INSTRUMENTS FOR USE IN THE TREATMENT OF CERTAIN INTRACRANIAL VASCULAR LESIONS

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Clamps A and B to be described here are the first in a series of four with which we have been experimenting over a period of years in an effort to solve some of the problems presented by patients with intracranial aneurysms and other vascular anomalies. Clamp A has been used here and in other neurosurgical clinics over a period of three years, and now we believe it has been perfected to the degree that it can be recommended to others. Clamp B has been used for a shorter period of time, but long enough for us to know that it can be extremely useful in the treatment of some of the more difficult intracranial vascular lesions. Clamp C, for external control of blood flow through the intracranial portion of the internal carotid artery, and Clamp D, for gradual occlusion (external) of end arteries such as the middle cerebral, are in the experimental stage, but indications are that they will be worth-while additions to our armamentarium.

CLAMP A (Figs. 1 and 2)

This clamp serves the same purpose as the one designed by Selverstone, but it has the advantage of being much smaller, less complicated, and less costly to produce.

The various components of this clamp are held together by means of spring mechanisms; therefore, no special tools are needed to regulate blood flow (through the common or internal carotid artery), nor to detach the control assembly from the part to be left in the neck. Only a hemostat or similar instrument is needed to detach the lid (Fig. 2F).

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Fig. 1

471
The screw driver remains in the control assembly at all times, and its movements and position are controlled by means of the locking screw. In addition to moving the pressure plate, the screw driver is used to detach the clamp assembly. The cap makes it easy to push the control assembly through the stab wound; also, it protects the spring mechanism when the instrument is being stored.

**Application of Clamp A.** The pressure plate must be up against the lid before an attempt is made to remove the lid or attach it to the U-shaped clamp.

1. Expose artery in usual manner and make a small stab wound as shown in Fig. 1; 
2. place clamp around artery; 
3. push control assembly through stab wound far enough to clear cap, then remove cap which may be partially detached by forcing screw driver downward (after loosening locking screw); 
4. attach control assembly to lid (snap on), then with finger under clamp for counterpressure place one flange in clamp and complete closure by gently forcing other flange into position (Fig. 2D); 
5. under direct vision, using dot as indicator, note number of turns of screw driver required to bring about complete occlusion from any predetermined position of pressure plate; 
6. to bring about additional occlusion, flush control assembly with alcohol, loosen locking screw fraction of a turn, turn screw driver (clockwise) as desired, tighten locking screw and re-apply dressing.

As the screw driver pushes the pressure plate down it assumes the same lower level as does the pressure plate; therefore, the position of the pressure plate can be determined by measuring the distance between the handle of the screw driver and the handle of the control assembly. When the artery is occluded the distance between the under surface of the screw driver (handle) and the top of the control assembly (handle) is approximately 8 mm., whereas when the pressure plate is completely retracted the distance is approximately 14 mm.

To remove control assembly from clamp and neck loosen locking screw; place two fingers under handle, and with thumb against screw driver force screw driver down as far as it will go. The pushing and pulling forces are equal; therefore, the clamp is detached without moving the artery.