International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Patil AV et al. Int J Reprod Contracept Obstet Gynecol. 2025 Feb;14(2):637-640
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20250208

Case Report

Vagal schwannoma in pregnancy: a case report

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Received: 22 September 2024
Revised: 05 January 2025
Accepted: 06 January 2025

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ABSTRACT

Cervical vagal schwannomas are rare, slow-growing, benign tumours that typically present in patients aged 30–50 years without neurological deficits. Magnetic resonance imaging (MRI) is the gold standard for preoperative diagnosis, while surgical resection remains the treatment of choice. A case report of a 25-year-old pregnant woman with a history of a right-sided neck swelling of 5×4×1 cm since childhood presented for antenatal care which was firm, immobile, and non-tender, with no significant neurological symptoms. Ultrasonography (USG) and computed tomography (CT) scan indicated a neurogenic tumour, most likely schwannoma. MRI in 2024 confirmed a 3.5×4.8×6.3 cm encapsulated, heterogeneously enhancing lesion in the right carotid triangle, consistent with a vagal nerve schwannoma. The tumour caused anterior displacement of the carotid artery and internal jugular vein without significant luminal narrowing. During her pregnancy, the patient remained asymptomatic but developed gestational hypertension postpartum. Neurology and neurosurgery consultations recommended tumour re-evaluation and follow-up after delivery. She underwent an emergency caesarean section at 38 weeks for obstetric indications, with intraoperative monitoring due to vagal nerve stimulation. Postoperative care included antihypertensive management, and the patient was discharged in stable condition with advice to follow up for definitive tumour management. Cervical vagal schwannomas are uncommon and often misdiagnosed due to their asymptomatic nature and resemblance to other neck masses. MRI is crucial for diagnosis, distinguishing vagal schwannomas from other neurogenic tumours based on vessel displacement patterns. Although surgical resection is the definitive treatment, management during pregnancy requires individualized, multidisciplinary care to balance maternal and fetal outcomes. Deferring surgery until postpartum is preferred unless urgent intervention is required. A collaborative approach ensures optimal outcomes for both mother and child.

Keywords: Atypical polypoid adenomyoma, Recurrent endometrial polyp

INTRODUCTION

Cervical vagal schwannomas are rare, slow-growing tumours usually reported to occur in patients between 30 and 50 years of age.[1,2] There does not seem to be a sex-related predisposition. Vagal schwannomas when encountered with pregnancy, their management requires individualized, multidisciplinary care to balance maternal and fetal outcomes. They are usually asymptomatic benign lesions and complete surgical resection is the treatment of choice. Imaging plays a central role in diagnosing vagal nerve neoplasm and in particular magnetic resonance imaging (MRI) has become the routine imaging study for these tumours. MRI provides important pre-operative information useful in planning optimal surgical treatment based on vessel displacement patterns. It is recommended to maintain pregnancy until term for patients exhibiting stable symptoms during the latter stages of pregnancy.[3]

CASE REPORT

A 25-year-old female, married since 8 years gravida 3 para1 living 1 mtp1 with previous LSCS with 37 weeks registered and immunized under Cama and Albless Hospital came to OPD for regular antenatal check-up. On physical examination patient has a 5×4×1 cm firm, smooth

surfaced, immobile, non-tender swelling on right side neck. Patient gives history of approximately 3×3 cm right sided neck swelling since childhood associated with 1 episode of right sided hemiparesis at 8 years of age without any neurological deficit managed conservatively. Ultrasound (neck) done in 2018 was suggestive of a well-defined hypo-echoic mass, with significant vascularity within of size 3.6×3.7 cm on right side of neck posterior to common carotid artery, differentials being paraganglioma and schwannoma, suggested CT scan.

CT scan done in 2018 suggestive of neurogenic tumour like schwannoma of right carotid space. Fine needle aspiration cytology (FNAC) s/o - neurogenic tumour – paraganglioma, and schwannoma. 5 years back the patient during her 1st pregnancy noticed gradual increase in size over 4-5 months to present size of 8×5 cm, presently still being asymptomatic. Ultrasound (US) of the neck done in 2024 s/o heterogeneously hyper echoic mass measuring 4.2×4.7×6.2 cm with increased internal vascularity within at right cervical level 2 region, causing splaying of right IJV and CCA without significant luminal narrowing, extending posteriorly to sternocleidomastoid superiorly, seen abutting right submandibular gland, findings s/o neoplastic aetiology MRI neck (plain + contrast) done in 2024 suggestive of defined encapsulated heterogenous T2WI hyper intense T1WI hypo intense lesion measuring 3.5×4.8×6.3 cm (AP×TR×CC) is seen in the right carotid triangle. Few non enhancing areas are seen within. Few areas of blooming are seen it shows avid heterogenous post contrast enhancement. Lesion is seen displacing the right IJV, right CA and cervical segments of ICA anteriorly. Features suggestive of right vagal nerve schwannoma. In view of increasing gestational age and need for termination of pregnancy, neurology opinion taken suggested neurosurgery opinion, biopsy of lesion followed by a follow up scan to look for progression in size of schwannoma. Neurosurgery opinion taken suggested that the patient needs further investigations, but considering patients pregnancy, advised to follow up after delivery for further management and advised to abort in case of emergency or sudden increase in size of swelling. All routine blood investigations throughout pregnancy within normal limits. Congenital scan is suggestive of no gross lethal congenital anomaly. Patient taken for emergency lower segment caesarean section at 38 weeks of gestation in view of previous LSCS with scar site tenderness in pre-labour under spinal anaesthesia. Intraoperatively patient had fluctuating pulse rate ranging from 60 bpm to 140 bpm due to on and off vagal nerve stimulation. Patient monitored post operatively, pulse rate settled to normal range, but found to have raised BP from day 5 post-partum with highest reading of 150/100 mm Hg, evaluated for the same and was started on antihypertensive medication. Patient continued on antihypertensive in postpartum period and discharged her under stable condition. Patient advised to follow up in neurosurgery department immediately after discharge for further management.

Results

Schwannomas are uncommon tumours that originate from peripheral nerves, with around one-third occurring in the head and neck region. They present clinically as slow-growing, painless masses on the lateral side of the neck, typically palpable near the medial edge of the sternocleidomastoid muscle. Diagnosing schwannomas prior to surgery is challenging because many vagal schwannomas do not present with neurological symptoms, and various other neck masses, such as paraganglioma, branchial cleft cysts, malignant lymphomas, or metastatic lymphadenopathy, are often considered in the differential diagnosis. Additionally, due to their rarity, schwannomas are frequently overlooked. When symptoms do appear, hoarseness is the most frequent.[1] Occasionally, touching the mass may trigger a sudden cough, which is a clinical sign specific to vagal schwannomas. The presence of this sign, associated with a mass located along the medial border of the sternocleidomastoid muscle, should make clinicians suspicious of a vagal nerve sheath tumour. Fine-needle aspiration biopsy (FNAB) remains a controversial diagnostic tool for these tumours.

There is widespread consensus regarding the importance of MRI in the pre-surgical evaluation, as it aids in diagnosing the tumour and assessing its proximity to the jugular vein and carotid artery. MRI findings can be distinctive, often allowing a preoperative diagnosis, as vagal schwannomas in the cervical region typically appears as a well-circumscribed mass lying between the internal jugular vein and the carotid artery. As reported by Furukawa et al, MRI findings are also useful in providing the nerve of origin and distinguish between vagal schwannomas and those arising from the cervical sympathetic chain.[4] Vagal schwannomas push the jugular vein laterally and the carotid artery medially, whereas schwanomas from the cervical plus sympathetic chain schwannomas move both vessels without separating them. In our case, Furukawa's criteria were met. Histological picture showing characteristic features of schwannoma consisting of Antony A and Antony B areas. Antony A areas consist of palisading of the nuclei around a central mass of cytoplasm called Verocay bodies. Antony B areas contain a loose stroma with no distinct pattern by the fibres and cells. Verocay bodies – the central mass of cytoplasm around which nuclei are seen palisading in Antony A areas.[5] MRI remains gold standard to assess vagal nerve schwannomas and to evaluate their extent.[6]

However, the above case report suggests that in pregnancy no acceleration in tumour growth is observed while based on the vessel displacement patterns of vagal schwannomas, pregnancy was terminated with a good maternal and fetal outcome by caesarean section under continuous monitoring and management of signs of vagal nerve stimulation intra-operative and postoperative. A very few previous studies are available about cervical vagal nerve schwannoma in pregnancy, it’s outcome and management.

RARE	GOLD STANDARD	TREATMENT OF CHOICE
30-50 years, asymptomatic, without neurological deficit	MRI NECK	Surgical resection

Figure 1: Atypical polypoid adenomyomas under a hysteroscope.

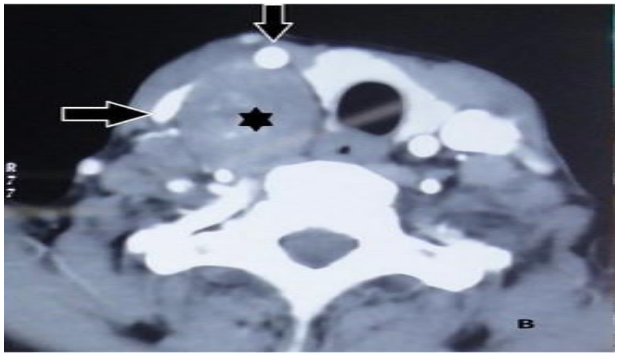

Figure 2: Downward arrow indicates CCA, right pointing arrow indicates IJV.

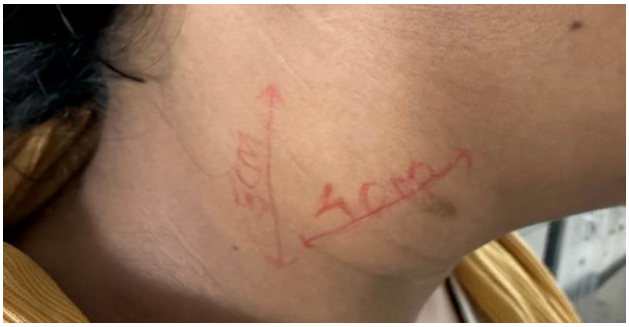

Figure 3: Right sided neck swelling of 5×4×1 cm.

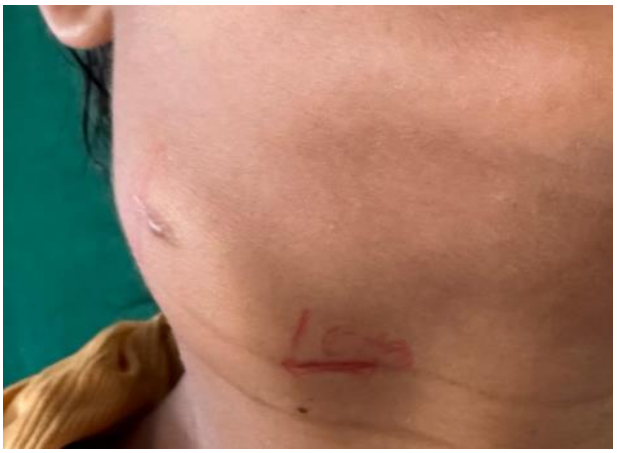

Figure 4: A swelling of 5×4×1 cm on right side of neck which is firm, immobile and non-tender on palpation.

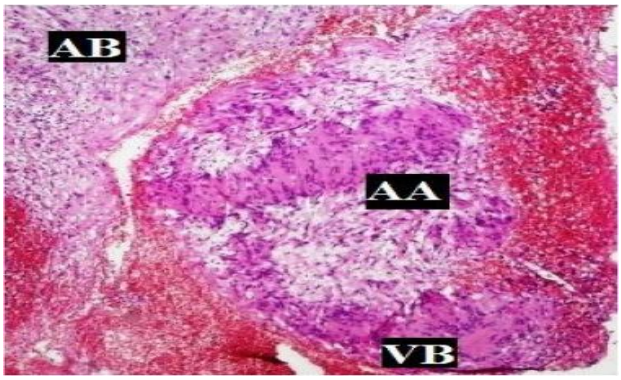

Figure 5: Histological picture showing characteristic features of schwannoma consisting of Antony A and Antony B areas.

AA- Antony A areas consist of palisading of the nuclei around a central mass of cytoplasm called VB-Verocay bodies, AB-Antony B areas contain a loose stroma with no distinct pattern by the fibres and cells, Verocay bodies – the central mass of cytoplasm around which nuclei are seen palisading in Antony A areas.

DISCUSSION

Managing vestibular schwannomas in pregnant patients presents a complex treatment challenge. Although these tumours are rare, an effective treatment plan that involves collaboration among specialists in obstetrics, anaesthesia, and neurosurgery ensures the best possible outcome for both the mother and the baby. Treatment choices depend on the patient's pregnancy stage and neurological condition. Each case should be individually assessed to determine the most appropriate treatment approach while minimising risks for both the mother and foetus. If the patient's neurological condition is stable, postponing the tumour removal until after childbirth is often the best course of action. However, if surgery is required during pregnancy, the second trimester is considered the safest time for the procedure. Malignancy is rarely reported and mainly associated to neurofibromatosis type 1.[7] Surgical resection remains the treatment of choice.[8,9] The main surgical options include radical excision with nerve grafting, intracapsular enucleation and debulking.[10]

CONCLUSION

Cervical vagal nerve schwannomas during antenatal period if remain asymptomatic doesn't require any active intervention. The above case report presents a well-managed asymptomatic cervical vagal schwannoma case in antenatal patient with MRI being the gold standard for diagnosis and deferring surgical intervention of cervical schwannoma until termination of pregnancy unless urgent intervention is required as the line of management. Ultimately surgical resection remains the treatment of choice for cervical vagal schwannoma. Management during pregnancy requires individualized, multidisciplinary care to balance maternal and fetal

outcomes. A collaborative approach ensures optimal outcomes for both mother and child.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Patil AV, Palve TT, Fatemi SM, Thatikonda RM. Vagal schwannoma in pregnancy: a case report. Int J Reprod Contracept Obstet Gynecol 2025;14:637-40.