A METHOD FOR CONTROL OF CAROTID CEREBRAL CIRCULATION DURING OPERATION

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UNTIL quite recently intracranial aneurysms were mere autopsy room curiosities. Later, their presence was suspected before death but no active treatment was possible. Occasionally they were disclosed accidentally at operation, either to be viewed respectfully before the surgeon closed the wound or to be recognized only in an overwhelming hemorrhage. Now, in increasing numbers, they are being diagnosed and are being treated successfully in planned surgical attacks. Sudden, profuse hemorrhage continues to be the greatest obstacle to successful surgery in these cases. This complication usually is controllable, but often at the price of trauma to neighboring tissues by packing, electrocoagulation, or by silver clips applied through a pool of blood. At present, aneurysms on the intracranial portion of the internal carotid artery are, in this group, the most amenable to treatment since in the event of hemorrhage, the afferent vessel is easily controlled by the application of a single silver clip. A lesion on the anterior cerebral artery is much less easily dealt with, since profuse bleeding may occur by flow from the opposite anterior cerebral artery through the communicating vessel. Control of this may result in occlusion of both anterior cerebral arteries, which can be disastrous even though the systemic blood pressure is not allowed to fall below the normal level. Feeling that control of the carotid circulation might permit more precise occlusion of the affected vessels, the following technic was devised.

Draping is described in some detail so the entire operation may be done in one stage. The patient is postured for a frontal craniotomy, without turning the head. The scalp is prepared for operation and the line of incision is marked. The neck is prepared. A single wet towel is swung around the site of craniotomy to cover the brows and to leave the airway open (B, Fig. 1 a). The neck is then draped (Fig. 1 b) and two towels (C) are brought along the sides of the face and fastened above the craniotomy site. A towel (G) is placed temporarily across the lower face. The common carotid arteries now are exposed through small oblique incisions in the line of skin folds at the level of the lower border of the thyroid cartilage. A stout, 36-inch linen ligature then is passed around the artery (Fig. 2 a). A “whistle-tipped,” woven, semi-flexible catheter (§18 F.) is threaded with a wire on the end of which a hook is formed. Both strands of the ligature then are drawn through the catheter with the hook, which is discarded. The tip of the catheter is placed on the artery and by traction on the ends of the ligature, one may occlude or release the artery at will (Fig. 2 b). The wounds are closed around the catheters with a few buried sutures and skin clips (Fig. 2 c). The towel (G) is removed and a fresh towel (D, Fig. 1 c) is put across the upper face. The catheters are brought around the face to the craniotomy site. The center of another towel (E) is placed under the chin and the ends are brought upward, protecting the part of the catheters outside the head drapes to give the anesthetist freedom of action. The head then is turned as desired and the craniotomy site is
Fig. 1. Method of draping to allow the arterial exposure and the craniotomy to be done with minimal redraping. The towels are lettered in order of their application. (a) Scalp and neck prepared; craniotomy and carotid incisions marked. A mark is placed similarly over the left carotid artery. (b) Towel G covers the lower face and towels C protect the field from below. (c) After the carotid operations, towel D is applied as a part of the permanent draping for craniotomy. Towel G is replaced by E to protect the neck and to give the anesthetist unrestricted access to the nose and mouth. (d) The completed craniotomy draping, with the catheters in the field.

draped in the usual manner (Fig. 1 d). The ends of the catheters with their ligatures are left exposed, fastened to the head sheet with skin clips.

The craniotomy then is performed and the lesion is exposed. If hemorrhage occurs, an assistant holds each catheter with one hand and with the other makes firm, gentle traction on the ligatures. This obliterates the carotid flow so that within a second or two the field may be cleared by suction. The bleeding spot may be found and a silver clip placed to control a vessel