A CASE OF TRAUMATIC RETROBULBAR ARTERIOVENOUS ANEURYSM

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The patient, a woman 32 years of age, entered the Clinic April 17, 1931, complaining of blindness in the right eye, protusion of the eye, and a constant swishing roar in the head synchronous with the pulse. On February 6, 1931, she had received a severe blow on the right supraorbital area in an automobile accident, the lacerations caused by this requiring suture. She immediately became unconscious and remained so for six days. On regaining consciousness she was blind in the right eye and a roaring noise was heard, which had been present constantly ever since. Hearing was diminished on the right side, and the patient was dizzy.

Examination revealed a right pulsating exophthalmos with a systolic bruit and blindness, palsy of the sixth nerve on the right side, irregular pupils, the right being larger than the left. The left pupil reacted to light and accommodation normally, the right consensually only. The palpebral fissures measured 11 mm. on the right, 8 mm. on the left. Dr. Ruedemann reported for the right eye: Convergence, marked conjunctival inflammation, pupil dilated to 5 mm., tortuosity of the ocular vessels, some edema. Disc shows definite atrophic change, the arteries and veins are approximately equal in size with some tortuosity of the vessels; definite macular hyperemia. Left eye: pupil 3 mm., disc normal.

Romberg's sign was positive, the patient falling to the right.

Lumbar puncture showed an initial pressure of 110 mm. water, a normal response to Queckenstedt's test, clear and colorless fluid. The spinal fluid showed a very faint trace of globulin, colloidal gold curve 5-5-5-5-5-2-1-0-0-0, Wassermann and Kahn tests 4 plus, total protein 30 mg. per 100 c.c. of fluid.

A roentgenogram of the right orbit showed erosion of the superior inner margin of the orbit. Other laboratory tests gave normal findings.

The patient was started on anti-luetic treatment. It was found that digital compression of the right common carotid artery against the carotid tubercle made the patient dizzy and weak after from two to three minutes. It also stopped the roar in her head and stopped the pulsation of the exophthalmos. To accustom her to diminished blood supply through the cerebral arterial system, we applied compression to the artery several times daily until on May 14th she could tolerate compression for twenty-five minutes with

ease. This was twenty-five days after the patient entered the hospital.

Operation — On May 15, 1931, the patient was operated upon. The head was rotated to the left, and under local anesthesia a

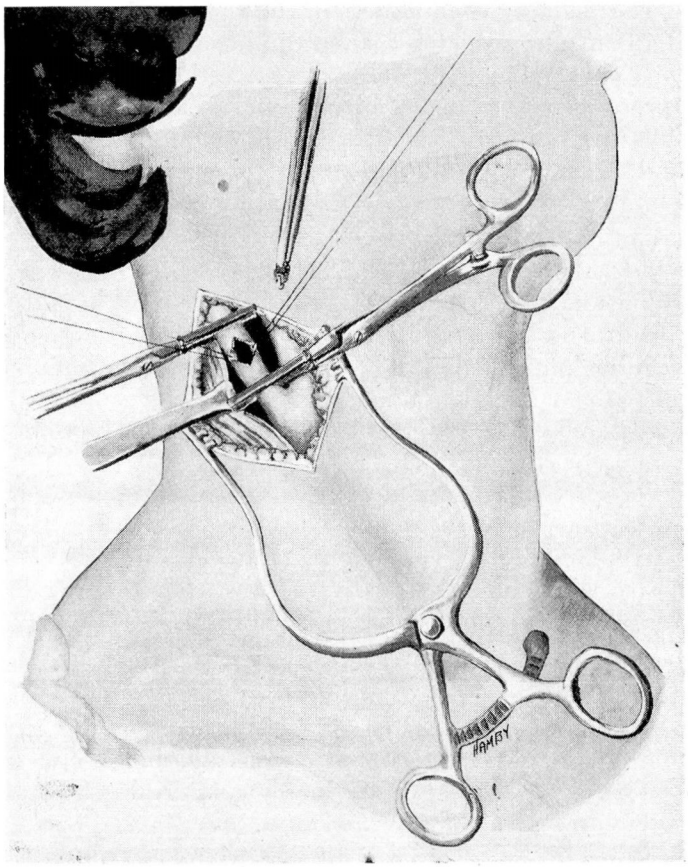

Fig. 1. An insertion of muscle plug into internal carotid artery

three-inch incision was made just anterior to the anterior border of the sternomastoid muscle on a level with the thyroid cartilage. The common carotid artery with its bifurcation was exposed. Compression of the external carotid did not affect the bruit, while compression of the internal carotid stopped it completely. The internal carotid was then dissected free for a distance of four cm. and

was clamped with two rubber-shod artery clamps. A vertical incision about 1 centimeter long was made into the lumen of the artery between the clamps. A purse-string suture of silk was placed around the incision, after which a piece of muscle from the platysma

Fig. 2-A

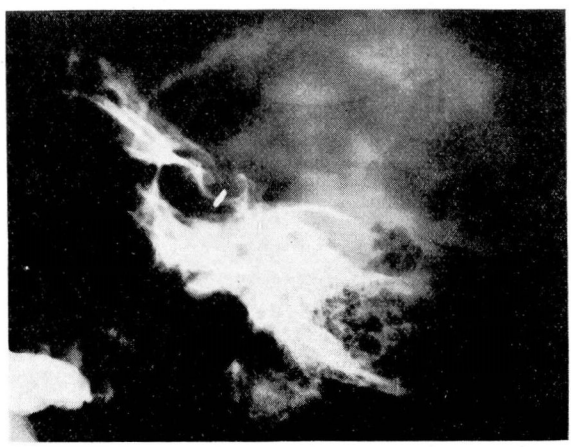

Fig. 2-B

Fig. 2. Roentgenograms of skull showing clip in place
(A) Anterior view
(B) Lateral view

was removed, cut to the size of a pea and clamped with a small silver clip. This was tucked into the opening in the artery (Fig. 1). The purse-string suture was tied and was oversewed with two additional running silk sutures. The clamps were removed and the artery replaced in its bed. The patient noticed no recurrence of the bruit following the removal of the clamps which had been

left on for about twenty minutes with no untoward effects. A vasselinized tape was put around the internal carotid artery to allow for traction hemostasis in the event that the arterial sutures failed to hold. This was removed twenty-four hours later. The wound was closed with buried silk and with clips to the skin. The patient's condition and morale were excellent throughout.

She was sent to the x-ray department and the plates showed the silver clip to be in the right side just at the outer side of the dorsum sellae and on a level with its floor (Fig. 2).

The patient was kept in bed and strict quiet was enforced to reduce the possibility of embolism to a minimum. She complained of headache and had some emesis for two days, probably the result of the increased cerebral blood flow.

On the third day, a thrombus was palpable in the upper lid and chemosis of the conjunctiva was becoming prominent. On the sixth postoperative day a bruit was audible by the stethoscope, but the patient could not hear it and pulsation was not palpable. Thinking that the muscle embolus might have shifted, another x-ray picture was made, but the clip was reported to be in its original position. Chemosis and injection of the conjunctiva, particularly of the lower lid, increased, but yellow oxide of mercury ointment and iced compresses gave great relief. On the sixteenth day a pulsation was felt in the supra-orbital region and the chemosis began to recede. Recession was progressive and the patient felt well in every way.

On June 10, 1931, twenty-six days after the operation the conjunctiva was somewhat congested, there was moderate chemosis in the lower portion, but the pulsations were no longer palpable, and while the bruit was audible to the stethoscope, it was much less than it had been a week previously. The patient had not heard the bruit since operation.

Dr. Barney Brooks, of Nashville, Tenn., first devised this method of treating arteriovenous aneurysm, feeling that the old principle of ligation of the common or internal carotid artery proximal to the arteriovenous communication was as erroneous in theory as it was disappointing in practice. Occlusion of the fistulous opening must be secured before the lesion can be considered conquered. Dr. Brooks usually uses a long thin strip of muscle instead of a small piece, as we did.

Several other operators have used the method and the results appear to be encouraging, although the number is as yet too small to allow accurate conclusions to be drawn.