

## Case Report

# Cystic schwannoma of cervical sympathetic chain masquerading as type II second branchial cleft cyst

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## ABSTRACT

Brachial cleft cyst is the most common differential diagnosis of benign lateral neck swelling but other cystic swellings like carotid body tumours and cystic schwannomas should be kept in mind. MRI of neck is of great assistance in determining the nature of the swelling as fine needle aspiration cytology will fail in diagnosing such swellings accurately. We present a case of 22 year old female who presented with a slow growing swelling which was diagnosed as brachial cyst on FNAC and CT but turned out to be cystic schwannoma of cervical sympathetic chain which highlights the importance of considering various differentials of lateral neck swelling and limitation of FNAC and importance of pre-operative MRI in such cases.

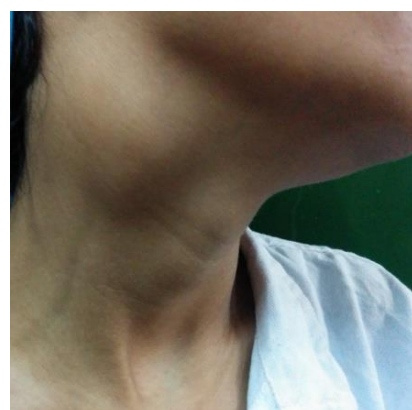
**Keywords:** Cystic schwannoma, Cervical sympathetic chain, Second branchial arch

## INTRODUCTION

Brachial cleft cyst is a common differential for benign lateral neck mass. Other differentials can be necrotic lymphadenopathy, epidermoid cyst, carotid body tumors, lymphangioma and rarely schwannomas. Schwannomas are benign, capsulated, firm and slow growing tumours arising from schwann cell of myelinated nerves. More than 25 percent of schwannomas are found in head and neck but less than 5 percent are cystic in nature.<sup>1</sup> Rarely these tumors can masquerade as brachial cleft cyst.

## CASE REPORT

A 22 year old female patient presented to our OPD with painless right side neck swelling since 4 years ago. On examination a 5 cm× 4 cm swelling on right side of neck extending from 1 cm below mastoid tip up to level of cricoid non tender soft mobile. No pulsations were felt on palpation.

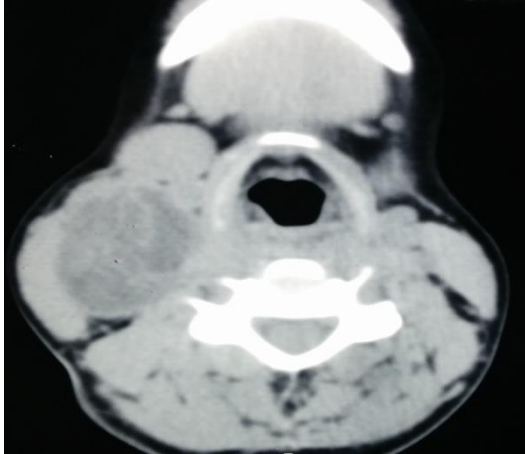


**Figure 1: Clinical presentation.**

On oral examination patient had a tongue tie. No obvious bulge or displacement of peritonsillar structures seen. On 70°scopy B/L vocal cords were mobile.

USG revealed a 5.6 cm × 4.1 cm × 3.7 cm well-defined heteroechoic lesion on right side in subcutaneous plane in upper cervical region suggestive of branchial cyst.

CT scan with contrast showed an encapsulated 3 cm × 4 cm cystic mass with focus of enhancing nodule along it's medial aspect suggestive of branchial cyst.



**Figure 2: Axial section.**



**Figure 3: Sagittal section.**



**Figure 4: Coronal section.**

Multiple FNAC yielded blood cells only hence inconclusive.

Patient was taken under general anaesthesia cervical incision taken and meticulous dissection done. The attachment was traced up to the sympathetic chain. A cystic mass was excised in situ with nerve of attachment. Patient developed Horner's syndrome postoperatively.

The gross specimen was smooth fusiform cystic 5 cm × 4 cm with thin nerve attached. The specimen was cut open chocolate brown thick fluid was expressed. Cut specimen showed median raphe.



**Figure 5: Gross specimen with nerve of origin.**



**Figure 6: Cut specimen.**

Histology showed benign spindle cells of neurogenic origin. Spindle cells had bland morphology and surrounded by myxoid matrix. Hypocellular & hypercellular (Antoni A and Antoni B) areas were seen, suggestive of schwannoma.

## DISCUSSION

Most common differential for benign neck masses is brachial cleft cyst and necrotic lymphadenopathy.<sup>2</sup> Other differentials are carotid body tumors, lymphangioma, epidermoid cyst and schwannomas. Gold standard for pre-operative fine needle aspiration cytology in conjunction with radiological imaging.<sup>3</sup>

Schwannomas are benign encapsulated tumors which arise from schwann cells. These tumours were first

described by Verocay in 1910. 25-40% of all schwannomas are found in head and neck area. These tumors are slow growing tumors which may manifest as a painless, smooth regular mass. FNAC in schwannomas may be inconclusive due to haemorrhagic aspirate or inadequate cellular materials.<sup>4</sup> In our case FNAC was suggestive of brachial cleft cyst.

The gold standard pre-operative investigation in cases of schwannoma is diffusion weighted gadolinium contrast MRI. On T1 weighted images, they are low signal intensity and on T2 weighted images, it is high signal intensity. On contrast administration, these tumours are homogeneously enhancing. It shows low intensity flow void giving characteristic "salt and pepper" appearance and has delayed wash out time on diffusion weighted imaging.<sup>4</sup> CT scans show a homogenous regular hypodense swelling which slightly enhance on contrast.

In our case, CT neck with contrast depicted a cystic heterogeneous mass with smooth borders which was abutting internal carotid artery suggestive of type II brachial cleft cyst by Bailey's classification. Bailey postulated following classification for second brachial cleft cyst type I: deep to platysma, anterior to sternocleidomastoid (SCM) type II: abutting internal carotid artery and adherent to internal jugular vein (most common) type III: extending between internal and external carotid arteries. Visualization of the cyst's extension or "tail" between the internal carotid artery and external carotid artery has been considered pathognomonic for type III BCCs type IV: abutting pharyngeal wall and potentially extending superiorly to skull base.<sup>5</sup>

Meticulous surgical dissection for complete excision of the tumor with tracing the origin of the swelling can help in the diagnosis. In our case, on surgical dissection we found that the mass was arising from cervical sympathetic chain behind the carotid vessels and there was no tract between the carotid as is expected in brachial cysts. This hinted towards a schwannoma arising from the cervical sympathetic chain.

Histologically, two tissue forms have been described. The Antoni type A tissue shows well-developed cylindrical bands of Schwann's cells and connective tissue fibres with a tendency towards palisading of the nuclei about a central mass of cytoplasm (Verocay bodies). Antoni type B tissue is a loosely arranged stroma in which the fibres and cells form no distinctive pattern. Between these palisades are the regions that are devoid of nuclei termed Verocay bodies. On immunohistochemistry, schwannomas are intensely S-100 positive along with capsular epithelial membrane antigen and CD34.<sup>6</sup> Hence, histopathology report with immunohistochemistry is the gold standard for confirmation of the diagnosis of schwannoma.

To the best of our knowledge and after extensive research of English medical literature, there are 4 reported cases of cystic schwannoma mimicking brachial cleft and all of them had origin from vagus nerve. In this case, the cystic schwannoma was arising from cervical sympathetic chain which never been reported in the literature.<sup>7</sup>

## CONCLUSION

Cystic schwannomas can present as brachial cyst radiologically but meticulous surgical dissection and tracing the site of the origin of the mass and final histopathological report will guide towards correct diagnosis. Complete surgical excision is treatment of choice.<sup>8</sup>

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## REFERENCES

1. Wakoh M, Yonezu H, Otonari T, Sano T, Matsuzaka K, Inoue T, et al. Two cases of schwannoma with marked cystic changes. *Dentomaxillofac Radiol.* 2005;34:44-50.
2. Colreavy MP, Lacy PD, Hughes J, Bouchier-Hayes D, Brennan P, O'Dwyer AJ, et al. Head and neck schwannomas: a 10-year review. *J Laryngol Otol.* 2000;114:119-24.
3. Sharma DK, Sohal BS, Parmar TL, Arora H. Schwannomas of head and neck and review of literature. *Indian J Otolaryngol Head Neck Surg.* 2012;64:177-80.
4. Wakoh M, Yonezu H, Otonari T, Sano T, Matsuzaka K, Inoue T, et al. Two cases of schwannoma with marked cystic changes. *Dentomaxillofac Radiol.* 2005;34:44-50.
5. Bailey H. Branchial cysts and other essays on surgical subjects in the faciocervical region. In: Bailey H, eds. *A Book.* 1st ed. London, England: Lewis; 1929.
6. Lanham PD, Wushensky C. Second brachial cleft cyst mimic: case report. *Am J Neuroradiol.* 2005;26:1862-4.
7. Buchanan MA, Williams SM, Hellquist H, Innes AJ. Cystic schwannoma of the cervical plexus masquerading as a type II second branchial cleft cyst. *Eur Arch Otorhinolaryngol.* 2009;266:459-62.
8. Bohara S, Dey B, Agarwal S, Gupta R, Khurana N, Gulati A. A Case of cystic schwannoma in the neck masquerading as branchial cleft cyst. *Rare Tumors.* 2014;6(3):53-5.

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