

## Extracranial internal carotid artery aneurysm presenting as pharyngeal mass with dysphagia

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### Abstract

Aneurysms of the extracranial portion of the internal carotid artery are rare. Generally, they occur just at the level of, or above, the bifurcation. Here we report a case of a left internal carotid artery aneurysm presenting as an oropharyngeal mass causing dysphagia.

**Key words:** Aneurysm; Carotid Artery, Internal; Dysphagia

### Case report

A 71-year-old woman was referred to our ENT department with an oropharyngeal mass and a two-month history of dysphagia. The physical examination revealed a healthy, active woman with an oropharyngeal, non-pulsating mass displacing the left tonsil and the lateral pharyngeal wall towards the midline. The mucosa appeared normal and there were no signs of infection or tenderness. The neck and larynx were normal. Her medical and social history were mostly unremarkable, without previous surgery, infections or cardiovascular disease; however the patient described a cervical injury following a car accident one year before. A magnetic resonance imaging (MRI) scan was performed which demonstrated the presence of a mass located at the bifurcation of the left carotid artery displacing its internal and external branches and reducing the pharyngeal lumen (Figure 1). The mass measured 4 × 2.5 cm in diameter with a thin peripheral wall; its content showed a low signal on T1- and T2-weighted MRI scans consistent with flowing blood and a peripheral high signal due to an adjacent thrombus. These findings led to the hypothesis of an internal carotid artery aneurysm. The patient therefore underwent selective carotid angiography, which confirmed the presence of an aneurysm, the medial portion of which was occupied by a thrombus; moreover, a kinking of the proximal internal carotid artery could be observed (Figure 2).

Finally, the patient underwent surgery under general anaesthesia using a standard approach anterior to the sternocleidomastoid muscle. Carotid control was obtained by proximal clamping and distal positioning of an occlusive catheter due to the high position of the aneurysm. A shunt was not used based upon stump pressure measurements. The aneurysm was resected and a direct end-to-end anastomosis created; the kinking was also corrected.

The patient had an uneventful post-operative course and was discharged four days after surgery. At six-month follow up she was healthy and did not suffer from dysphagia.

### Discussion

Extra-cranial carotid artery aneurysms are rare. Dehn and Taylor<sup>1</sup> reported only nine cases in 14 years during which

they performed 469 surgical procedures for aneurysms in other sites. In approximately 8500 operations for arterial aneurysms McCollum *et al.*<sup>2</sup> observed only 21 cervical carotid aneurysms. Finally, Busuttill *et al.*<sup>3</sup> described 14 true carotid aneurysms collected over 24 years and El-Sabrouh and Cooley<sup>4</sup> reported 29 collected over 36 years.

Cervical aneurysms involve with decreasing frequency the common carotid artery, its internal and its external branches.<sup>5</sup>

Infection, atherosclerosis, trauma, congenital or development defects, fibromuscular dysplasia, and cystic medial necrosis may represent aetiological factors in the development of aneurysms of the carotid artery.<sup>6</sup>

Such aneurysms usually present as a pulsatile mass in the neck or within the pharynx and may cause isolated cranial nerve palsies or haemorrhages from the oropharynx, nose or ear. In our case the presence of a large thrombus along the aneurysm's medial wall explained why the mass was not pulsating. Other clinical symptoms may include sudden headaches, facial pain, dysphagia or upper airway obstruction. Dysphagia, which was the only clinical sign in our case, may be the result of cranial nerve palsies due to compression exerted by a high internal carotid artery aneurysm<sup>7</sup> or of direct expansion within the oropharyngeal cavity (as in our case and also those of Hori *et al.*<sup>8</sup> and Kubis *et al.*<sup>9</sup>) or within the oesophagus.<sup>10</sup> Major symptoms and signs associated with cerebral thromboembolic phenomena include transient ischaemic attacks and fatal cerebral infarction.

Surgical treatment is required to avoid disastrous consequences. Fatal complications can in fact occur in 71 per cent of non-treated external carotid artery aneurysms.<sup>11</sup>

Duplex ultrasound scanning is the most simple diagnostic investigation, but it may fail if the lesion is high. Arteriography most often provides the diagnosis of the lesion. Magnetic resonance imaging and arteriography are fundamental for diagnosis and treatment.

Until 1950 the treatment of choice was ligation but today this should be used only when reconstruction is not possible. Extracranial-intracranial bypass graft is rarely used and does not exclude the aneurysm from the bloodstream.<sup>4</sup> Many extracranial carotid artery aneurysms can be treated with a direct end-to-end

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FIG. 1

Coronal magnetic resonance image shows the aneurysm (4 × 2.5 cm) located at the left carotid artery bifurcation displacing its internal and external branches and reducing the pharyngeal lumen (thin arrow). The mass showed a low signal on T1- and T2-weighting and a peripheral high signal due to a thrombus (thick arrow).

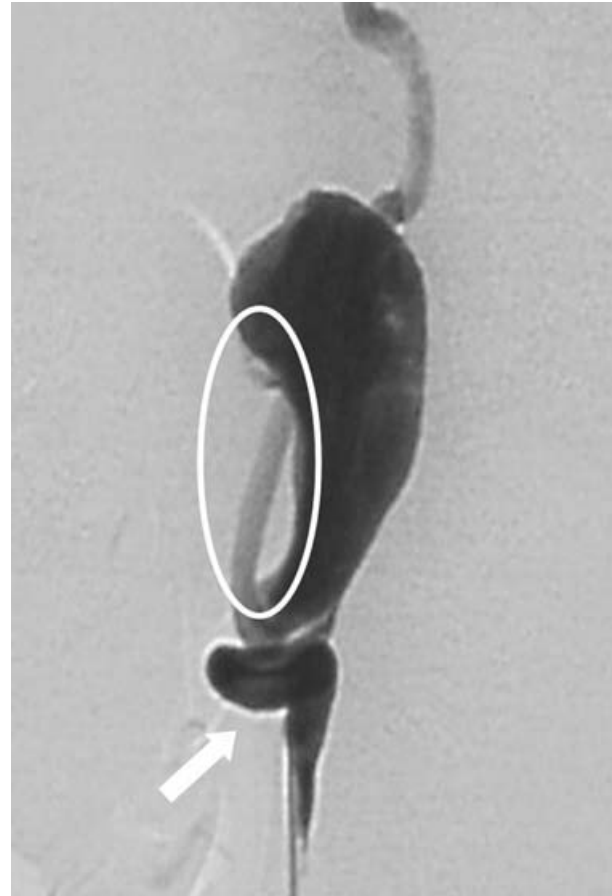


FIG. 2

Selective carotid angiography demonstrates the presence of an aneurysm the medial portion of which was occupied by a thrombus (oval); the proximal internal carotid artery is seen to be kinked (arrow).

anastomosis of the internal carotid artery after the removal of the aneurysm. If primary anastomosis cannot be performed a graft can be interposed. In case of a large fusiform aneurysm partial aneurysmectomy and patch closure can be performed to avoid lesions of the vagus, recurrent laryngeal and glossopharyngeal nerves.<sup>12</sup> If distal control cannot be obtained because of severe fibrosis or high extension of the aneurysm the artery is controlled internally with a Fogarty catheter, a T-shunt or an olive-tipped metal dilator. Aneurysms with intracranial extension may be approached via a mandibular subluxation or an approach posterior to the sternocleidomastoid muscle.<sup>13</sup> Surgery however can be difficult because of the location of the aneurysm or due to a hostile neck. In these cases an endovascular stent graft placement represents a further therapeutic option for the treatment of cervical carotid aneurysms.<sup>14,15</sup>

### Conclusion

Although rare, internal carotid artery aneurysms should be considered in the differential diagnosis of a mass in the oropharynx or neck. Our case evidenced the importance of a thorough examination of the patient in order not to miss a rare vascular cause for an oropharyngeal mass. Colour Doppler ultrasonography, computed tomography and/or MRI studies provide non-invasive, direct information prior to angiographic evaluation, which is the definitive diagnostic procedure. Biopsy or other cytologic examination<sup>16</sup> may have disastrous consequences due to haemorrhage and the possibility of a vascular cause should always be considered. Biopsies must be avoided, although they may be eventually performed following appropriate imaging.

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