A self-retaining multipore suction tube

Technical note

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A new self-retaining multipore suction tube with three unusual features is described. The features are: 1) multiple 0.5 mm suction openings; 2) a variable suction control; and 3) a device for fixation to a self-retaining retractor.

KEY WORDS • suction device • instrumentation • multipore suction tube

In our experience, during operative procedures the operative field is often obscured with cerebrospinal fluid or blood unless suction is used. We have developed a new suction device to solve this problem, and describe this self-retaining multipore suction tube and its method of utilization.

Description of Device

The self-retaining multipore suction tube is shown in Fig. 1. It differs in three respects from the design of the usual suction tube. First, this tube has 25 small holes, each 0.5 mm in diameter, at the suction portion (Fig. 2). Second, there is a sliding lid which changes the suction strength by adjusting the size of the proximal air hole, and third, the tube has a plate which can be used to fix the tube to a self-retaining retractor. The surgeon has both hands free for surgery without needing to hold a suction tube, even when cerebrospinal fluid or blood is flowing.

Comment

This self-retaining multipore suction tube has been used in operations on seven patients with intracranial aneurysms. Four of the aneurysms arose from the anterior communicating artery aneurysms and two from the middle cerebral artery. In one case there were two aneurysms, one on the internal carotid-posterior communicating artery and one on the middle cerebral artery. The suction tube was placed in the basal cistern. The continuous suction of bloody cerebrospinal fluid made it very easy to dissect the tissue around the vessels. The surgeon did not need to hold a suction tube, so he was able to cut or coagulate the arachnoid membrane around the arteries or aneurysms with one hand while elevating it with his other hand. The design of this device prevents perforation of arteries or damage to small vessels because of multiple openings and because each suction hole is only 0.5 mm in diameter. We have used this tube only on patients with aneurysms; however, we believe it has wider applicability and many advantages over other suction devices.

This new self-retaining multipore suction tube has the following three features: 1) it can be fixed to a self-retaining retractor and suction cerebrospinal fluid or blood; 2) the strength of the suction is variable, with adjustment possible by changing the size of the proximal air hole; and 3) the design prevents perforation of arteries or injury to small vessels.

Fig. 1. Photograph of the suction tube, showing the suction tip (A), the sliding lid for proximal air-hole occlusion (B), and the plate for fixing the tube to a self-retaining retractor (C).

Fig. 2. Enlargement of the suction tip.