Cobalt-chromium alloy aneurysm clip

Otawara et al. evaluated the mechanical properties and surface elemental composition of Cobalt-chromium alloy aneurysm clips implanted for more than 10 years in patients with cerebral aneurysms.

Five aneurysm clips implanted for ruptured or unruptured intracranial aneurysms were retrieved and examined. New aneurysm clips were applied to the regrown aneurysms. The implantation period ranged from 11 to 20 years. Four new and unused aneurysm clips were also examined as controls. The mechanical properties of the clips were tested by measuring their closing force and bending strength. The surface elemental composition of the aneurysm clips was evaluated using x-ray photoelectron spectroscopy. The closing force of the retrieved clips exceeded the minimum force requirement at the time of manufacture. The bending strength was similar between the retrieved and control clips. Chromium oxide was the predominant constituent on the surface of all clips, and its concentration on the retrieved clips was higher than that on the control clips.

Data in the present study demonstrated that Co-Cr alloy aneurysm clips retain their mechanical properties in vivo for a long time, which indicates the reliability of these clips [1].

1)
Otawara Y, Endo MM, Ogasawara K, Kubo Y, Ogawa A, Watanabe K. Reliability of cobalt-chromium alloy aneurysm clips after long-term implantations in patients with cerebral aneurysms. J Neurosurg. 2006 Nov;105(5):713-6. doi: 10.3171/jns.2006.105.5.713. PMID: 17121132.