Case Report
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Ancient Schwannoma of the Nasal Cavity Arising From the Piriform Aperture: A Rare Case Report

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Abstract

Introduction:

Schwannoma is a benign peripheral nerve sheath tumour arising from Schwann cells. Although head and neck schwannomas are common, their occurrence in the sinonasal tract is rare. Ancient schwannoma is an uncommon histopathological variant characterised by long-standing degenerative changes. Owing to its rarity and nonspecific clinical and radiological presentation, ancient schwannoma poses a diagnostic challenge.

Case Report:

We report the case of a 36-year-old man with a five-year history of nasal obstruction, initially left-sided and subsequently bilateral, associated with hyposmia progressing to anosmia, epistaxis, left-sided serous rhinorrhoea and headache. Nasal endoscopy revealed a bilobed, smooth-surfaced mass occupying the left nasal cavity. A preliminary biopsy was non-diagnostic; therefore, complete endoscopic excision was performed. Histopathological examination revealed an ancient schwannoma characterised by predominantly hypocellular Antoni B areas, the absence of cytological atypia and mitotic activity, a sclerohyaline stroma, and foci of intralesional osseous metaplasia. Immunohistochemistry showed positivity for S100 and SOX10, with a Ki-67 proliferation index of <1%. The postoperative course was uneventful. At the 15-month follow-up, the patient's symptoms had completely resolved, with no evidence of disease recurrence.

Conclusion:

Ancient schwannoma of the nasal cavity is a rare entity that should be considered in the differential diagnosis of benign sinonasal masses. Radiological findings are not pathognomonic; however, the presence of a well-circumscribed lesion with smooth bony remodelling and degenerative features may suggest a slow-growing benign process. Complete surgical excision, preferably via an endoscopic approach, is the treatment of choice and is associated with an excellent prognosis.

Keywords: Ancient schwannoma, Sinonasal schwannoma, Paranasal sinuses

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Introduction

Schwannoma is a benign nerve-sheath tumour derived from Schwann cells, the glial cells that produce the myelin sheath of peripheral nerves. Head and neck schwannomas account for approximately 25–45% of all cases, but only 4% arise in the sinonasal tract (1). From a histopathological perspective, the recognised subtypes are classic, ancient, cellular, plexiform, epithelioid and reticular/microcystic (2).

Ancient schwannoma is a particularly rare form. The term "ancient" refers to slow-growing, long-standing schwannomas characterised by distinctive degenerative changes, including areas of haemorrhage, cystic degeneration, atypical nuclei, reduced Antoni A areas, calcification and perivascular hyalinisation (3,4). Radiological investigations can support the diagnosis, but histopathological and immunohistochemical examination remains the gold standard. This report discusses a case of ancient schwannoma of the left nasal cavity and aims to provide clinical, radiological and therapeutic information on this rare condition.

Case Report

We describe the case of a 36-year-old man in good general health, with no history of smoking or alcohol misuse and no known allergies, who presented to our clinic with bilateral nasal obstruction of approximately five years' duration, hyposmia progressing to anosmia, occasional epistaxis and, in the preceding few months, left-sided serous rhinorrhoea. The obstruction had initially developed on the left and subsequently involved the right side. The only neurological symptom was a left-sided headache. Endoscopic examination revealed a bilobed, smooth-surfaced mass with a fleshy appearance and solid consistency occupying the entire left nasal cavity. The mass bled slightly on contact (Figure 1).

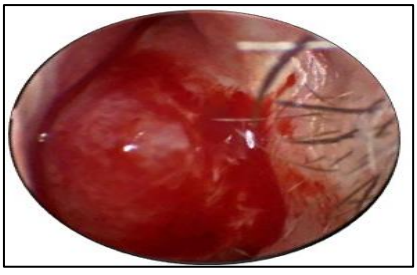

Fig 1. Endoscopic image of the neoformation occupying the left nasal cavity, showing bleeding upon contact

Its size prevented endoscope passage. A stenosing rightward deviation of the nasal septum was also present. Oropharyngeal examination was unremarkable.

Coronal and axial computed tomography (CT) images showed a solid soft-tissue mass measuring 10 × 12 × 5 cm, with internal calcifications, in the left nasal cavity. The mass displaced the nasal septum contralaterally and abutted the medial wall of the ipsilateral maxillary sinus. The remaining paranasal sinuses were normally aerated (Figure 2).

Fig 2. CT imaging of the paranasal sinuses. A) axial section and b) coronal section showing a mass occupying the left nasal cavity

Magnetic resonance imaging (MRI) showed a polypoid mass measuring 2.6 cm transversely, 5.5 cm sagittally and 3.6 cm coronally. The mass obstructed the left nasal cavity, with no clear cleavage plane separating it from the middle and inferior turbinates. It caused rightward convex deviation of the nasal septum, leftward displacement of the left lateral nasal wall and inferior displacement of the left half of the hard palate. It also obstructed the left nasolacrimal duct, which was dilated to a diameter of 8 mm. The mass was hypointense on T1-weighted images and heterogeneous, with hypo- and hyperintense areas, on T2-weighted images. It exhibited heterogeneous enhancement following intravenous contrast administration (Figure 3).

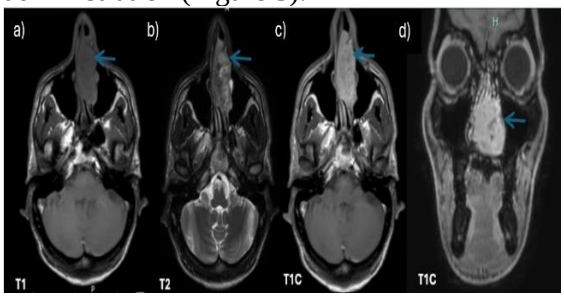

Fig 3. Magnetic resonance imaging of the paranasal sinuses: the mass shows in a) Axial T1 ipointense signal, b) Axial T2 both hypo- and hypertense signal C) Axial and coronal with contrast inhomogeneous enhancement

The mass was biopsied under local anaesthesia, but the histopathological findings were inconclusive. Endoscopic surgery was therefore performed under general anaesthesia. The mass was completely removed in fragments and submitted for histopathological examination. The maxillary sinus and anterior ethmoid air cells were free of disease.

The mass appears to originate in the region of the piriform aperture; however, the nerve of origin could not be identified intraoperatively.

Histopathological examination revealed an ancient schwannoma, predominantly comprising a hypocellular population of spindle cells without significant atypia (Antoni B areas) (Figure 4A). There was no evidence of mitotic activity, and the Ki-67 proliferation index was <1%. The cells displayed abundant eosinophilic fibrillar cytoplasm and wavy nuclei, occasionally arranged in a palisading pattern to form Verocay bodies (Figure 4B). The spindle cells were embedded in a sclerohyaline stroma containing calcifications and foci of osseous metaplasia, representing ancient changes (Figures 4C,D).

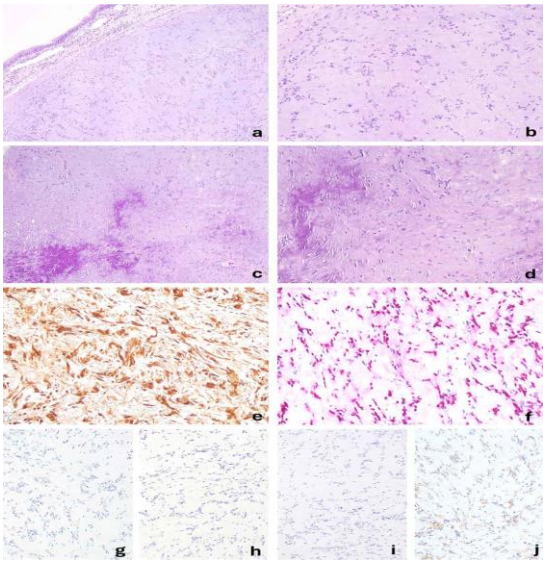

Fig 4. Histological features of ancient schwannoma. A) Submucosal proliferation, partially lined by respiratory epithelium, composed of Antoni B areas. B) Cellular features and Verocay bodies. C,D) Ancient features. On immunohistochemistry, the proliferation was diffusely positive for S100 (E) and SOX10 (F), negative for pan-cytokeratin (G), Melan-A (H), desmin (I), and beta-catenin showed scant cytoplasmatic positivity with nuclear negativity (J). Original magnifications: a,c=40X: b,d,e,f,g,h,I,j=100X. a,b,c,d= hematoxylin & eosin stain. E,f,g,h,I,j= immunohistochemical stains.

The tumour cells exhibited the following immunophenotypic profile: S100+ (Figure 4E), SOX10+ (Figure 4F), CKAE1/AE3− (Figure 4G), Melan-A− (Figure 4H), desmin− (Figure 4I), beta-catenin+/−, with exclusively cytoplasmic positivity (Figure 4J), CD34+ in peripheral elements, AR− and MSA−.

The postoperative course was uneventful, and the patient was discharged on the second postoperative day. At subsequent follow-up visits, he reported complete resolution of his presenting symptoms. However, he also reported the onset of mild paraesthesia localised to the left maxillary region. At the 15-month follow-up, there was no evidence of recurrence (Figure 5).

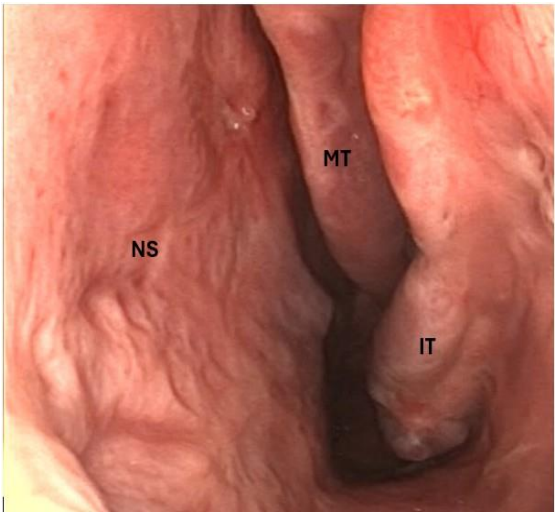

Fig 5. endoscopic follow-up image showing no evidence of recurrence (NS: nasal septum, IT: inferior turbinate, MT: middle turbinate)

Discussion

Schwannomas should be considered among the various neoplasms that may arise in the paranasal sinuses, although their occurrence in the sinonasal region is rare. The most common sites in the head and neck region are the oropharynx, parapharyngeal space and soft tissues of the neck (5).

The site of origin of a schwannoma within the sinonasal tract is often difficult to determine. However, these tumours are thought to arise from the sensory branches of the trigeminal nerve or from sympathetic and parasympathetic autonomic nerve fibres (6).

The most common symptoms include nasal obstruction, epistaxis, nasal pain, mucopurulent rhinorrhoea and hypoaesthesia (7). These symptoms overlap with those of other nasal

neoplasms and therefore do not aid the differential diagnosis.

There are no pathognomonic radiological features that permit a definitive diagnosis of schwannoma. However, imaging may help determine whether a lesion represents a benign or malignant process. CT is useful for assessing the size and extent of the lesion.

A schwannoma typically appears as a well-circumscribed soft-tissue mass causing smooth bony remodelling as a result of slow, compressive growth, without the invasive features typically seen in malignant tumours (8–10). In the present case, CT demonstrated thinning of the nasal septum and the medial wall of the left maxillary sinus.

Furthermore, the normal aeration of the remaining sinonasal cavities supported the likelihood of a localised, non-infiltrative lesion. In selected cases, CT may demonstrate radiological features consistent with the degenerative changes typical of ancient schwannoma, such as the intralesional calcifications also observed in the present case (11). On MRI, a schwannoma typically appears iso- to hypointense on T1-weighted images and hyperintense on T2-weighted images. Heterogeneous post-contrast enhancement is common, particularly in the ancient variant, owing to degenerative changes (12).

The target sign may be seen on T2-weighted images and is characterised by a hypointense central core and a hyperintense peripheral rim, reflecting the lesion's differing internal composition: fibrous centrally and myxoid peripherally (13).

A definitive diagnosis can be established only by histopathological examination. A schwannoma consists of hypercellular areas containing palisading spindle cells (Antoni A areas), alternating with hypocellular myxoid areas containing loosely arranged spindle cells (Antoni B areas), with positive immuno-histochemical staining for S100 (14,15).

Ancient schwannoma, by contrast, is characterised by the distinctive degenerative changes described above. In the present case, the lesion predominantly comprised hypocellular Antoni B areas composed of spindle cells without cytological atypia.

The stroma was sclerohyaline, with foci of intralesional osseous metaplasia.Treatment consists of complete surgical excision, preferably via an endoscopic approach when permitted by the location, size and extent of the lesion. When complete endoscopic resection is not feasible, an open surgical approach may be required. Recurrence following complete excision is exceedingly rare (16).

In the present case, the patient underwent complete endoscopic resection followed by endoscopic surveillance.The present case has several distinctive features. First, the lesion developed in the left nasal cavity and appeared to arise from the lateral nasal wall near the piriform aperture. Although a small number of cases of ancient schwannoma of the sinonasal tract have been reported in the literature, to the best of our knowledge, this is the first documented case originating from the piriform aperture (Table 1).

Second, histopathological examination revealed predominantly hypocellular Antoni B areas with a sclerohyaline stroma and intralesional osseous metaplasia, but without cytological atypia. This differs from other ancient schwannomas, in which degenerative nuclear atypia may be observed.

The diagnosis was further supported by positivity for S100 and SOX10. At the most recent follow-up, there was no evidence of disease recurrence. Given the patient's favourable clinical course and the absence of endoscopic findings suggestive of recurrence, a further follow-up examination, including MRI, was scheduled for one year after the most recent assessment.

Table 1: ancient schwannomas of the sinonasal tract

Author	Location	Age Sex	Main Symptoms	Ct/Mri	Treatment	Follow-Up	Recurrence
[4]Apoorva K V1, (2025)	Maxillary	M, 35	Right nasal obstruction and intermittent right-sided headaches	CT: diffuse, heterogeneously enhancing soft tissue density affecting the right maxillary sinus, leading to the expansion of the medial wall and extending into the right nasal cavity, ethmoid sinus, and sphenoid sinus. MRI: well-defined lesion with altered signal intensity in the right nasal cavity, involving the middle and inferior turbinates, resulting in the widening of the right osteomeatal complex and extending into the maxillary antrum with mucosal thickening	External approach through lateral rhinotomy	Not specified	no
[5] Birhanu Kassie Reta et al (2025)	Nasal vestibule	F, 21	Progressive left side nasal mass and nasal obstruction	Not performed	Transvestibular external approach	Not specified	no
[9]Venkatasamy R. et Al (2023)	Septum	M,77	Left nasal obstruction and hyposmia	Non enhancing lesion with thinning of the nasal septum and medial wall of the left maxillary sinus	Endoscopic surgery	6 months	no
[10] R. Muthukumar et Al (2024)	Ethmoid and left nasal cavity	F, 70	Bilateral nasal obstruction	CT: extension of soft tissue with thickening and remodelling of nasal septum, medial wall of left maxillary sinus	Endoscopic surgery	Not specified	no
[11] Busra Yaprak Bayrak et al, (2024)	Septum	M, 62	Nasal obstruction, rhinorrhea, intermittent epistaxis	CT: A soft tissue mass in the left nasal cavity with lobulated contours, and containing calcification in places	Endoscopic surgery	12 years	no
[11] Busra Yaprak Bayrak et al, (2024)	Right posterior nasal region	F, 44	Headache, facial numbness, nasal congestion and occasional rightsided nosebleeds	CT: Soft tissue masses containing cystic and calcified areas compressing the maxillary sinus and extending to the pterygopalatine fossa.	Endoscopic surgery transmaxillary pterygopalatine fossa approach	7 years	no
[12] Kodama S. et Al (2010)	Septum and sphenoid	F, 41	Left nasal obstruction	CT: Inhomogeneously enhancing mass MRI: Isointense T1, moderately hyperintense T2, inhomogeneous enhancement after Gadolinium	Endoscopic surgery	2 years	no

Conclusions

Sinonasal ancient schwannoma is an exceptionally rare benign tumour and should be included in the differential diagnosis of unilateral nasal masses, particularly when imaging demonstrates a well-circumscribed lesion with expansile growth and bony remodelling rather than destructive bone changes. Although CT and MRI are essential for defining the extent of the tumour, assessing its relationship with adjacent structures and planning surgery, they do not provide a definitive diagnosis, which relies primarily on histopathological and immunohistochemical examination.This case highlights the importance of considering ancient schwannoma in the differential diagnosis of rare sinonasal tumours and expands the spectrum of its possible sites of origin. The absence of recurrence at the 15-month follow-up emphasises the role of complete surgical excision combined with careful endoscopic and radiological surveillance.

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