Clipping after Pipeline embolization device placement for a thrombosed ACoA aneurysm

TO THE EDITOR: We read with great interest the article published by Daou and colleagues2 (Daou B, Chalouhi N, Starke RM, et al: Clipping of previously coiled cerebral aneurysms: efficacy, safety, and predictors in a cohort of 111 patients. J Neurosurg 125:1337–1343, December 2016). This publication has enormous interest for cerebrovascular neurosurgeons working in centers that offer both endovascular and surgical aneurysm repair strategies. Surgical treatment of aneurysms previously treated with endovascular therapy presents several constraints, as mentioned in this article. We would like to provide from our practice an additional example of clipping an aneurysm that had been previously treated with a stent as we think it would be interesting to readers of the cited article. While ruling out causes of chronic headache, we diagnosed a 70-year-old woman with an aneurysm of the anterior communicating artery (ACoA), with its neck at the left A1–A2 junction. The aneurysm measured 8 × 8.5 mm. The dome of the aneurysm was pointing anteroinferiorly and had an intraluminal thrombus (Fig. 1). She had no visual or other neurological deficits associated with the aneurysm. Considering the size and location of the aneurysm, our multidisciplinary team proposed treatment. Both surgical and endovascular options were suggested, and the patient elected to undergo the endovascular option. A 2.75 × 16–mm Pipeline embolization device (PED) was positioned on the left A1–A2 segments under biplane fluoroscopic guidance. The immediate postprocedural digital subtraction angiography (DSA) study showed marked contrast stasis within the sac, compatible with reduced inflow. Treatment with aspirin and clopidogrel had been instituted 1 week before the procedure, without any antiplatelet resistance on biological tests. Magnetic resonance angiography (MRA) performed 1 month after treatment showed no evidence of blood flow inside the aneurysm sac, and the patient had a normal neurological examination. Three months after intervention, the patient experienced progressive diminution of vision in the left eye, and in the space of a week she had no light perception in this eye. Visual field and optical coherence tomography (OCT) findings suggested a lesion of the retrobulbar, prechiasmatic optic nerve on the left side (Fig. 2A and C). Magnetic resonance imaging, MRA, and DSA showed complete exclusion of the treated aneurysm and normal flow within the parent vessel but also a paradoxical increase in size related to intrasacular thrombosis, leading to worsening of the mass effect and optic neuropathy (Fig. 3). After discussion in the multidisciplinary neurovascular board, we elected to treat this aneurysm surgically. The optic nerve was markedly compressed by a turgid thrombosed aneurysm with solid and liquid components. The thrombosed aneurysm sac was excised after decompression of the sac contents, and the aneurysm neck was clipped. The aneurysm sac was completely dissected away from the optic nerve, thus achieving good decompression of the nerve (Fig. 4). The patient recovered her vision completely in the first 2 postoperative days, which was later confirmed with formal assessments of visual acuity, fields, and OCT (Fig. 2B and D).

As Colby and colleagues recently showed in a nonrandomized retrospective series,1 flow diversion using a PED for the repair of an ACoA aneurysm seems to have an extremely high rate of success (96%) immediately after the procedure. With respect to long-term results, this study showed complete occlusion of the aneurysm in 86% at an average follow-up of 10.4 months. The safety and efficacy of PED placement in terms of ophthalmological outcome after coiling large and giant internal carotid artery aneurysms were evaluated by Sahlein et al.4 while analyzing the results of the Pipeline for Uncoilable or Failed Aneurysms (PUFS) trial. These authors found that the procedure was related to a 5% worsening of previous ophthalmological deficit, attributed to ischemia of the ophthalmic artery territory. Gressot et al.3 have recently shown that

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**FIG. 1.** Left: Initial MR angiogram showing an 8 × 8.5–mm ACoA aneurysm (black arrow). Right: Three-dimensional reconstruction of DSA angiogram showing the circulating part of the aneurysm (white arrow). Figure is available in color online only.
FIG. 2. A: Preoperative visual fields showing marked vision loss in the left eye. B: Postoperative visual fields showing the normalization of vision. C: Preoperative OCT showing left optic nerve impairment. D: Postoperative OCT showing the normalization of vision. Figure is available in color online only.