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Extracranial internal carotid aneurysm masquerading as a parapharyngeal tumour

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A 67 year old female presented with 5 months of right ear blockage. Past medical history was significant for surgically resected breast cancer. There was no past history of traumatic injury to the neck.

On examination, the patient had a bulging mass pushing the right soft palate forwards. Blood pressure was 120/70 mmHg. There was no abnormality on neurological examination.

Initial imaging with MRI of the neck and brain showed a 35mmx45mmx55mm well circumscribed lesion centred within the right prestyloid parapharyngeal space (Figure 1). The lesion was heterogeneously hypointense on T1 and T2 weighted imaging with moderate diffuse contrast enhancement. A provisional diagnosis of parapharyngeal salivary gland tumour was made.

A plan was made to attempt US guided FNA via a cervical approach posterior to the right submandibular gland. Doppler ultrasound showed hazy signal dropout internally on all sequences, suggestive of a slow flow varix. FNA was withheld and the patient proceeded to CT angiographic assessment.

The CT angiogram demonstrated a sharply circumscribed mass arising 20mm above the origin of the right internal carotid artery (ICA) and finishing 9mm below the base of skull (Figure 2). The mass opacified concurrently with the proximal right ICA, suggesting a carotid aneurysm.

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A right carotid angiogram was performed to further delineate the anatomy of the lesion (Figure 3). From the bifurcation, there was 20-30mm of normal ICA, followed by a large saccular aneurysm. There was no evidence of out-flow vessel at the top or apex of the aneurysm.

The patient proceeded to open surgical repair with aneurysm excision and saphenous vein graft. Intraoperatively, two openings emptying from the right ICA into the aneurysmal sac were found, each separated by 20mm. Histopathology confirmed marked arteriosclerotic fibrointimal thickening and fibrosis, consistent with aneurysm wall. The patient awoke with no neurologic deficit and is well one month after surgery.

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Discussion

The parapharyngeal space is divided into a pre- and post-styloid region by the fascia running from the styloid process to the tensor veli palatini muscle. Prestyloid pharyngeal tumours are most commonly salivary tumours, usually arising from the deep lobe of parotid. Approximately 80% are benign while 20% are malignant. The most common histological subtype is a pleomorphic adenoma (1). Malignant tumours, such as adenocarcinoma or adenoid cystic carcinoma are uncommonly seen (2).

Routine workup of parapharyngeal tumours is with CT and MR imaging. Ultrasound guided FNA usually has a limited role due to the deep nature of the parapharyngeal space. In a subset of patients with large, accessible parapharyngeal tumours, FNA can play a role in diagnosis.

On CT, pleomorphic adenomas are typically homogeneous and hypodense relative to native salivary gland tissue with variable enhancement (3). They are well-circumscribed, homogeneous masses on MR imaging, with low T1 and high T2 signal intensity(4). These lesions typically enhance homogeneously with gadolinium, although larger tumours can show variable enhancement. CT features of internal carotid aneurysms include the presence of a well-defined mass, with peripheral eggshell calcification(5). Early arterial enhancement suggests an arterial vascular type of lesion. Aneurysms may display high central signal intensity on T1 and T2 weighted MR imaging, corresponding to true arterial flow(5). Low signal may surround it, corresponding to surrounding thrombus within the aneurysm. In our case study, the lesion was well-circumscribed and displayed heterogeneous hypointense signal on MR. Only on CT, did the lesion display classic early arterial enhancement (Figure 2). Furthermore, displacement of the pterygoid plates was thought to be consistent with an arterial aneurysmal lesion.

Extracranial ICA aneurysms are uncommon and represent 0.2-0.4% of all operated aneurysms. Common risk factors for development include atherosclerosis and traumatic neck injury(6). Less common risk factors include connective tissue disorder (Ehlers-Danlos syndrome, fibromuscular

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dysplasia), infection and radiotherapy(7). Patients typically present with a pulsatile cervical or parapharyngeal mass which may also have bruit. Occasionally, the lesion may be asymptomatic. Central nervous system symptoms due to thrombo-embolism are common, and may include hemiplegia, hemiaesthesias, unilateral visual loss and dysphasia. CT angiogram can be used to assess for ICA aneurysm, although digital subtraction angiography is the gold standard for investigation. DSA is used for pre-operative planning and can give vital information about location, type of aneurysm and the presence of further lesions.

In conclusion, ICA aneurysms may have a similar radiologic appearance to salivary tumours. Consideration must always be given to the possibility of aneurysmal disease in the differential diagnosis of parapharyngeal space lesions in order to ensure that the correct operation is performed by the most appropriate surgeon, minimising the risk for potentially catastrophic complications.

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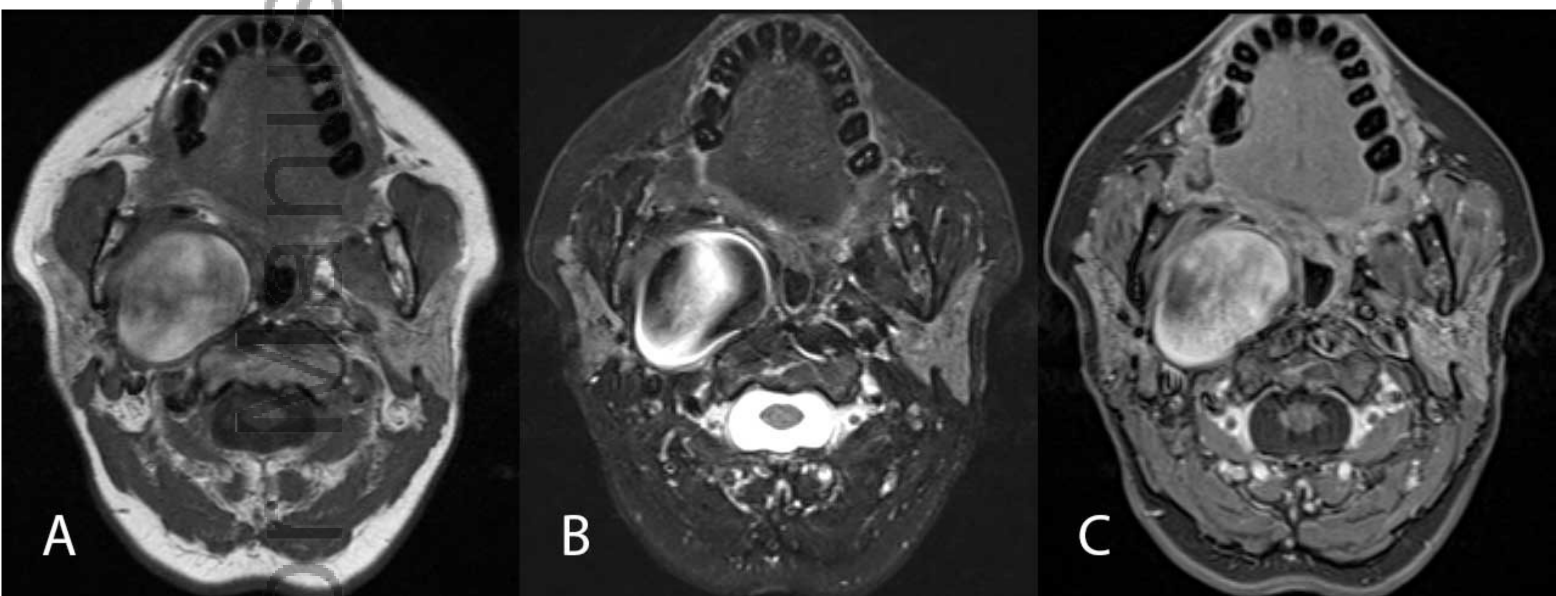

Figure 1.jpg

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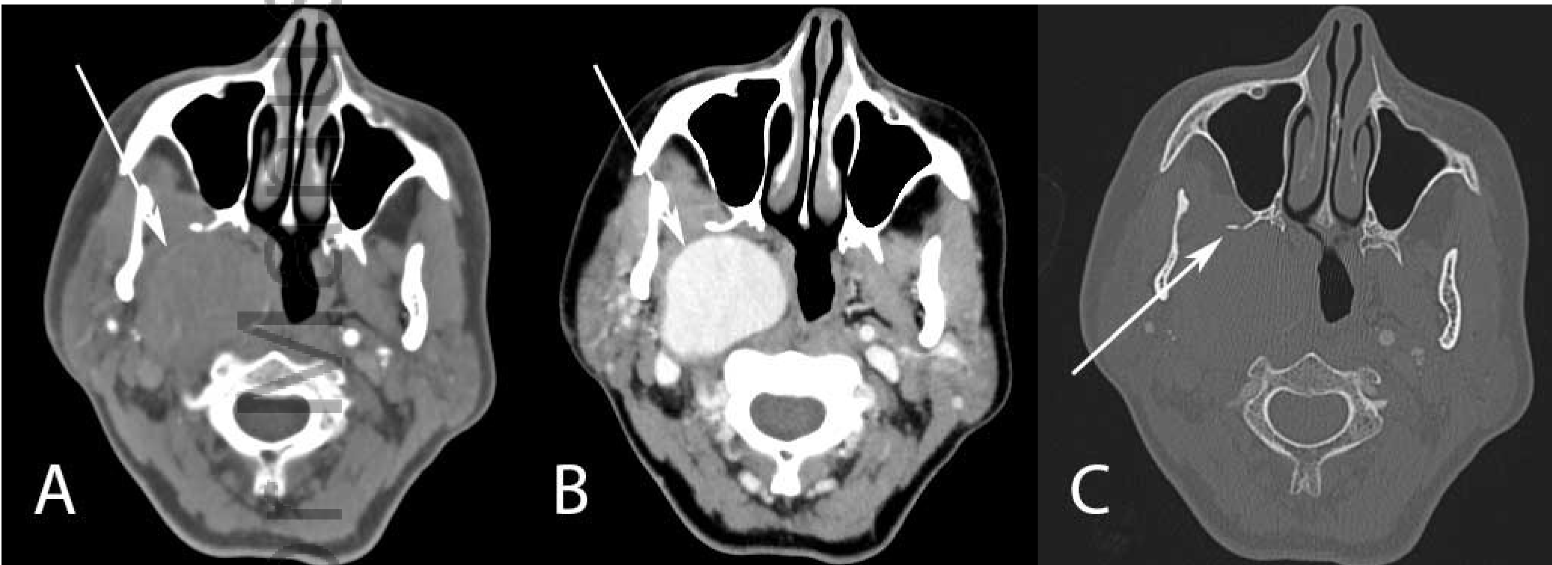

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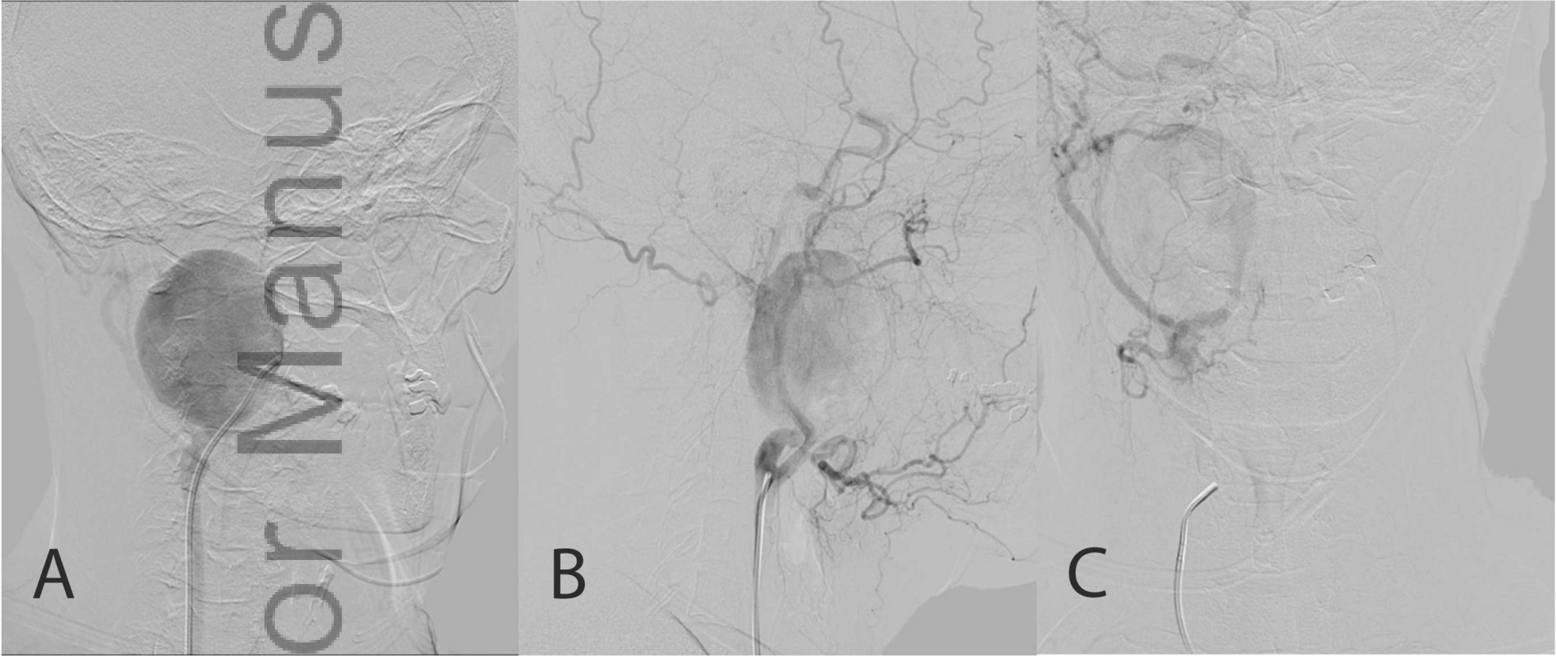

Figure 3.jpg

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