with craniocerebral arteriovenous malformations or fistulas.

Head trauma is considered to be the most common cause of carotid cavernous fistula. The fistula may occur without fracture, although basal skull fractures or facial fractures commonly produce fistulas. In the series of Stern, et al., 10 of 15 patients developed carotid cavernous fistulas following facial or head trauma, whereas 16 of the 39 patients reported by Perret and Nishioika developed fistulas after some type of head trauma.

Fig. 3. Arterial phase, anteroposterior view. Cavernous sinus (1 arrow), superior ophthalmic vein (2 arrows), and internal jugular vein (3 arrows) are well demonstrated.