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Case Report

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Schwannoma of the Left Nasal Cavity originating from the Nasal Septum: A Case Report

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ABSTRACT

Schwannomas are benign tumors arising from Schwann cells, typically found in peripheral nerves. Their occurrence in the nasal cavity is rare.We present the case of a 60-year-old female with a gradually enlarging mass in the left nasal cavity, ultimately causing complete obstruction. The rhinolological examination revealed a round mass, confirmed by CT and MRI. Endoscopic resection was performed, and histopathological analysis confirmed a benign Antoni type A schwannoma. This case emphasizes the importance of including schwannomas in the differential diagnosis of nasal masses. Endoscopic resection proved effective for complete removal, with no complications. The findings align with existing literature on the rarity of nasal schwannomas, their clinical presentation, and the significance of thorough postoperative follow-up. Nasal schwannomas are rare tumors that can cause significant nasal obstruction. Early diagnosis and complete surgical excision via an endoscopic approach are critical for favorable outcomes.

Keywords: Endoscopic Endonasal Surgery, Nasal cavity schwannomas, Rare tumors.

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1. INTRODUCTION

Schwannomas are benign, slow-growing tumors that arise from the Schwann cell sheath of peripheral nerves, first described by Virchow in 1908. These tumors are particularly rare in the head and neck region, with less than 4% involving the nasal cavity and paranasal sinuses [1]. They can occur at various anatomical sites, ranging from the skull base to the thoracic inlet, and often present diagnostic challenges due to their nonspecific clinical and radiological features .

This case report highlights an exceptional instance of a schwannoma located in the left nasal cavity, a rare and unusual site for this type of tumor. During the surgical procedure, the tumor's origin was precisely identified at the nasal septum, underscoring the importance of a meticulous intraoperative assessment. Such cases offer valuable insights into the varied clinical presentations and management strategies for schwannomas in the sinonasal region.

2. CASE REPORT

We present the case of a 60-year-old female who consulted for a prominent mass in the left nasal cavity, gradually developing over a two-year period. Although the mass initially caused no discomfort, it eventually led to complete obstruction of the left nasal cavity, resulting in widening of the nasal pyramid and marked centrofacial deformity. Although the patient experienced hyposmia, she did not report any episodes of epistaxis or facial pain.

The rhinological examination revealed a round, smooth-surfaced mass that completely obstructed the left nasal cavity, contributing to sleep disturbances (Figure 1). The mass is firm in consistency, painless, and smooth to the touch, with no bleeding after manipulation due to its lack of vascular characteristics. It was easily detached from the nasal vestibule without infiltrating the skin or palatine bone, and no spontaneous bleeding was observed. A significant deviation of the nasal septum to the right was also noted, although the mass did not extend into the choana or nasopharynx. Additionally, no cervical lymphadenopathy was palpated, and the neurological examination showed no abnormalities.

A CT scan revealed a tissue mass occupying the left nasal cavity (64 x 22 mm), uniformly enhancing with contrast, with slight extranasal extension but no involvement of the choana (figure 2). Additionally, there was filling of the left maxillary sinus without alteration of the surrounding bony structures (ethmoidal labyrinth, ethmoidal roof, cribriform plate, and palatine bone).

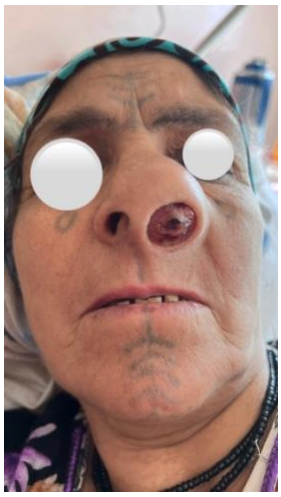

Figure 1 : Clinical picture showing a mass obstructing the left nasal cavity without an air passage

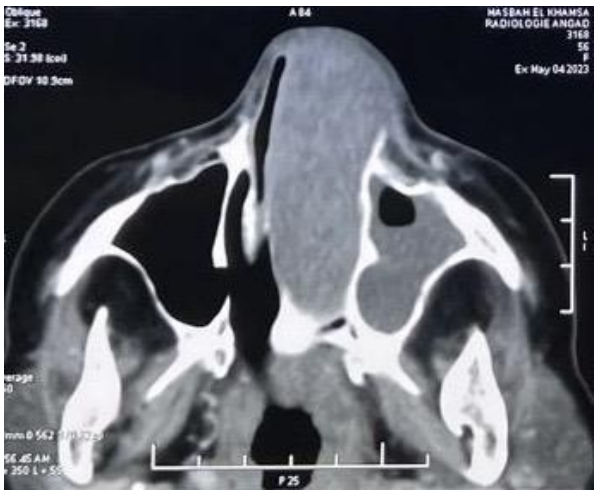

Figure 2 : Facial CT scan, axial slice.

MRI confirmed that the mass did not extend to the skull base and showed a retention signal within the sinus cavities. The mass was hypointense on T1-weighted images and exhibited an intermediate signal on T2, with enhancement following gadolinium injection. It was surrounded by a thin rim, suggesting full encapsulation and no involvement of adjacent bony structures (Figure 3).

Suspecting a possible nasal cavity tumor, a biopsy was performed after obtaining informed consent. The pathological examination confirmed the diagnosis of schwannoma.

An endoscopic surgery was performed, allowing for an extensive resection of the tumor, which was attached to the nasal septum. The dissection was carried out via a unilateral submucosal approach, preserving the contralateral septal mucosa to prevent any sequelae of perforation. The septal cartilage appeared healthy, without any pathological lytic involvement.(Figures 4) .The tumor was divided into fragments to simplify the resection process.(Figures 5) .

Intraoperative examination confirmed clear margins of tumor resection. At the end of the procedure, the mucosa was repositioned, and unilateral hemostatic packing was applied.

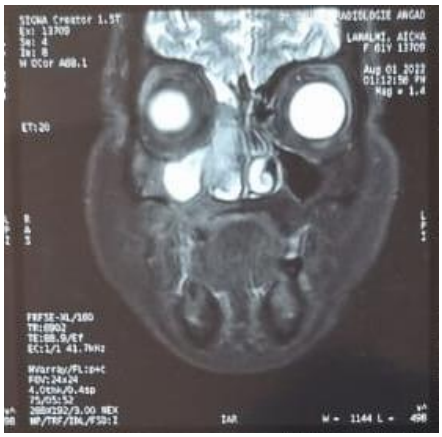

Figure 3 : Coronal T2-weighted face MRI.

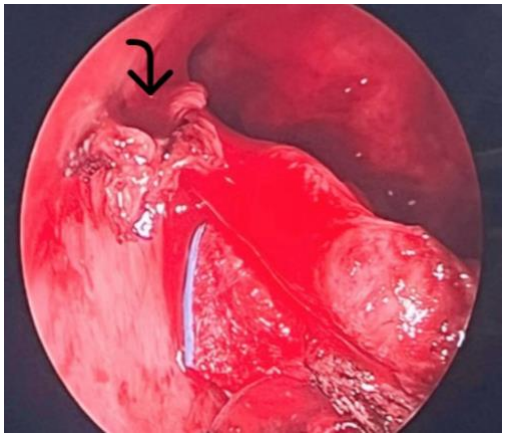

Figure 4: Progressive dissection of the tumor revealed its attachment to the septum (black arrow) while showing an intact appearance of the cartilage.

The packing was removed after 48 hours, with no hemorrhagic or ophthalmological complications.

The histopathological examination revealed spindle-shaped cells arranged in intertwined fascicles, with the presence of Verocay bodies, consistent with a benign Antoni type A schwannoma. No evidence of malignancy was observed (Figure 6).

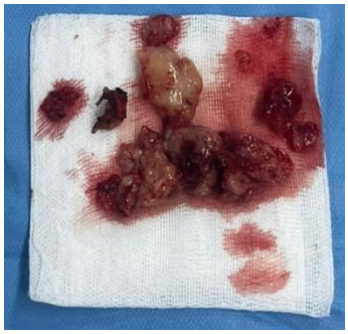

Figure 5 : Post-operative appearance of the tumor mass, fragmentation resection.

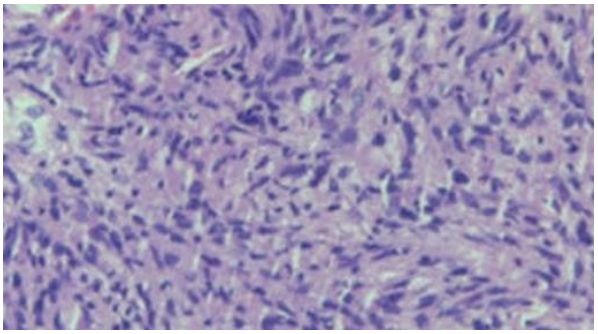

Figure 6 : Antoni A areas with spindle cells and Verocay bodies.

3. DISCUSSION

Schwannoma is a benign, slow-growing tumor originating from Schwann cells, which form the myelin sheath of peripheral, autonomic, and cranial nerves [1,2]. In the head and neck region, these tumors can develop at various sites, from the base of the skull to the thoracic inlet.

Approximately 70% of schwannomas in this region are associated with the auditory nerve, while their occurrence in the nasal cavity and paranasal sinuses is rare, accounting for only about 4% of cases [1,3]. These tumors can present at any age but are most frequently diagnosed in middle-aged adults, with no predilection for gender or race [1,2].

Nasal schwannomas are thought to originate from different types of nerve fibers, including sympathetic nerves from the stellate ganglion, parasympathetic fibers from the sphenopalatine ganglion, and sensory branches of the ophthalmic and maxillary nerves. The sympathetic fibers are primarily associated with the septal blood vessels, while the parasympathetic fibers innervate the mucous glands. Sensory fibers provide general innervation to the nasal septum. In addition, schwannomas that occur in the olfactory groove may be derived from the olfactory bulb and nerve. [4,5].

Determining the origin of nasal schwannomas is particularly challenging due to the complex and diffuse innervation of the nasal cavity, making it difficult to identify their nerve attachment during surgery.

Nasal and paranasal schwannomas often present with nonspecific symptoms. The most common complaints include nasal obstruction, epistaxis, rhinorrhea, and deformity of the nasal pyramid [6]. Additional symptoms may include hyposmia and facial pain, while less frequently, exophthalmos and epiphora are observed [7]. Schwannomas located in the sphenoid sinus can lead to symptoms such as headache, vision loss, diplopia, and proptosis, which typically progress gradually over several months [3].

Due to the overlap in symptoms, these tumors can be mistaken for other sinonasal conditions. Differential diagnoses include carcinoma, inverted papilloma, sarcoma, lymphoma, and neurofibroma [8,9]. Endoscopic examination typically reveals septal schwannomas as polypoid masses lacking distinctive features [10].

The posterior third of the nasal septum is the most common site for these tumors, representing about 60% of cases, followed by the middle and anterior portions [4]. This distribution is likely explained by the innervation of the posterior region by the posterior septal nerve, which is considered the primary site of origin for these tumors [10].

Imaging is essential for assessing the extent of the tumor, which helps in selecting the most appropriate surgical approach [11].

On computed tomography (CT), schwannomas typically appear as a homogeneous mass with soft tissue density and heterogeneous enhancement after contrast injection. There is also bone erosion without significant destruction [11,12]. These characteristics were observed in the present case.

On magnetic resonance imaging (MRI), schwannomas often present as well-defined masses that displace adjacent structures without directly invading them [13]. Typical features include intermediate signal intensity with enhancement after gadolinium injection on T1-weighted images. On T2 sequences, a range of intensities is observed, from intermediate intensity indicating a highly cellular lesion to high, heterogeneous intensity associated with cystic and stromal lesions [12].

It is often difficult to determine the tumor’s origin solely from imaging due to the filling of the nasal cavities and involvement of multiple sinuses. In such cases, the tumor's attachment is frequently identified during the surgical procedure [12].

The definitive diagnosis of schwannoma is based on histopathological examination . The distinction between schwannoma and neurofibroma remains complex, as both tumors

originate from Schwann cells.

Benign schwannomas are macroscopically gray-brown, firm, and well-encapsulated. Histologically, they are classified into two types, often observed simultaneously: Antoni A type, characterized by a dense network of spindle-shaped cells arranged in bundles, and Antoni B type, which appears hypocellular and myxomatous, with loose connective tissue. Furthermore, immunohistochemical stains such as calretinin and GFAP (glial fibrillary acidic protein) can help differentiate schwannomas from neurofibromas [13,14].

Immunostaining for the S-100 protein is positive, further supporting the diagnosis of schwannoma [15].

Neurofibromas typically appear non-encapsulated, with irregular borders that invade the nerve, and are often associated with diffuse forms of neurofibromatosis, particularly Von Recklinghausen disease [16].

The treatment of schwannomas in the nasal cavity relies on complete surgical resection due to their typically encapsulated nature.The choice of surgical technique depends on the size, location of the tumor, and its potential extension to surrounding structures. For schwannomas limited to the nasal cavity, an endoscopic approach is preferred as it minimizes external incisions. However, a transfacial or combined approach is recommended when the tumor is extensive [12].

Available studies suggest that, even in advanced cases, endoscopic surgery assisted by a navigation system can achieve complete resection if no contraindications are present [13]. Furthermore, endoscopic excision performed in fragments can be effective for large schwannomas and those located laterally [17].

No study has yet been able to conclude on malignant transformation, required safety margins, or the incidence of recurrences. It is therefore crucial to ensure long-term follow-up to observe the tumor's evolution and behavior [11]. An MRI is typically scheduled one year after surgery to detect any signs of recurrence [13].

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