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# Nasal Schwannoma—A Case Report

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## Abstract

**According to the literature, half of the schwannoma cases occur in the head and neck areas and only less than 4% occur in the sinonasal tract. In this case, a 50-year-old male patient, Mr. Jeyapal with a-year-long progressive left side nasal obstruction and purulent rhinorrhea, is presented [1]. The CT reveals a mass filling the left nasal cavity. During surgical intervention, the mass is found to originate from the medial side of the septum anteriorly and inferiorly. The pathological examination reveals capsulated tumor with palisading cellular arrangement and high cellular density [2]. The pathological findings and nervous origin of the tumor are discussed after an extensive review of the literature.**

## Keywords

**Nasal Schwannoma, Chronic Nasal Obstruction, Nasal Polyp**

## 1. Introduction

Half of the cases with schwannoma occur in the head and neck region, but less than 4% occur in the sinonasal area. This tumor is derived from the schwann cell, which can be found in many kinds of nerves, including cranial nerves (except olfactory and optic nerves), peripheral nerves, sympathetic and parasympathetic nerves. Clinically, these patients are indicated to have unilateral nasal obstruction, frequent epistaxis, anosmia, and painful sensation. The characteristics of the tumor are polypoid, slow-growing, and encapsulated. With nasal schwannoma, however, some special pathological findings are specific, which are not found in tumors from other regions.

## 2. Case Report

The patient was a 50-year-old male. He visited us because of a progressive left side nasal obstruction with intermittent purulent rhinorrhea for more than a year. No epistaxis, anosmia, or any other nasal symptom was

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mentioned. He denied any systemic disease and had never undergone any surgery. He was an agriculture coolie, smoked one pack of cigarettes per day and chewed betel nuts for over 10 years (**Figure 1**).

During his visit, under anterior rhinoscopy, a large polypoid mass was noted in his left nostril, which occupied the left nasal cavity and protruding out. Some yellowish mucopus was also found in the left nasal cavity. Posterior rhinoscopy revealed normal.

CT scan of the paranasal sinus showed a large soft tissue mass in the left nasal cavity with protrusion into the nasopharynx (**Figure 2**).

Patient underwent biopsy under local anaesthesia and it was reported as cellular schwanoma.

Lateral rhinotomy surgery was performed under general anesthesia with an impression of mass occupying nearly the entire left nasal cavity without much adhesion to nasal mucosa. Its insertion was at the vestibule left side. A deviated nasal septum, a laterally displaced left middle turbinate, and an atrophic inferior turbinate were found. These seemed to be secondary changes from the mass effect (**Figure 3**).

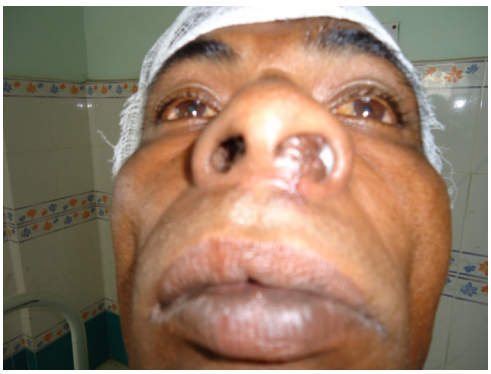

**Figure 1.** Clinical picture.

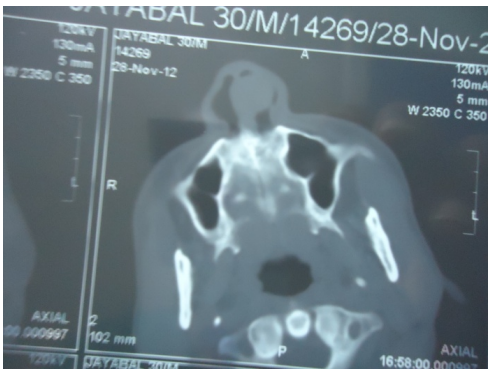


**Figure 2.** CT PNS axial cut.

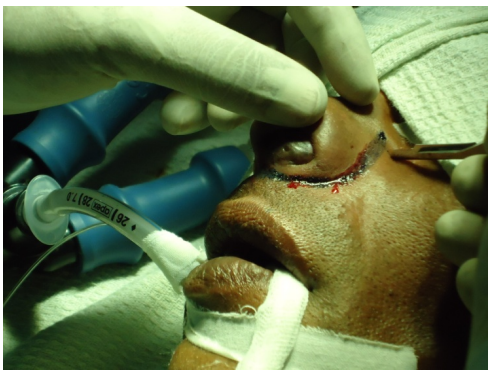

**Figure 3.** Lateral rhinotomy incision.

Lateral rhinotomy approach:

It was described by Moure in 1902. Incision starts under medial end of eyebrow, extending inferiorly, between medial canthus and nasal dorsum, along the deep nasal-cheek groove adjacent to nasal ala. To achieve en bloc resection, anterior nasal cavity entered through the inferior and anterior aspects of the medial wall of the maxilla. En bloc extirpation of the mass was possible because the tumour was occupying the anterior part of the nasal cavity. It was totally removed. The procedure was smooth and the patient's condition was uneventful (**Figure 4**).

The gross appearance of the specimen was yellowish white, soft, and polypoid (**Figure 5**).

Microscopically, a section showed a non-encapsulated hypercellular tumor composed of round to ovoid cells with palisading or fasicular arrangement in fibrillary background Verocay body-like structures were found in some sections Nuclear atypia was absent and the mitotic index was low (average of less than 1/10 HPF).

Immunohistochemically, the tumor cells were strongly and diffusely positive for vimentin and S-100 staining. Neuron specific enolase and smooth muscle actin stainings were focally positive. Cytokeratin, epithelial membrane antigen, and desmin staining were all negative. Therefore, benign nasal schwannoma was diagnosed.

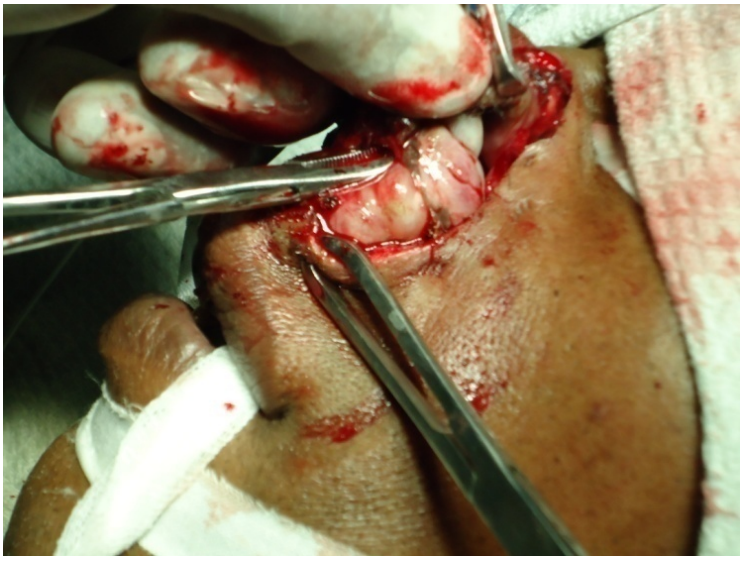

**Figure 4.** Intra operative picture showing the mass.

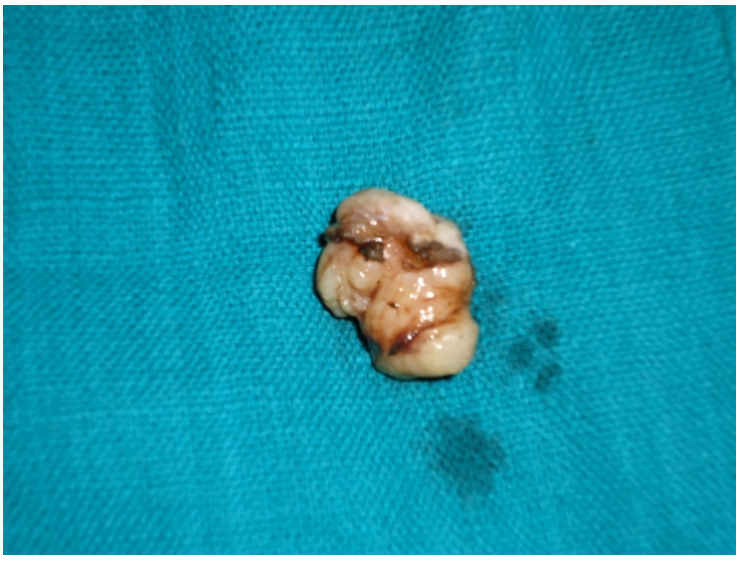

**Figure 5.** Exicised mass.

## 3. Discussion

Schwannoma is not a common tumor in the sinonasal tract. Only about 70 cases have been recorded in the literature [3]. A sinonasal schwannoma can be found in many sites, including the nasal septum, paranasal sinus, tip of the nose, turbinate, and nasopharynx [4]-[7]. The presenting symptoms of the tumor are always non-specific, depending on the site of the mass [8].

Generally, a unilateral nasal obstruction is the most common symptom, where patients usually feel a progressive unilateral nasal obstruction for a long period of time. Unilateral epistaxis is also a frequent complaint. Anosmia, painful sensation, and headache are noted because of the mass effect of the tumor [9].

Grossly, the schwannoma is usually reported to be an encapsulated mass with a smooth surface. Microscopically, Antoni A and Antoni B arrangements are diagnostic for this tumor [10]. Considering the neuro fibroma as the major differential diagnosis in this area, the typical pathological finding of proliferating spindle cells within wide-spreading keloid collagen bundles with branching vessels is not found in this case. According to one report [3], the pathological findings of schwannoma of the sinonasal tract are different from schwannomas in other regions. The differences include the loss of fibrous encapsulation and dominating hypercellularity. In this report, the pathological findings for our patient are compatible. No capsule was noted on the tumor surface. No typical Antoni B area was noted, and only interlacing weary cells with high density were found in all sections. These findings were compatible with the pathological findings of cellular schwannoma.

However, no typical fibrous capsule of cellular schwannoma was found, but a verocay body could be seen in some sections. These conflict the diagnostic criteria of cellular schwannoma [2].

On account of the hypercellular pattern of nasal schwannoma, it is always important to consider the possibility of malignancy. However, a scanty mitotic change in the average high power view may support the diagnosis of benign schwannoma. Cellular schwannoma also has a benign clinical course [2].

There was no malignant cell infiltration, which further confirmed the diagnosis of its benign nature.

Immunohistochemical stains are important in making these differentials diagnoses. Weary spindle cells are suggestive of nerve or muscle origin. Antibodies against vimentin, S-100, neuron specific enolase, smooth muscle actin, cytokeratin, epithelial membrane antigen and desmin were used. The tumor cells are strongly and diffusely positive for vimentin and S-100 stainings These are compatible with the diagnosis of either the typical or cellular schwannoma, but are not congruous with the differential diagnosis of juvenile angiofibroma, solitary fibrous tumor, hemangiopericytoma, fibroma, malignant peripheral nerve sheath tumor, or meningioma [2] [3]. Neuron specific enolase and smooth muscle actin stainings are focally positive, which revealed the possibility of a tumor of nerve or epithelial origin. However, antibodies against cytokeratin, epithelial membrane antigen, and desmin showed a negative result. Muscle origin is excluded after these stainings. These special staining patterns give a further confirmation of our diagnosis.

According to one report [3], schwannoma without a fibrous capsule has also been noted in gastric schwannoma. It is considered to be from the autonomic myenteric plexus because of the absence of a fibrous epineural sheath. Therefore, it is possible that the nasal schwannoma in our case is from autonomic nerve origin. Although the olfactory nerve is close to the location of the tumor, the lack of schwann cells in the olfactory nerve excludes this possibility.

In an overview of this case, we are reminded to include schwannoma in the clinical diagnosis when a patient presents with unilateral sinusitis and a large polyp. However, the extraordinary location, the lack of a fibrous capsule, and the presence of the Verocay body noted in this case are different from other reports [2]. Although a recurrence rate of 23% has been reported, nasal schwannoma usually has a benign clinical course [2]. Local wide excision of the tumor may be the first choice of management.

In our case, endoscopic sinus surgery was enough for removal of the tumor because of its definite origin. On account of its gigantic size and fragile consistency, en bloc resection is impossible. Complete removal is achieved by piecemeal resection. Nevertheless, considering the versatile entities of a unilateral polypoid mass, it is worthwhile to take a biopsy specimen before the operation for determining an appropriate surgical procedure. MRI evaluation before surgical exploration is recommended. Schwannoma presents as a solitary soft mass, with a high signal in the T2 weighted image in MRI. In some cases, the nerve is usually at the peripheral side of the mass [7]. These examinations promote better comprehension of the nature and the extent of the tumor. After clarification of the character and extent of the mass, endoscopic sinus surgery is enough for most benign lesions, otherwise, an external approach is the choice for unresolved cases. Finally, the findings in this case imply a pos-

sible relationship between the special pathological changes and the tumor origin, but the exact result needs further investigation.

## 4. Conclusion

Schwannoma is not a common tumor in the sinonasal tract. Only about 70 cases have been recorded in the literature. The presenting symptoms of the tumor are always non-specific, depending on the site of the mass. Microscopically, Antoni A and Antoni B arrangements are diagnostic for this tumor. MRI evaluation before surgical exploration is recommended. Local wide excision of the tumor may be the first choice of management.

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