Adjustable microvascular clamp for cerebrovascular surgery

Technical note

NORMAN PETERS, M.D., AND AYUB K. OMMAYA, M.D., F.R.C.S.

Section of Applied Research, Branch of Surgical Neurology, National Institute of Neurological Diseases and Stroke, National Institute of Health, Bethesda, Maryland

A lightweight adjustable double microvascular clamp is described that requires only one adjustment before application for anastomosis of arteries.

KEY WORDS • anastomosis of arteries • double microvascular clamp • Mayfield clip

MICROVASCULAR anastomosis is a precise technique that requires nothing less than the optimal instrumentation if the procedures are to be successful. Especially critical is the need to have exact unalterable approximation of the vessels to be anastomosed. A variety of single and double microvascular clips is available. Henderson, et al., devised an adjustable double microvascular clamp that allows an atraumatic approach to both the anterior and posterior vessel wall; however, this clamp requires multiple independent adjustments that make it cumbersome in intracranial surgery.

We have devised a lightweight adjustable double microvascular clamp composed of two Mayfield aneurysm clips that slide along a cylindrical stainless steel bar (Figs. 1 and 2). Once adjusted to the desired interclip distance, both clips are applied simultaneously to the vessel with a modified Mayfield aneurysm clip applier. Thus, only one adjustment is required prior to application and none afterward. The device utilizes the friction produced between the clip and the inner and outer bar to hold the individual clips and the severed vessel ends in perfect apposition.

FIG. 1. Drawing showing microvascular clip being applied to a vessel.
Adjustable microvascular clamp

NOTE-REMOVE SHARP EDGES & POLISH SURFACES OF CLIPS THAT COME IN SLIDING CONTACT WITH 1/16" ROD & CAP.

SPACERS 1/16" I.D. X .087" O.D. X .050" LONG

SILVER SOLDER BOTH ENDS

ACTUAL SIZE MATERIAL-STAINLESS STEEL WEIGHT 1.1 GRAMS

MAYFIELD ANEURYSM CLIP APPLIER

MODIFIED CLIP APPLIER MATERIAL STAINLESS STEEL

Fig. 2. Diagrams showing design specifications of the microvascular clip. Right diagram shows the Mayfield aneurysm clip applier modified to carry a microvascular clip.

We have used this clip for anastomosis of arteries of 1 mm and less in diameter as well as on small delicate veins in the rat. In each instance, good flow was reestablished after anastomosis with no discernible trauma to the vessel. The figures show the necessary modifications required to the Mayfield clips and applier; however, potential users needing further details are welcome to contact the authors.

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References


Address reprint requests to: Ayub K. Ommaya, M.D., F.R.C.S., Section on Applied Research, Branch of Surgical Neurology, National Institute of Neurological Diseases and Stroke, National Institutes of Health, Bethesda, Maryland 20014.