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Case Report

Bilobulated paraclinoid aneurysm mimics double aneurysms: A comparison of endovascular coiling and surgical clipping treatments

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Abstract

This report presents two cases of subarachnoid hemorrhage caused by rupture of paraclinoid aneurysms. Both aneurysms presented a bilobulated appearance upon image study. Both cases were treated successfully, the first with surgical clipping and the second with endovascular coiling. The special bilobulated feature of paraclinoid aneurysm in this particular anatomic location suggests its close relationship with the carotid dural ring. This relationship caused varying degrees of difficulty in both coiling and clipping the aneurysm. We compared the limitations and advantages of both treatments, and suggest that surgical clipping may be the treatment of choice in this region.

Keywords: carotid dural ring; clipping; coiling; paraclinoid aneurysm

1. Introduction

The treatment of paraclinoid aneurysms has been discussed in many previous articles.[1–8] These aneurysms are defined as those arising from the internal carotid artery (ICA) between the cavernous sinus and the posterior communicating artery. Paraclinoid aneurysms can be located intra- or extradurally, depending on their anatomical relationship with the dural ring. There have also been reports that some aneurysms can be tied by the dural ring, have both intra- and extradural compartments, and look bilobulated.[3,9] Treatment strategies may differ depending on the location and size of the aneurysms, and the physician's personal experience.

Hereby, we present two cases of paraclinoid aneurysms with bilobulated appearance mimicking double aneurysms. One case was treated by coil embolization and the other by microsurgical clipping.

2. Case Reports

2.1. Case 1

A 43-year-old woman suffered from sudden-onset headache, dizziness, nausea, and vomiting. She proceeded to visit a neurological clinic, and underwent magnetic resonance imaging and then digital subtraction angiography (DSA) studies. Both revealed a bilobulated aneurysm at the right distal cavernous and paraophthalmic ICA, approximately 3.8 mm in diameter and 4 mm in neck width. The aneurysm protruded laterally (Fig. 1).

Conflicts of interest: The authors declare that there are no conflicts of interest related to the subject matter or materials discussed in this article.

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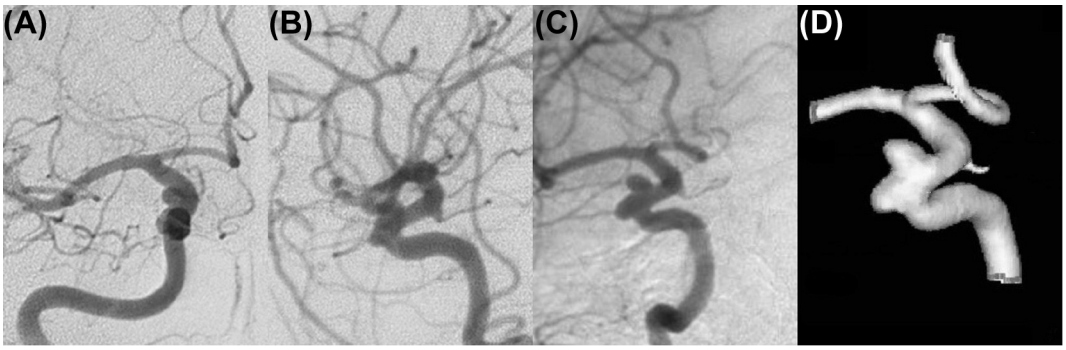

Fig. 1. (A) Anteroposterior view, (B) lateral view, (C) oblique view, and (D) three-dimensional reconstruction of the right internal carotid angiogram shows a bilobulated aneurysm protruding laterally.

The patient underwent craniotomy for aneurysm clipping 2 months after the episode. During the operation we found a wide-neck aneurysm near the takeoff of the ophthalmic artery from the right ICA. The dome size and neck size were about 7 mm × 4 mm and 6 mm, respectively. The aneurysm was divided by the distal dural ring into two lobules. After the release of the dural ring, a curved aneurysm clip was used to clip the neck of the aneurysm without temporary clipping Fig. 2).

The patient recovered well after the surgery and was discharged without neurological deficit. The follow-up computed tomography (CT) angiography, which was performed 8 days after the surgery, showed no residual aneurysm, and all relevant major arteries were preserved.

2.2. Case 2

A 63-year-old woman, who suffered from sudden-onset headache and dizziness during work, was sent to the hospital for medical management. She had a history of hypertension, which had been under good medical control for several years. Her consciousness remained clear at the time of admission. The DSA disclosed a bilobulated aneurysm in the left ICA, involving the distal cavernous and supraclinoid segments. The aneurysm had a wide neck with two domes protruding posteriorly and medially, forming two compartments. The larger distal compartment was about 6.5 mm in length, and the smaller proximal compartment had a dome of 2.2 mm (Fig. 3).

The patient later underwent endovascular embolization therapy. Transfemoral embolization of the wide-neck aneurysm was performed by stent-assisted coil embolization. A 4.5 mm × 20 mm self-expandable stent (Neuroform 2; Boston Scientific Corp., Fremont, CA, USA) was deployed into the ICA to bridge the aneurysm neck, followed by navigation of a microcatheter into the aneurysm sac of the ICA. Seven electrodetachable coils (Boston Scientific Corp.) were inserted into this sac. Postembolization DSA revealed total obliteration of the aneurysm sac without compromise of the parent artery. However, the smaller proximal compartment is difficult to access due to the vascular and aneurysmal anatomy.

This patient tolerated the whole embolization procedure well and was discharged in a stable condition. The follow-up CT angiography performed 4 months later disclosed total angiographic occlusion of the aneurysm sac, with no evidence

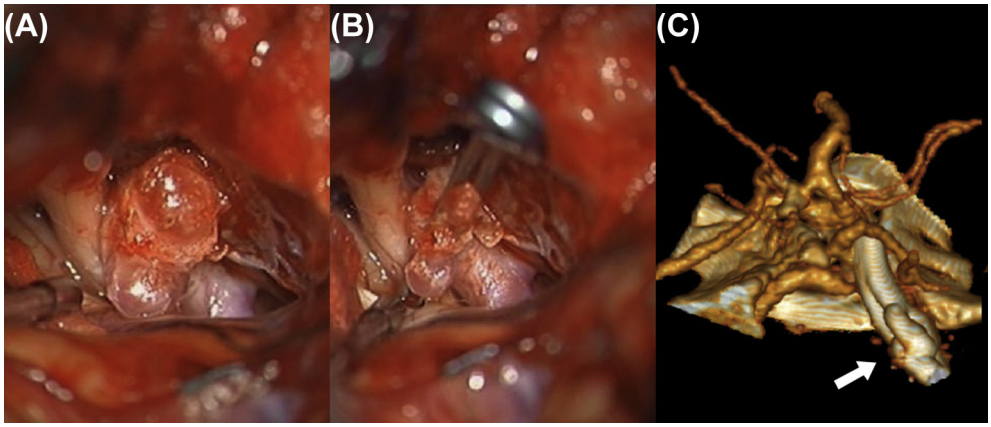

Fig. 2. After removal of the anterior clinoid process extradurally, the clinoid segment of the internal carotid artery is exposed. A bilobulated aneurysm is (A) seen and (B) clipped under a microscope. (C) Reconstruction of postoperative computed tomography angiography shows a clip (arrow) beside the internal carotid artery without residual aneurysm.