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# VAGAL SCHWANNOMA MASQUERADING AS THYROID NODULE

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## ABSTRACT

Head and Neck Schwannomas are rare. Cervical vagal schwannoma constitutes about 2-5% of neurogenic tumours. Vagal Schwannoma may masquerade as thyroid nodule. A 76-year-old male presented with hoarseness and gradually increasing swelling in the left side of the neck for 30 years. Presence of a neck mass on left side with Substernal extension, fixity and left vocal cord palsy was suspicious for thyroid malignancy. Ultrasonography (USG) Neck was suggestive of left Thyroid Nodule 7 x 5cm. Fine needle aspiration cytology (FNAC) reports were suggestive of Colloid goitre. Contrast enhanced CT (CECT) Neck findings shows hypo-intense mass splaying the carotid artery and Internal Jugular Vein (IJV). Subsequent FNAC reports were suggestive of spindle cell tumour (Sternocleidomastoid Tumour). Intra-operatively, tumour was arising from left vagus nerve, excised and histopathological examination (HPE) confirmed Vagal Schwannoma. FNAC may yield erroneous report if the aspirate is from thyroid tissue adjacent to the vagal schwannoma or may be confused with other spindle cell tumour like sternomastoid tumour in vagal schwannoma patients. USG and CECT neck may need in depth analysis to differentiate Vagal Schwannoma from thyroid malignancies.

## KEYWORDS

Vagal schwannoma, thyroid swelling, USG Neck, CECT Neck, FNAC

## INTRODUCTION:

Schwannomas are well-encapsulated, mostly benign neurogenic tumours, originating from nerve sheath cells. About 25-45% of extracranial schwannomas have been reported to lie in the head and neck region.[1] Head and neck schwannomas arising from cervical vagus nerve are extremely rare and constitutes about 2-5% of neurogenic tumours.[2] Cervical vagal schwannomas present as asymptomatic, slowly enlarging, painless, lateral neck masses, mobility only along the horizontal axis.

Presence of a mass in neck, substernal extension, fixity, and hoarseness in patients with vagal schwannoma may be mistaken for a thyroid malignancy. We present one such case where USG Neck, CECT Neck and FNAC assisted in the diagnosis of the lesion preoperatively and was confirmed intraoperatively.

**Case Report**:

A 76-year-old male presented on 5th October, 2022 with the complaint of progressive, painless swelling on the left side of the neck for the last 30 years. He also complained of hoarseness for the last 4 years. On local examination of the swelling, the mass was horizontally ovoid, about 5x4 cm in size. It extends from lower half of the left side of the neck to the left clavicle. The mass is well defined, firm, fixed, non-compressible, non-pulsatile, no local rise of temperature, no bruit. All routine investigations were found to be normal. On endoscopy of oropharynx and laryngopharynx, there was left vocal cord palsy.

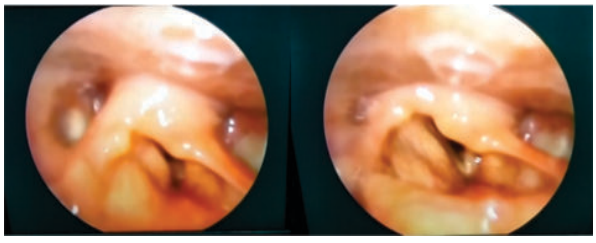

**Fig.1 Endoscopic examination of laryngopharynx showing left vocal palsy.**

USG neck was done and it was suggestive of bilateral thyroid nodules, right lobe nodules, one measuring 4x3 mm in size and left lobe nodule, larger one measuring 12x10 mm in size.

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FNAC of the left neck swelling was repeated twice from different labs. First one showed thyroid tissue having features of colloid goitre and second one was suggestive of fibromatosis (sternomastoid tumour) and no thyroid tissue was seen.

CT scan of neck suggested of left thyromegaly with multiple calcification and small calcific nodules in the right lobe and isthmus. There was evidence of intrathoracic extension, appears partially encasing the IJV, carotid artery displaced medially, trachea displaced slightly to the left, asymmetry of rima glottidis suggested left vocal cord palsy (Fig.2).

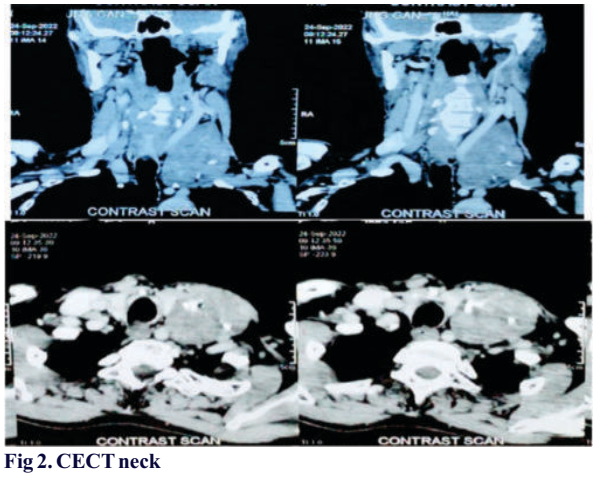


**Fig 2. CECT neck**

Surgical excision of the mass was planned under General Anaesthesia. A transverse skin incision was given 2 fingers breath above the sternal notch, subplatysmal flap was elevated and strap muscles were dissected carefully. Intraoperatively, left thyroid appeared normal, swelling was present in the left carotid sheath, lateral and anterior to left carotid artery, medial to left IJV. The left IJV was found to be compressed. Tumour was dissected, ligated, and excised very carefully.

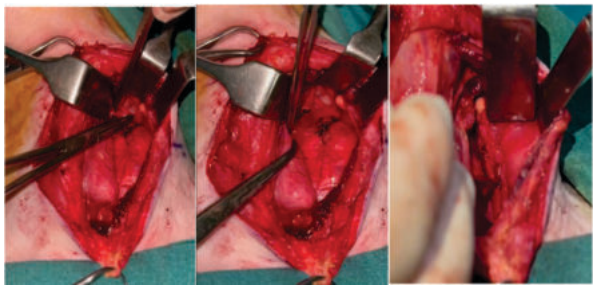

**Fig. 3: Excised specimen of a fusiform tissue mass measuring around 7x5cm was sent for HPE.**

Microscopic examination findings showed a well-encapsulated tumour with focal areas displaying benign spindle cells arranged in loose singles in an eosinophilic fibrillary stromal background with overall features suggestive of schwannoma with degenerative changes.

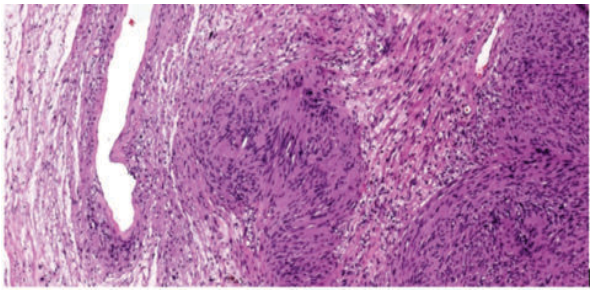

**Fig. 4: Photomicrographic image of histology of tumour showing spindle cells**

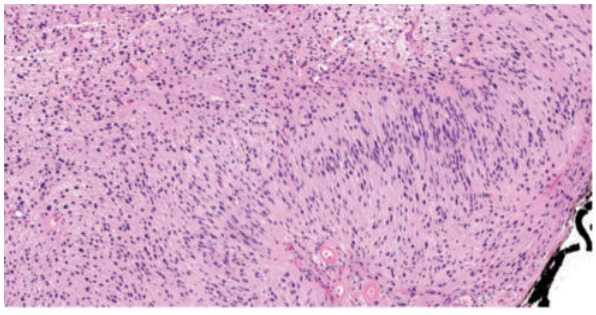

**Fig. 5: Microscopic picture of histology of tumour (hematoxylin and eosin stain)**

## DISCUSSION:

The diagnosis of vagal schwannoma is challenging as being a rare tumor, head and neck localization of the tumor is infrequent and vagal origin in that region is unusual.[3,4,5] Calcaterra et al reported that the head and neck is the site of origin in more than one-third of all solitary schwannomas and that they occur most often in the lateral part of neck.[6]

The accuracy of diagnosis of vagal schwannoma preoperatively is difficult, because few vagal schwannomas present with neurological deficits, and the differential diagnosis of neck tumours is broad.[7] Differential diagnosis of neck swelling include thyroid swellings, branchial cleft cyst, malignant lymphoma, paraganglioma, metastatic cervical lymphadenopathy, vascular malformations, reactive lymphadenopathy, carotid artery aneurysm, salivary gland tumors, neurofibroma, TB lymphadenitis, schwannoma of cervical sympathetic chain,etc.

Vagal schwannoma most commonly presents with hoarseness. Paroxysmal cough may be produced on palpating the mass which is a clinical sign unique to vagal schwannoma. Pezzullo et al reported the prevalence of preoperative paralysis of the vocal cord to be 12% but hoarseness is almost always present even after surgery of schwannomas originating from the cervical vagus nerve.[8] Preoperatively, this case presented with hoarseness for the last 4 years. On examination, there was left vocal cord palsy. Postoperatively, aggressive voice therapy has been done for vocal cord compensation.

The diagnosis of vagal schwannoma can be difficult due to broad differential diagnosis and non-specific clinical presentation and therefore, radiological imaging plays an important role in the diagnosis. The usefulness of FNAC is still controversial; majority do not recommend open or needle biopsy for these masses.[9] The preoperative diagnostic accuracy of FNAC can be influenced by the quality of the specimen and the experience of cytopathologist .[4] On USG images, it appears as a round or elliptical cross-section with a clear border tumour.[4] CECT usually shows vagal nerve schwannoma as a well-covered, well-defined mass, which is usually of higher attenuation than muscle on contrast-enhanced images.[4,9] As reported by Furukawa et al, Magnetic Resonance Imaging (MRI) findings are also useful for preoperative estimation of the nerve of origin of schwannomas of the vagus nerve and the cervical sympathetic chain.[10] Usually, separation of the IJV and internal carotid artery helps to distinguish between schwannomas of the vagus nerve and those of the cervical sympathetic chain.[10,11]

In our case USG neck, FNAC, CECT neck were done for preoperative diagnosis but the tumour was initially misunderstood to be a thyroid swelling.

The tumour was excised carefully, and intraoperatively it was found to be arising from vagus nerve. Postoperatively the diagnosis was confirmed by HPE which suggested of schwannoma with degenerative changes. Therefore, appropriate imaging and preoperative accurate diagnosis are required for preoperative planning and successful treatment of vagal schwannomas.

## CONCLUSION:

Vagal nerve schwannoma is a rare tumour with low lifetime risk of malignant transformation, Radiologic imaging plays an important role in diagnosing vagal nerve schwannoma. MRI is a gold standard to assess vagal nerve schwannomas and to evaluate their extent, differential diagnosis, and treatment planning. The treatment of choice of vagal nerve schwannoma is complete surgical excision. Vagal Schwannomas may mimic thyroid malignancies. FNAC may yield erroneous report if the aspirate is from thyroid tissue adjacent to the vagal schwannoma. It may be confused with other spindle cell tumour like sternomastoid tumour. USG and CECT neck may need in depth analysis to differentiate Vagal Schwannoma from thyroid malignancies.

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