because of their infrequency, intracranial aneurysms that arise from the carotid artery at the origin of the ophthalmic artery have received little attention. Their importance is no less than that of the more common types both in regard to danger to life and involvement of neighboring structures by hemorrhage or compression. Carotid-ophthalmic aneurysms, having an intimate relation to the optic nerve which covers and tends to hide their origin, present special surgical problems for their obliteration. In addition, there is an unusual incidence of multiplicity.

In each instance but two, the aneurysm arose from the superior or superomedial aspect of the internal carotid artery, in the obtuse angle at the origin of the ophthalmic artery (Figs. 1-4). In the exceptions (Case 13 and left aneurysm Case 14), the sac arose from the infraclinoid portion of the carotid, below and medial to the origin of the ophthalmic artery. The small aneurysms projected upward, but there was a distinct tendency for the sacs to extend medially as they enlarged, probably because of the restraint of the overlying optic nerve.

Incidence

Carotid-ophthalmic aneurysms are rare in reported series. Pool and Potts cite two examples in 157 cases. The most accurate figure would appear to be that of the Cooperative Study where 143 were found in a series of 2672 patients with single aneurysms, an incidence of 5.4%. It is of interest that nine of our 14 patients had multiple aneurysms, three having bilateral carotid-ophthalmic aneurysms. There was a striking sex incidence in the series, as 11 of 14 patients were women.

Signs and Symptoms

In view of the intimate relationship to the optic nerve, it is surprising that only one of the 14 patients presented preoperative evidence of compression of this structure (Case 12), in spite of the fact that the aneurysm was large in seven other cases. The absence of definite localizing features in 13 cases was even more remarkable, for in seven the optic nerve was seen at operation to be indented and thinned by the dome of the sac. Case 12 merits brief summation, for in addition to the profound loss of vision, there were bilateral aneurysms whose site of origin and relation to the optic nerves were shown clearly at autopsy.

Case 12. A 61-year-old woman had had diminished vision in the left eye all her life. For 6 months she had noticed decreasing vision in the right eye and occasional spider-web scotomata. Two brisk subarachnoid hemorrhages occurred 7 days apart, 1 month before admission. Following the second episode, the patient noted more rapid visual loss on the right.

Examination. Visual acuity on the right was limited to finger-counting at 2 feet, while on the left with correction was 20/200. Visual fields were inconsistent, but there appeared to be a temporal defect in the right eye. Angiography revealed a large bilocular aneurysm arising from the anteromedial aspect of the right internal carotid artery at the origin of the ophthalmic artery, undoubtedly the cause of her recent loss of vision (Fig. 5). Additionally, a smaller broad-based sac was noted in a symmetrical position on the left. An operation was scheduled, principally in an attempt to restore useful vision and to prevent recurrent bleeding.

Operation. Seven weeks after her last hemorrhage, anesthesia was induced in an extremely agitated patient. The aneurysm burst as the scalp incision was made, and although a bone flap was turned down quickly, the brain was under such pressure that the procedure was abandoned. The patient survived 12 hours.

Autopsy. A large aneurysm was seen to arise from the carotid at the origin of the
ophthalmic artery, compressing the inferior aspect of the greatly elongated and thinned right optic nerve (Figs. 6 and 7). The smaller aneurysm on the left had a similar origin, and its dome could be seen bulging into the widened left optic nerve.

Comment. Although the severe visual loss in the right eye was undoubtedly due to rapid enlargement of the underlying aneurysm, the amblyopia on the left was probably unrelated to the smaller sac in view of its life-long presence and that this degree of compression had caused no visual loss in the remaining cases. It is probable that under light anesthesia the pain of the scalp incision produced a rise in blood pressure sufficient to burst the aneurysm before it could be exposed.