CLINICAL NOTE

Endovascular Treatment of a Petrous Internal Carotid Artery Aneurysm With Hemotympanum and Epistaxis Using a Coronary Stent and Detachable Platinum Coils

Report of a Case

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Endovascular therapy can assist otolaryngologists with a variety of commonly encountered conditions, including vascular neoplasms, vessel ruptures, epistaxis, malignant neoplasms, and trauma. Although most otolaryngologists are familiar with the procedures for tumor and epistaxis embolization, arteriovenous fistula embolization, tumor chemotherapy, vessel sacrifice, and large vessel stenting, few of these specialists encounter symptomatic aneurysms during their careers.[1-5] These lesions, however, can be managed in a variety of minimally intrusive ways that exclude the aneurysm from the native circulation while preserving the normal cerebral vasculature. In this report, we demonstrate the use of a coronary stent along with endovascular aneurysm coils to treat a petrous carotid aneurysm to occlude the lesion and eliminate rebleeding yet preserve the patient's cerebral circulation.

REPORT OF A CASE

A 24-year-old woman with no significant medical or surgical history presented with several episodes of epistaxis. Evaluation revealed right-sided hemotympanum. The Weber test lateralized to the right ear and bone conduction exceeded air conduction on the right side at 512 Hz. A fine-cut head computed tomogram with and without contrast demonstrated opacification of the right mastoids, epitympanic recess, and mesotympanum. Ossicular erosion was identified, as was thinning or dehiscence of the lateral carotid canal wall. A 4.2-mm enhancing area was identified adjacent to the lateral turn of the right petrous carotid artery (**Figure 1**). Concerned that the patient might harbor a carotid aneurysm, the physician performed a cerebral arteriogram. This study identified what appeared to be a pseudoaneurysm of the petrous carotid artery (**Figure 2**). The arteriogram also demonstrated no opacification of the right anterior circulation and no anterior communicating artery despite a high-volume left common carotid contrast injection with simultaneous right carotid cervical compression, thus indicating a low likelihood that the patient would tolerate sacrifice of the right carotid artery as a mode of lesion treatment.

To preserve the carotid artery and exclude the aneurysm from the native circulation, a 4 × 18-mm uncovered coronary stent (Vision; Guidant, Santa Clara, Calif) was advanced over a 300-cm-long, 0.014-mm Platinum Plus Microwire (Boston Scientific, Natwick, Mass) and deployed in the right petrous carotid artery across the aneurysm neck. The patient was then given 5000 U of intravenous heparin sodium and 15 mg of eptifibatide (Key Pharmaceuticals, Kenilworth, NJ). A 0.014-in Transcend EX wire (Target Therapeutics–Boston Scientific, Fremont, Calif) and a 0.014-in Prowler microcatheter (Target Therapeutics–Boston Scientific) were

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next advanced across the stent wall and into the aneurysm. One 3 × 6-cm, ultrasoft, platinum Guglielmi detachable coil and three 2 × 6-cm, ultrasoft, platinum Guglielmi detachable coils (Target Therapeutics–Boston Scientific) were then placed into the aneurysm. A final angiographic image showed no aneurysm opacification and right internal carotid artery patency (**Figure 3**).

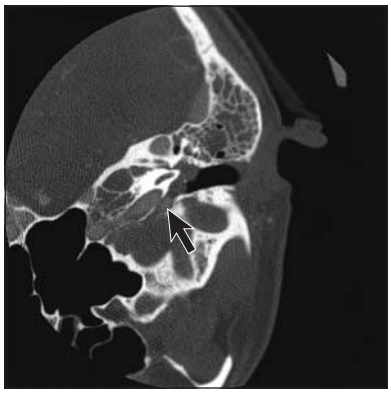

Figure 1. Axial contrasted computed tomogram showing petrous carotid artery pseudoaneurysm (arrow).

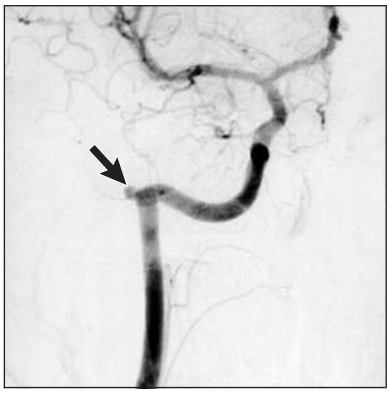

Figure 2. Anteroposterior right internal carotid artery arteriogram showing petrous carotid artery pseudoaneurysm (arrow).

The patient was observed overnight while receiving a heparin infusion and was given 400 mg of clopidogrel bisulfate and 325 mg of aspirin. She was discharged the following day with a prescription for 75 mg/d of clopidogrel for 30 days and 325 mg/d of aspirin indefinitely. The neurologic examination results remained normal, and no further bleeding was encountered.

COMMENT

The differential diagnosis for a patient who presents with hemotympanum or the appearance of hemotympanum includes trauma, aberrant course of the petrous internal carotid artery, vascular neoplasm such as a glomus tympanicum, and carotid aneurysm. The differential diagnosis for epistaxis includes friable nasal mucosa, trauma, neoplasm, arteriovenous malformation, arteriovenous fistula, and aneurysm. The clinical combination of hemotympanum with epistaxis is rare and most likely includes trauma, neoplasm, or aneurysm. The use of magnetic resonance imaging, computed tomographic arteriography with fine-cut evaluation of the skull base bony anatomy, and/or cerebral catheter angiography can usually define the origin of such clinical events.

The use of coils to treat cerebral aneurysms is well described in the literature, as is the use of coronary- and cerebral-specific stents. Combined use has also been described for the management of aneurysms that cannot be treated with coils alone or in situations in which coiling of the aneurysm risks occlusion of a parent vessel.[5-10]

This case is an excellent example of the ability of endovascular techniques to treat combined otolaryngologic and vascular diseases. In the future, the development of more navigable covered stents will provide physicians with the ability to reconstruct vessels and exclude anomalous conditions without the need to combine multiple endovascular procedures.

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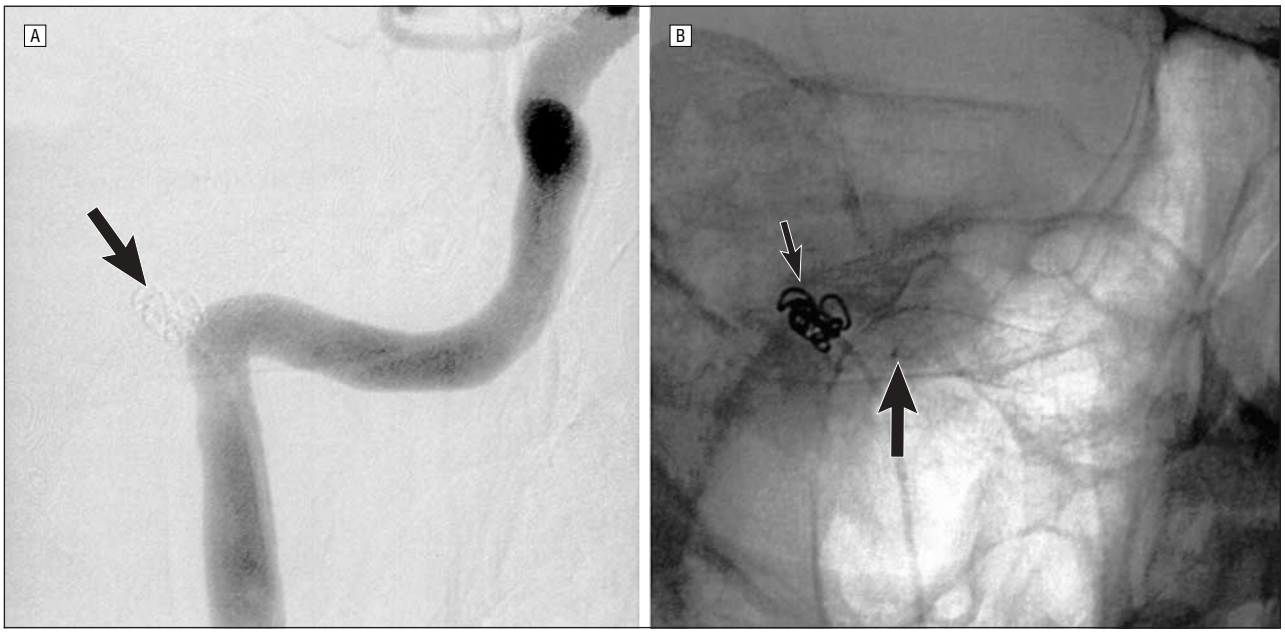

Figure 3. Anteroposterior right internal carotid artery arteriograms showing the petrous carotid artery after placement of the coil and stent. A, Coil (arrow). B, Coil (small arrow) and stent (large arrow).

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