Modification of intracranial aneurysm clip

Technical note

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A modification of the Mayfield aneurysm clip is described which is thought to decrease the chance of slippage of the clip, mainly in the case of large-necked and atherosclerotic aneurysms.

KEY WORDS • aneurysm clip • Mayfield clip

SINCE the development of the Mayfield intracranial aneurysm clip in 1953, modifications of this and many other clips have been developed. A common problem with all clips has been the risk of slipping following placement on the neck of an aneurysm. The purpose of this paper is to present an additional modification of the clip which introduces a new principle, namely, of utilizing the sac of the aneurysm after the neck is occluded to give added stability against slipping.

Description and Experience

The modification consists of the development of teeth-like projections that interlock (Fig. 1), located on one edge of the blades of the clip so that after placement it engages the tissue of the aneurysmal sac (which is useless tissue).

The modification has been tested on nine dogs with aneurysms created by anastomosing the external jugular vein to the carotid artery. In each of these animals the clip was repeatedly applied and removed from the neck of the aneurysm. It did not tear the sac and appeared more secure than other clips. In two animals the clip was left in place for 45 minutes and in neither case did perforation occur.

The modified clip was also used in five cases of human aneurysms after the aneurysms were clipped by one of the standard methods for clipping, four of these were thin-walled aneurysms and one was an atherosclerotic aneurysm. In the case of the atherosclerotic aneurysm, the jaws of the clip failed to close and were 0.8 mm apart but the clip nevertheless remained securely fixed. The teeth did not perforate the wall of the aneurysm.

From evidence gathered from animal studies and observation, the clip appears to be useful on some thick-walled aneurysms, when the chance of slippage is greater than usual. The basic principle of the instrument is that
the tips of the teeth engage the wall of the aneurysmal sac after the neck is occluded and would appear to give greater security against slippage.

References


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