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Vagal Nerve Schwannoma Presenting as Carotid Space Region Mass

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Abstract

Vagal nerve Schwannomas rare benign neoplasms.

1. These tumours usually are slow growing and presents as painless mass lesions of the neck which rarely undergoes malignant transformation.
2. Even though these tumors are rare a high degree of suspicion for vagal schwanomas should be kept while dealing with the carotid region mass lesions based on the clinical and imaging findings so that the risk of nerve injury during the surgery can be minimized.
3. Typical imaging findings can point towards the diagnosis but the confirmation is only based on histopathology.

We are describing a cases of vagal nerve schwannoma presenting with a carotid space region mass.

Keywords: Carotid space Schwannoma nerve Schwannomas, Vagus, Neuromas

Introduction

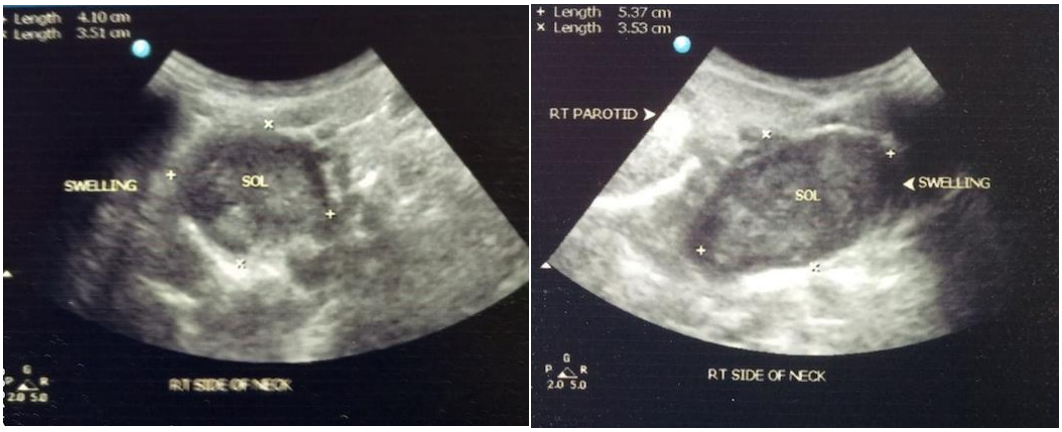
Vagal nerve Schwannomas rare benign neoplasms.*1* These tumours are usually are slow growing and presents as painless mass lesions of the neck which rarely undergoes malignant transformation.*2*Even though these tumors are rare a high degree of suspicion for vagal schwanomas should be kept while dealing with the carotid region mass lesions based on the clinical and imaging findings so that the risk of nerve injury during the surgery can be minimized.*3* Typical imaging findings can point towards the diagnosis but the confirmation is only based on histopathology. Thus vagal nerve Schwannomas should be differentiated from the other tumors of the region like carotid body paraganglioma and glomus vagale Surgical excision remains the choice of treatment for vagal schwannoma. We are describing a cases of vagal nerve schwannoma presenting with a carotid space region mass.

Case

A 36 year old lady came to the out patient department with a swelling on the right side of the neck which she had noticed about 2 months back. Since then there was no obvious change in the size of the swelling and she denied any history of pain, discharge, difficulty swallowing or any change in the voice. On local examination a non tender swelling of approximate size of 3.5 x 3 cm is seen which was soft to firm in consistency with smooth surface and no discoloration of the overlying skin in the right side of the neck in parotid region. Carotid artery was palpated anterior to the lesion.

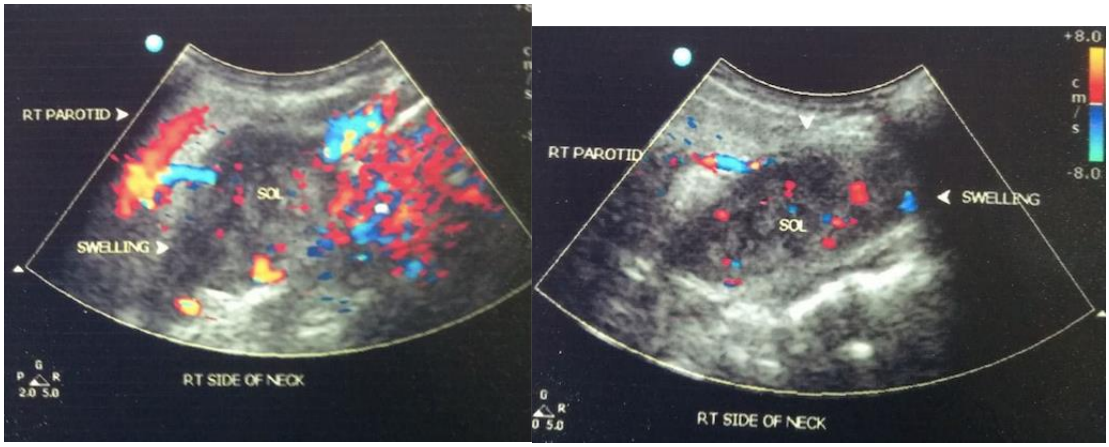
Ultrasonography (USG) with color doppler was performed which showed:A large oval solid mass seen in neck at angle of mandible on right side, measuring 5.3 cm x 4.1 cm x 3.5 cm in size. This mixed echoeic

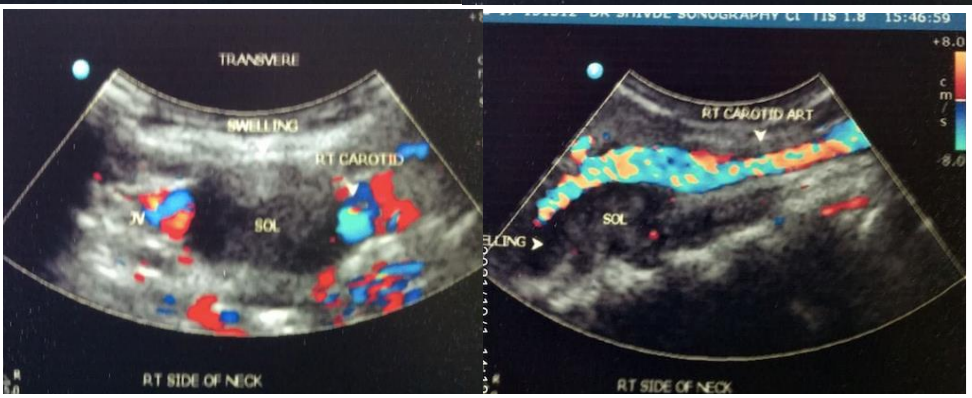
SOL is located adjacent to lower pole of parotid and extending in carotid space in jugulo-diagastric region. This mass is displacing Right carotid artery medially and internal jugular vein laterally. There is increased vascularity seen in this mass on colour and power Doppler. Right parotid gland is seen above SOL and appears normal. No significant intraglandular lymphnodes are seen. No significant lymphadenopathy seen.



USG showing: A large mixed echoeic SOL oval solid mass seen in neck at angle of mandible on right side, located adjacent to lower pole of parotid and extending in carotid space in jugulo-diagastric region.

USG Images showing: The lesion with increased vascularity on colour and power Doppler.

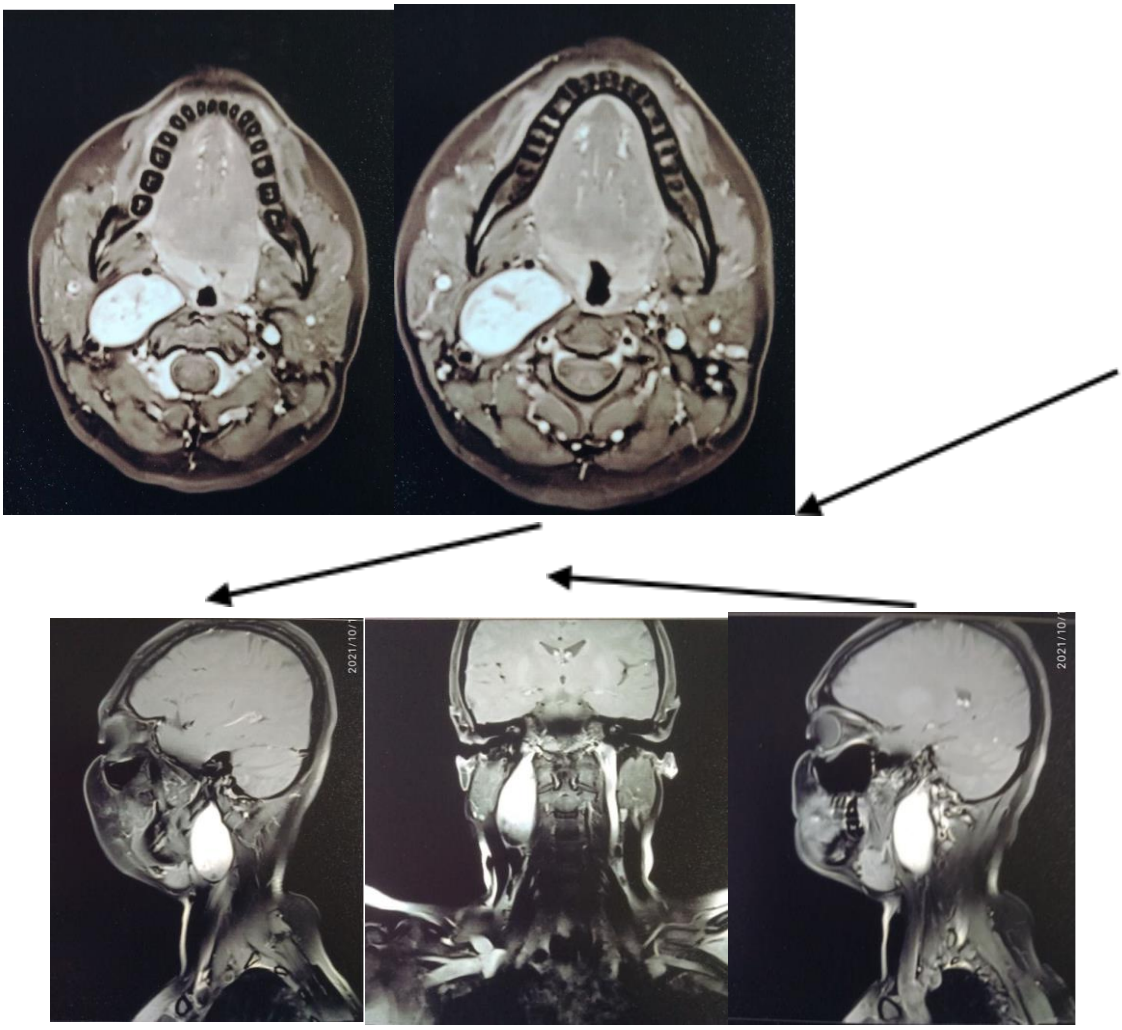




USG Images showing: This mass is displacing Right carotid artery medially and internal jugular vein laterally.

Contrast enhanced MRI was performed which showed: A well defined T1 isointense and T2 heterogeneously hyperintense mass lesion measuring 6.0 x 3.5 x 3.1 cm with intense enhancement of post contrast images, seen in right carotid space region extending from just above the level of carotid bifurcation and superiorly till skull base. It is located between right carotid vessels and IJV. It is displacing adjacent posterior belly of digastric laterally. It is mildly displacing right ICA antero-medially. Right jugular vein is displaced postero-laterally and appears to be mildly compressed by the lesion.

CCA SOL
IJV

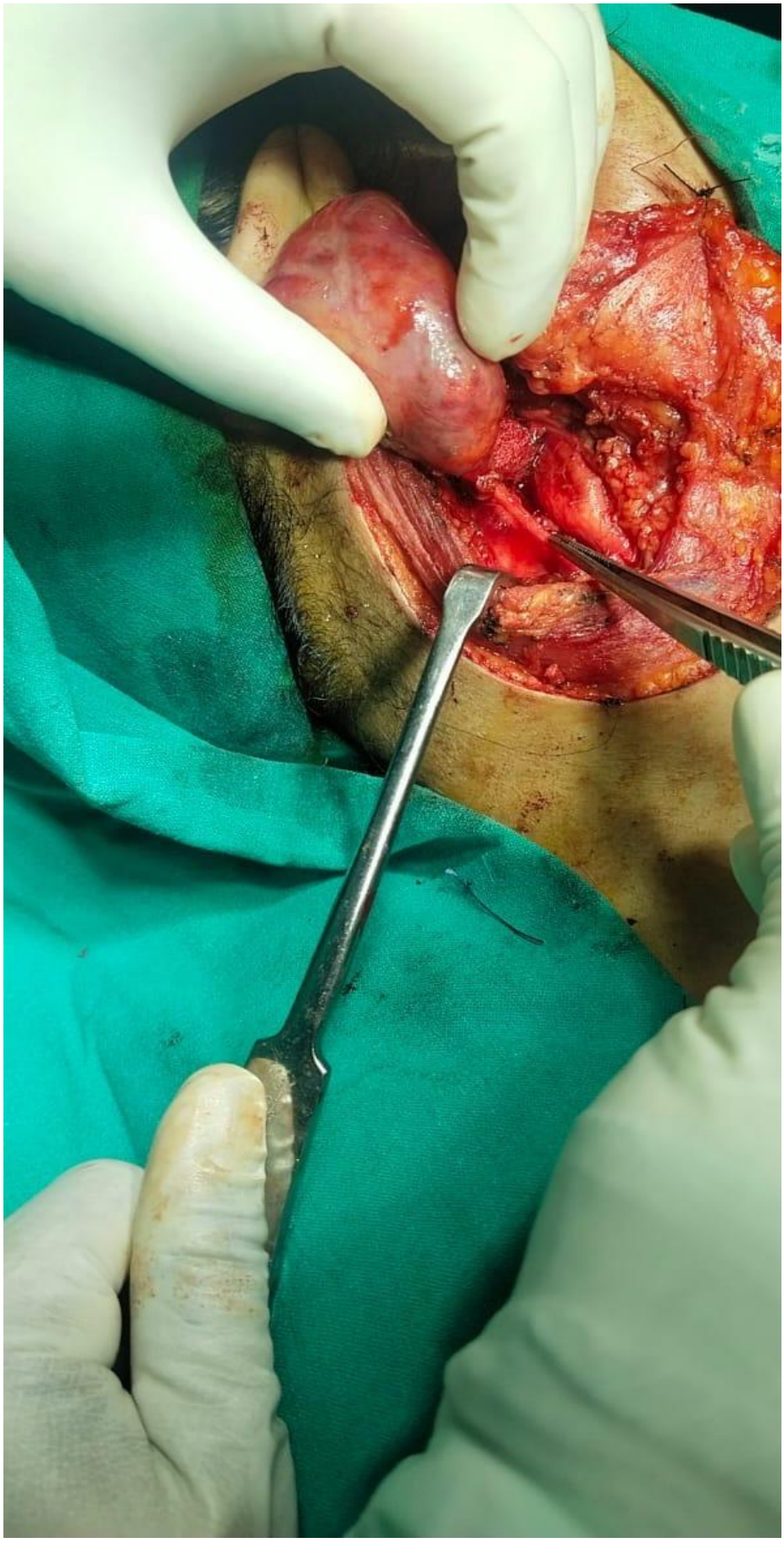


Post contrast MRI Images showing the carotid space mass lesion.

Fine needle aspiration cytology (FNAC) low grade spindle to epithelioid cell neoplasm with possibility of paraganglioma. However post operated histopathological sample from the lesion later confirmed the diagnosis of vagal nerve schwanoma.

Following the imaging findings the patient underwent surgical resection and an encapsulated mass lesion arising from the vagus nerve was dissected.

Histopathology reports later confirmed the diagnosis of Vagal nerve Schwanoma.



Discussion

The carotid space is the anatomical space which extends inferiorly from the arch of aorta up to the base of skull superiorly. The content of this anatomical space are carotid artery, internal jugular vein, sympathetic plexus, vagus nerve, lymph nodes, and the congenital remnants of the second branchial cleft. All these structures can cause different mass lesions in the carotid space. *4*

Vagal Nerve Schwanzoma

Vagal nerve Schwannomas rare benign neoplasms.

1. These tumours are usually are slow growing and presents as painless mass lesions of the neck which rarely undergoes malignant transformation.
2. schwanomas are closely associated with the respective nerve of origin. No sex predilection has been noted
3. Carotid region Vagal nerve schwannomas are difficult to distinguished from paragangliomas, as both of them can be found in similar locations and they can often have similar presentations.
4. Schwannomas are usually seen in the the retrostyloid parapharyngeal space, however in some cases schwannomas extending to the posterior cranial fossa through the jugular foramen have been reported
5. MRI is an important imaging tool in the evaluation of schwanomas. Schwanomas usually appear Isointense on T1 weighted images and hyper intense on T2 weighted images and have smooth, well defined margins and a homogeneous overall appearance
6. Similar imaging appearance was noted in our case on contrast enhanced MRI.

MRI also helps in establishing the relationship between the carotid space schwanomas with the surrounding vascular structures i.e. between the tumor and the carotid artery and the jugular vein. As the characteristics and positioning of these surrounding vascular structures is helpful in differentiating vagal nerve schwannomas from the similarly appearing lesions of this region such as:

Schwannomas arising from sympathetic chain, as Vagal nerve schwannomas will displace the IJV (internal jugular vein) laterally and the CA (carotid artery) medially, whereas schwannomas arising from the cervical sympathetic chain displace both the carotid and IJV without separating them *4*. This typical feature was also found in our case. In a few cases necrosis and cystic degeneration have also been reported*7*.

Although MRI is superior in evaluating these lesions, It has been observed as seen in the case discussed above that USG with color doppler done by an experienced

radiologist can also help characterizing the lesion and establish its relations with the surrounding vessels especially IJV and CA. Thus USG is also very important imaging modality which can helpful in imaging of such lesions.

The MRI can also help differentiating the vagal nerve schwanomas from the paragangliomas which shows typical “ salt and pepper” appearance due to hemorrhages and flow voids.

Schwannomas arising from the vagus nerve in the carotid region must also be differentiated from the carotid body tumors and glomus vagale tumors so that the appropriate treatment can be given to the patients. Carotid body tumors originates at the bifurcation of the carotids, splaying the external and internal carotid arteries, whereas glomus vagale tumors usually displace the internal carotid artery anteriorly or medially or both. Both of these tumors enhance intensely on post contrast images and shows typical “ salt and pepper” appearance due to hemorrhages and flow voids. This “ salt and pepper” appearance is not seen in schwannomas.

Surgical excision is considered to be the treatment of choice for schwannomas of the carotid space. Imaging plays very important role in differentiating vagal nerve schwanoma of the carotid space from the other lesions. As risk of nerve injury during the surgery can be minimized and important nerve functions can be preserved. In cases of vagal nerve schwanomas where complete resection is not possible subtotal or near-total tumour resection is preferred*8*.

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