

A giant aneurysm of extracranial carotid artery presenting with hoarseness: A case report and review of literature

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ABSTRACT

A 42-year-old female was admitted to our hospital with progressively enlarging pulsatile mass in the left lateral cervical region, hoarseness and pain radiating to left ear. Magnetic resonance angiography demonstrated a left internal carotid aneurysm, which extended from the carotid bifurcation nearly to the skull base, and a normal internal carotid artery (ICA) segment was found before the artery entered into the carotid canal. The aneurysmal segment was removed with resection of the bony structures, and direct arterial reconstruction was performed without any tension or damage to the cranial nerves. Pathological examination showed a true aneurysm with atheromatous changes follow-up after 2 years revealed a patent ICA.

Keywords: Carotid artery; end to end anastomosis; giant aneurysm; hoarseness.

Extracranial carotid artery aneurysms (ECAA) are very rare with an incidence of 0.5-1%, and they account for less than 1% of all peripheral artery aneurysms. Atherosclerosis is believed to be the primary etiological factor with rarer causes attributed to arterial dysplasia, dissection, trauma, connective tissue disorders and mycotic infection. Patients usually present with neurological symptoms (cerebrovascular accident, transient ischemic attack or Horner's syndrome) or a pulsatile mass in the neck. We report an ECAA which extended the skull base, and treated with resection of the aneurysm and reconstruction of internal carotid artery with a direct end to end anastomosis.

CASE REPORT

A 42-year-old female presented with a 6-month history of discomfort and progressive pulsatile mass in her left lateral cervical region, hoarseness, and pain radiating to left ear. She did not report any history of infection, trauma, previous surgical interventions or placement of a central venous catheter. Clinical

examination revealed a pulsatile mass below left mandibular angle, in front of sternocleidomastoid muscle. Duplex scanning of carotid artery showed a vascular mass with a size of 3.5×4 cm between left internal and external carotid arteries. Magnetic resonance angiography (MRA) demonstrated a left internal carotid artery aneurysm, which extended from the carotid bifurcation nearly to the skull base (Figure 1). Surgery was performed to avoid development of the neurological symptoms. The aneurysm was explored via a standard anterior cervical approach, from the preauricular region down to the neck through the anterior border of the sternocleidomastoid muscle. The common carotid artery and the proximal part of the internal and external carotid arteries were identified by conventional methods and gentle dissection. Vagus, accessory and hypoglossal nerves were exposed and preserved. The aneurysm was dissected and resected after systemic heparinization (Figure 2). In this patient, not only brain activity was monitored continuously with NIRS (Near infrared spectroscopy- INVOS cerebral oxymetry -Somanetics Corporation, Troy, MI)

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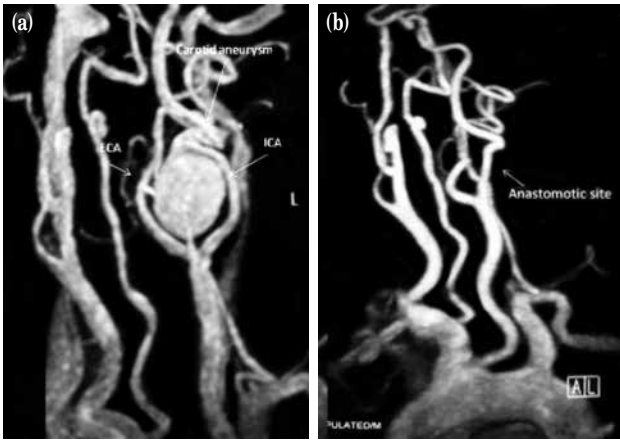


Figure 1. (a) Preoperative magnetic resonance angiography image, and (b) multislice contrast enhanced tomography of extracranial carotid artery aneurysm.

but also the systolic internal carotid back pressure was measured as 60 mmHg. Therefore, an arterial shunt was not required.

The continuity of the artery was restored without any tension, and a direct end-to-end anastomosis was done. Thus, clamping time was short. Postoperative recovery was uneventful. On the postoperative third day, the patient was discharged without any neurological complications or cranial nerve dysfunction. Pathological examination of the aneurysmal sac showed a true aneurysm with atheromatous changes (Figure 3). Follow-up after 2 years revealed a patent ICA.

DISCUSSION

Since description initial carotid artery ligation for aneurysmal disease by Cooper in 1808,^[1]

current surgical modalities include resection with end-to-end anastomosis if feasible, replacement or intrapositional grafting using either autologous vein graft or synthetic grafts, and patch angioplasty.^[2] In our case, we performed aneurysm resection and end-to-end anastomosis. The differential diagnosis must include carotid body tumor, enlarged lymph nodes, neck tumors, pseudoaneurysm of carotid artery, and a redundant or kinked carotid artery. Diagnosis of a non-pulsatile thrombosed aneurysm might be difficult.^[3] Hyperextension and rotation of the neck can cause compression of the internal carotid artery on the transverse processes of the cervical vertebrae, and formation of a pseudoaneurysm. In addition, pseudoaneurysm of carotid artery can occur after penetrating or blunt trauma and carotid endarterectomy. Formation of a pseudoaneurysm is rare after carotid endarterectomy, with a reported frequency of 0.3%.^[4]

In many articles, primary ligation has been reported as the most appropriate option especially in ruptured cases. A stroke risk of 0.9% has been reported during conventional surgical treatment, but this risk is higher after primary ligation. However, cranial nerve damage has been reported in 44% of the cases.^[4,5] Therefore, histological examination of the aneurysm wall shows not only fragmentation of the elastic lamina, but also marked thinning of the vessel wall. There was no evidence of infection or other specific pathologies, and this was considered diagnostic of an uncomplicated true aneurysm of the ECA.

In the large series,^[5,6] surgical treatment of these aneurysms has been reported as a safe and effective method associated with major stroke or mortality

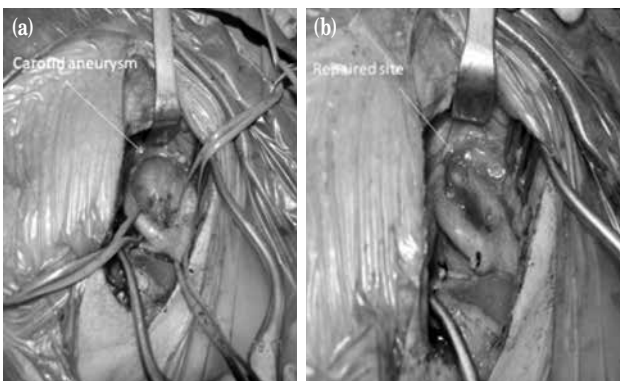


Figure 2. (a) Peroperative appearance of extracranial carotid artery aneurysm showing to its extend near the skull base), and (b) peroperative appearance of direct end to end anastomosis of internal carotid artery after resection of the aneurysm.

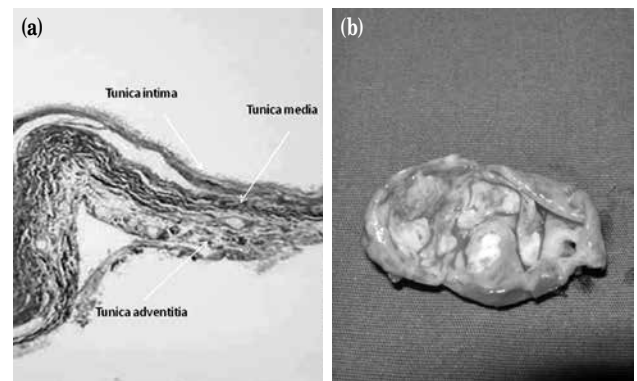


Figure 3. Histopathological appearance of the aneurysm sac. (a) Hematoxylin-Van Gieson stain shows fragmentation of the elastic lamina, and marked thinning of the vessel wall. (b) Macroscopic view of aneurysmatic sac's inner surface (right).

(4% and 9%, respectively). However, the incidence of postoperative cranial nerve dysfunction ranged between 6-44%, and some authors preferred less invasive treatment options such as coil embolization or endovascular repair of the aneurysm. Currently, there is little information in the literature about endovascular repair of carotid aneurysms due to risk of cerebral embolization.

This unusual case was successfully treated by applying the principles of routine surgery, and we are pleased to report that there are no complications after two years of follow-up.

Declaration of conflicting interests

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