COMPLICATIONS IN THE SURGERY OF INTERNAL CAROTID ARTERY THROMBOSIS*

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(Received for publication July 2, 1957)

Amelioration of neurological symptoms following complete thrombosis of the internal carotid artery presents a difficult therapeutic problem. Surgical therapy has been approached in four ways: 1) excision of the thrombosed segment, 2) excision of the thrombosed segment with the interposition of an arterial or venous graft, 3) end-to-end anastomosis of vessels, and 4) thrombo-endarterectomy. The rare occurrence of bleeding from the distal portion of the internal carotid artery has been documented in the experience of Webster et al.\(^7\) in the exploration of 41 patients with demonstrated occlusion of the carotid arteries. Failure in attempted thrombectomy to effect retrograde bleeding from the internal carotid artery is illustrated in a case of bilateral thrombosis of the internal carotid artery and in a case of intracranial extension of thrombosis of the cervical internal carotid artery. The complications in the postoperative course of a patient who had retrograde bleeding from the internal carotid artery following thrombectomy suggested the advantage of performing thrombectomy through the common carotid artery. Retrograde flow of blood from the internal carotid artery was not a satisfactory index of complete removal of the thrombus in a case of this report. The hazards of anticoagulant therapy following successful thrombectomy are emphasized in the fatal hemorrhages found at necropsy in this patient.

CASE REPORTS

Case 1. A 58-year-old male had weakness of the left leg 1 year prior to admission. This gradually improved. A right facial weakness and hemiparesis began 2 days before admission to the hospital.

Examination revealed a right facial palsy, right hemiplegia, sustained right ankle clonus, and marked aphasia. Grade II hypertensive retinopathy was present.

Operations. Four months following admission left carotid angiography\(^\dagger\) and exploration of the cervical carotid artery revealed an organized thrombus in the common and internal carotid arteries. Thrombectomy was performed but there was no retrograde flow of blood from the internal carotid artery. Cervical sympathectomy was performed.

* Presented at the Medical and Surgical Conferences, Veterans Administration Hospital, Pittsburgh, March 19, 1957.

\(^\dagger\) Angiography in all cases was performed using 10–20 cc. per injection of 50 per cent sodium diacetrizoate (Hypaque Sodium).
Three weeks later right carotid angiography and exploration of the right carotid arteries in the neck revealed an organized thrombus in the common, internal and external carotid arteries which could not be completely removed. Vertebral angiogram revealed filling of the posterior cerebral artery on the right.

**Course.** Six months later the neurological findings had not changed from those on admission.

**Case 2.** A 41-year-old, right-handed male had sudden onset of loss of consciousness and left hemiplegia 1 week before admission.

**Examination.** He presented signs of mental confusion and had a complete left central facial palsy and left spastic hemiplegia. Spontaneous clonus of the arm and leg and Hoffmann and Babinski's signs were present on the left. Deep tendon reflexes were hyperactive, the left more than the right. Superficial pain sensation was intact. Touch sensation was decreased over the left extremities but preserved over the face. Motion and position sensations were lost in the left extremities.

**Operations.** Eighteen days after the onset of symptoms exposure of the internal carotid artery was carried out in the neck. Complete occlusion of the internal carotid artery was found at the bifurcation and a thrombus, 2 cm. in size, was removed. During removal of the clot the internal carotid artery was torn and this vessel was closed by sutures at the bifurcation. Anastomosis of external carotid artery to internal carotid artery was made above the site of this thrombosis. Free flow of blood from the proximal end of the external carotid artery and a good retrograde flow from the internal carotid artery were observed before the anastomosis was complete. Pathological diagnosis was arteriosclerosis of carotid artery.

Percutaneous right carotid angiography 3 weeks following operation revealed an occlusion of the common carotid artery. Exploration of the anastomosis disclosed a complete thrombosis of common, internal and external carotid arteries. Removal of thrombus from proximal and distal ends of the bifurcation did not result in a flow of blood.

**Course.** Ten months later he had increased spasticity in the left leg and arm. The right ulnar, radial and superficial temporal pulsations were absent. The popliteal, posterior tibial and dorsalis pedis pulses were not palpable bilaterally. Left superficial temporal and left carotid pulses were present.

**Case 3.** A 36-year-old, right-handed female presented with personality and mental changes beginning 1 week after parturition and 3 months before admission. During this period she had transient episodes of blindness. Three weeks following delivery she noticed a mass in the right breast which was treated with antibiotics and Meticorten, 20 mg. daily, for 15 days and the mass decreased about 50 per cent. Four days before admission the breast abscess was excised. Two days later she became emotionally agitated and this was followed by semicoma, right hemiplegia and aphasia.

**Examination** revealed a complete motor aphasia, left ptosis, right facial weakness, right hemiparesis, hypesthesia over the right half of the body and a probable right homonymous hemianopsia. Percutaneous carotid angiography revealed an occlusion of the left internal carotid artery.

**1st Operation.** Exploration of the left cervical internal carotid artery was performed 9 days after hemiplegia occurred. A thrombus, 5 cm. in length, was removed from the internal carotid artery. This partially organized clot began 2 cm. above the bifurcation of the common carotid artery. No retrograde blood flow was obtained