# Primary schwannoma of thyroid presenting as solitary thyroid nodule: a rare case report

**Hemavathi Narayan[1], Rashmi Krishnappa[2,*], Usha Maniyappa[3], Srikanth V. Kulkarni[4]**

[1]PG Student, [2,3]Assistant Professor, [4]Professor, Dept. of Surgery, Ramaiah Medical College, Bangalore

***Corresponding Author:**
Email: rashmikrishnappa123@gmail.com

## Abstract

The thyroid gland is a very rare site for head and neck Schwannomas. Till date there have been only 19 reported cases in English literature. In the head and neck region, the vagus and the cervical sympathetic chain are the common sites for Schwannoma. Here, we report a case of Schwannoma of thyroid in a 18 year old adolescent male who presented with Solitary Nodule which moved with deglutition. We report this case to emphasize the importance of pre-operative or intraoperative diagnosis of these tumors.

**Keywords:** Solitary Nodule, Schwannoma, Thyroid, Histopathology.

## Introduction

Schwannomas are benign neoplasms originated from the Schwann cells. Schwannomas were first described in 1908 by Vercacy and represents the commonest form of peripheral nerve sheath tumors.[1,4] Out of all Schwannomas, 25% occur in the head and neck region, most of them arising in relation to the peripheral nerves and cervical sympathetic region. But its location within the thyroid gland is extremely rare. The first reported case of thyroid schwannoma was by Delancy and Fry in 1964.[4] They mimic a thyroid nodule and its sonographic and cytological features make preoperative diagnosis a challenge.

## Case Report

An 18 year old male presented with a right side nodular thyroid swelling which was gradually increasing in size since 1 year. There was no history of dysphagia, odynophagia and hoarseness of voice. Physical examination revealed a 3x2cm soft, mobile, non tender solitary nodule that moves with deglutition. Cervical lymphadenopathy was clinically absent. His serum T3, T4 and TSH was found to be normal.

Ultrasonography of thyroid showed a well defined hypoechogenic nodule in the superior pole of the right thyroid (Fig. 1). FNA report was found to be inconclusive even after multiple trials, following which hemithyroidectomy was done.

The thyroid specimens with adjacent solitary thyroid nodule were sent separately for histopathological examination. On gross examination of the solitary nodule of thyroid, showed well circumscribed encapsulated mass of size 2.5x2x0.7 cm. Cut surface was solid and grey white with tiny foci of haemorrhage while the thyroid tissue was unremarkable (Fig. 2).

Microscopic examination showed a well capsulated tumor composed of hypercellular and hypocellular areas of benign spindle cells. Good numbers of verocay bodies were noted along with secondary changes (Fig. 3, 4). The adjacent thyroid tissue showed nodules composed of colloid filled varying sized lined by benign follicular epithelial cells. The thyroid nodule resembled benign nerve sheath tumor and was further subjected to immunohistochemistry.

The immunohistochemistry (IHC) staining showed that these spindle cells were strongly and diffusely positive for S-100 thus confirming the diagnosis of Schwannoma with very low Ki 67 activity (Fig. 5, 6).

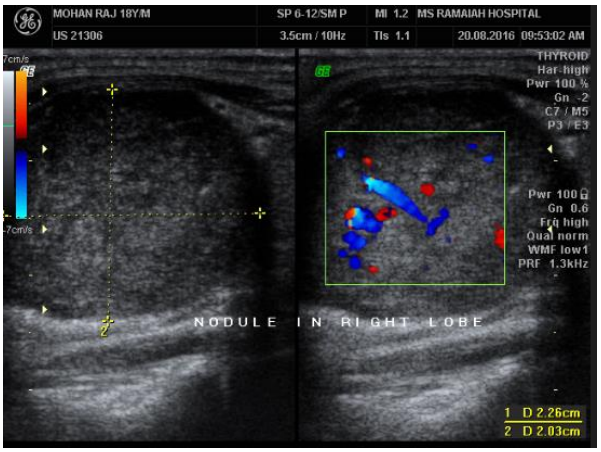


**Fig. 1: Ultrasonography showing a solitary nodule in the upper lobe of the right lobe of thyroid**

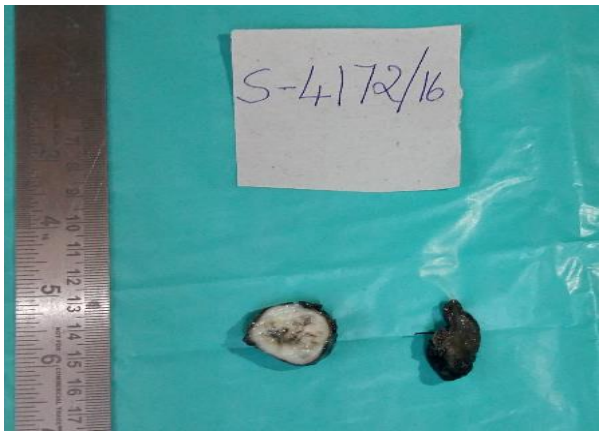


**Fig. 2: Gross of a solitary nodule and thyroid tissue. Cut surface of a solitary nodule reveals solid, grey white areas with tiny foci of haemorrhage**

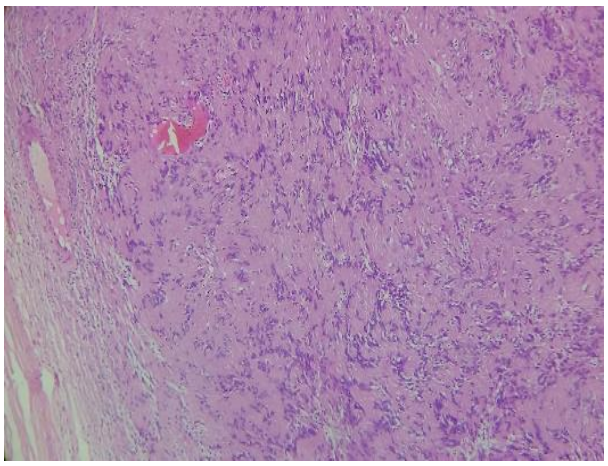

**Fig. 3: Photomicrograph showing Antoni A pattern of spindle cells with nuclear palisading (verocay bodies) (H& E, X400)**

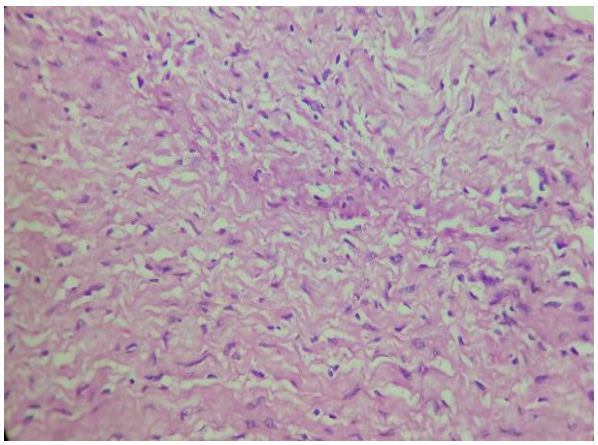

**Fig. 4: Photomicrograph showing hypocellular areas (Antoni B areas) (H& E, X400)**

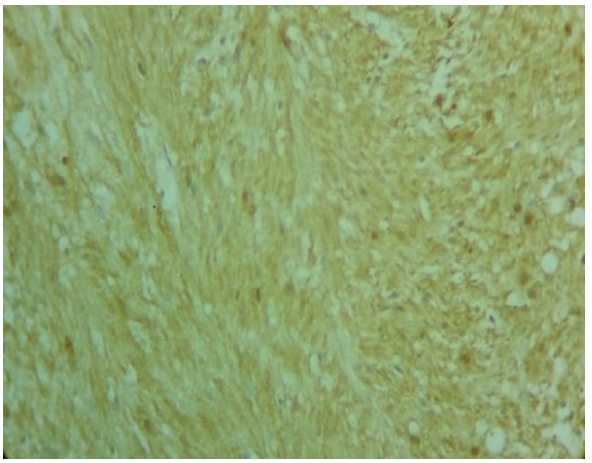

**Fig. 5: Immunohistochemistry shows spindle cells positive for S-100 protein**

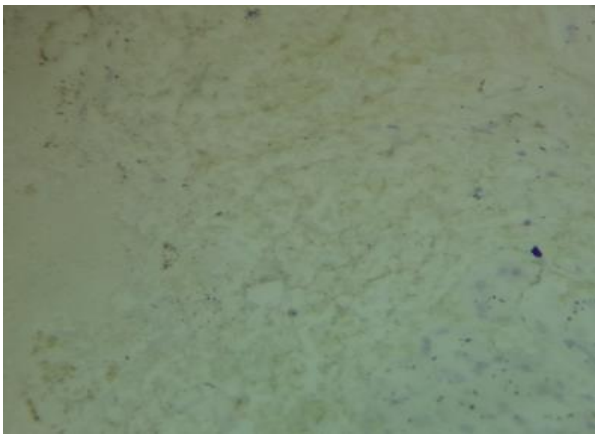

**Fig. 6: Immunohistochemistry showing very low Ki-67 activity**

## Discussion

Primary non-epithelial neoplasm of thyroid accounts for less than 1% of all thyroid neoplasm. The lesions included in this category are lymphomas, teratomas, lipomas, hemangiomas and schwannomas. It has been postulated that schwannomas originate from intra-thyroidal sensory nerves.[3] They are rare, solitary, encapsulated, slow-growing tumors and rarely exhibit malignant transformation.[1] It is very difficult to make a precise preoperative diagnosis. The majority of patients with intrathyroid schwannomas present only with a painless, slow- growing mass, without any other symptoms. The ultrasonography and computed tomography (CT) scans usually reveal a well-delineated, solid nodule, without involvement of the cervical lymph nodes. The thyroid functions test are usually within the normal range.[2]

Fine needle aspiration is, in most cases, unsuccessful and does not allow obtaining an accurate diagnosis because of scanty material yield or diagnosed as colloid goitre because of sampling of normal thyroid tissue leaving the tumor.[1]

A histopathological study with immunohistochemistry is frequently required. Complete surgical excision is the technique of choice in the treatment. However, due to difficulty in providing a preoperative diagnosis, a hemithyroidectomy was performed in this case. The histopathological diagnosis of a primary schwannoma case, made us to review the previous FNA slides, which retrospectively showed few spindle cells resembling schwannoma cells which were initially mistaken for endothelial cells.

Thus we learnt that the surgeon should also ask for frozen section in the absence of pre-operative diagnosis. Though frozen section is not usefull in all cases of thyroid tumors it would have helped in similar cases. However the gold standard remains histopathological examination supported by Immunohistochemistry. Mores such case reports will improve our understanding and raise our index of suspicion.

## Conclusion

Primary thyroid Schwannoma is a rare entity. It closely mimics a cold thyroid nodule in clinical presentation and in sonology. It should be considered in the pre-operative differential diagnosis of thyroid nodule. Surgical excision is considered to be curative and treatment of choice. Better dialogue between the pathologist, surgeon and radiologist and as well use of USG- guided FNAC, IHC and intraoperative frozen section are sure to improve pre-operative diagnosis of these tumors.

## References

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