



## Clinico-Pathological Study Of Rare Type Of Sinonasal Masses In Adults- A Hospital Based Cross-Sectional Study

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### Abstract

**Background:** Tumors involving the sinonasal cavity are considered rare. They can arise from paranasal sinuses or can involve the sinuses by direct extension from adjacent structures. Though all sinonasal masses have similar clinical features and symptomatology, diagnosis is based on diagnostic tests like nasal endoscopy, radiological imaging & histopathological studies. Histopathological examination plays a significant role in the diagnosis to rule out different types and malignancies. Hence the present study mainly focuses on rare type of sinonasal masses in adults who presented to the tertiary care center.

**Aim:** To study the clinicopathological profile of sinonasal masses presenting to a tertiary care hospital in Andhra Pradesh.

**Methods:** This is a retrospective hospital-based descriptive study conducted among 14 rare cases of sinonasal masses in patients attending ENT OPD at tertiary care Centre in Andhra Pradesh from May 2022 to April 2023. History, clinical assessment, and histopathological examination (HPE) was done in all cases as per hospital record supplemented by radiological investigation as per requirement.

**Results:** Of the 14 patients enrolled for the study, 9 were females and 5 were males. Majority of the patients were females belonging to 41-50 years age. The mean age of the patients was 50 years. Nasal obstruction (93%) was the most common presenting complaint followed by epistaxis (43%). HPE revealed that 29% are angiofibromas followed by inverted papillomas (22%) and adenocarcinomas & Glomangiopericytomas (14%).

**Conclusions:** Sinonasal masses have various differential diagnoses. Nasal obstruction (93%) was the most common presenting complaint. The definitive diagnosis, is better established with histopathological diagnosis. Surgery was the treatment of choice for benign lesions.

**Keywords:** rare, Sinonasal masses, Computed tomography-paranasal sinuses (CT-PNS), Magnetic Resonance Imaging (MRI), Histopathological examination (HPE)

### Introduction

The nose is the most distinguished part of the face having exquisite and functional significance. The existence of any mass in the nose and PNSs may look like a simple problem; however, it generates many queries regarding the differential diagnosis. The aetiology and pathogenesis of sinonasal masses

is still controversial in many cases. Thus, it becomes mandatory for otorhinolaryngologist to elicit detailed history and thorough clinical and radiological examination before reaching a final diagnosis, so that correct and timely intervention can be done. Most patients present with complaints of nasal obstruction,

nasal discharge, sneezing, disturbances of smell, epistaxis, ophthalmic complaints like epiphora, proptosis, diplopia, and visual disturbances. Facial swelling, pain headache and snoring with sleep apnoeic spells are not infrequent findings in patients with massive sinonasal masses.<sup>1</sup>

These lesions may be small or can be extensive from vestibule to nasopharynx. A sinonasal mass can have various differential diagnoses. They may be congenital, inflammatory, allergic, neoplastic (benign or malignant). Congenital masses are predominantly mid line swellings and include dermoid, glioma and encephaloceles.

They are mainly classified as non-neoplastic and neoplastic and further into benign and malignant among the neoplastic lesions. Sinonasal masses or tumours can remain clinically silent for months to years. Neoplasms affecting the PNS and nasal cavities are rare in comparison with sinonasal inflammatory disease but benign neoplasia of the nose and PNS is relatively common.<sup>2</sup> Malignancies of the nose and PNS account for less than 1% of all malignancies and about 3% of all head and neck malignancies.<sup>3</sup> **Tandon et al and Dasgupta et al** took considerable efforts to study sinonasal masses in the Indian population.<sup>4,5</sup> Still, an analysis of the sinonasal masses in the Indian population has been lacking. Though sinonasal masses have similar clinical features and symptomatology, diagnosis is based on diagnostic tests like nasal endoscopy, radiological imaging & histopathological studies. Histopathological examination plays a significant role in the diagnosis to rule out different types of malignancies. The present study mainly focuses on the clinicopathological profile, age, and sex distribution of rare type of sinonasal masses in adults who presented to the tertiary care center.

### **Aim:**

To study the clinicopathological profile of sinonasal masses presenting to a tertiary care hospital in Andhra Pradesh.

### **Methodology:**

The hospital-based descriptive study was conducted among 14 patients with rare variety of sinonasal masses attending ENT OPD of Alluri Sita Rama Raju Academy of Medical Sciences, Eluru in Andhra Pradesh from May 2022 to April 2023.

**Inclusion criteria:** All patients age 18 years and above who presented with nasal masses.

**Exclusion criteria:** Patients with inflammatory and allergic polyps.

After obtaining consent from the patients, all patients were evaluated thoroughly after a detailed history and complete ENT, head and neck, and systemic examination. Patients underwent nasal endoscopic and radiological examination (Computed tomography-paranasal sinuses (CT-PNS with/without contrast)) to make a presumptive diagnosis of nasal mass. Cases with orbital and intracranial complications were further evaluated with Magnetic Resonance Imaging (MRI) and other relevant investigations. After investigations, all cases of nasal masses were subjected to excision biopsy and sent for histopathological examination. Definitive management was done as per HPE report. Patient's bio data, clinical profile and histological diagnosis and operative procedures were analyzed. Data was analyzed using Microsoft office excel 2007.

### **Ethical Considerations:**

The study was conducted after obtaining approval from the Institutional Ethical Committee (IEC).

### **Statistical Analysis:**

Data entry was done using M.S. Excel. Descriptive / Qualitative variables were expressed using pie charts /bar diagrams.

### **Results:**

Of the 14 patients enrolled for the study 9 were females and 5 were males.

Majority of the patients were females belonging to 41-50 years age. The mean age of the patients was 50 years.

Figure:1 shows that Nasal obstruction (93%) was the most common presenting complaint noticed among 13 patients followed by epistaxis (43%) among 6 patients, nasal discharge among 5, head ache among 2 and snoring with mouth breathing among 2 patients.

Figure 2 shows that 36% of the sino-nasal masses originated from nasal septum, followed by turbinate's (22%), Middle meatus (21%), frontal recess (14%) and sphenoid-ethmoidal recess (7%).

Figure 3 shows Diagnostic Nasal Endoscopy (DNE) of right Glomangiopericytoma showing friable mass with blood-tinged discharge in the right nasal cavity between septum and inferior turbinate. Mass was adherent to septum causing displacement of the nasal septum to opposite side.

CT PNS of a Glomangiopericytoma showing soft tissue density in the Right nasal cavity involving frontal sinus, Ethmoidal air cells and sphenoid sinus on right side with focal destruction of nasal septum.

Figure 4 shows Diagnostic Nasal Endoscopy (DNE) of Respiratory Epithelial Adenomatous Hamartoma shows globular mass originating from right side roof of the nose extending up to floor of nasal cavity between septum and inferior turbinate with bilateral polypoidal changes seen in middle meatus, nasal cavity, sphenoethmoidal recess. CT PNS of respiratory epithelial adenomatous hamartoma showed Sinonasal polyposis involving bilateral frontal, bilateral ethmoidal sinus, bilateral nasal cavities with extensions into right sphenoid sinus and bilateral maxillary sinus. Bilateral osteomeatal complex blocked. Bilateral sphenoethmoidal & frontal recess blocked. Widened olfactory cleft.

Figure 5 shows that Diagnostic Nasal Endoscopy (DNE) of a **schwannoma** showing mass in Left nasal cavity between nasal septum & middle turbinate and extending posteriorly into nasopharynx. Contralateral nasal cavity is normal. CT PNS shows a soft tissue attenuation noted in entire left maxillary sinus with widening of left osteomeatal complex seen extending & occupying whole nasal cavity protruding into nasopharynx up to posterior pharyngeal wall and seen extending superiorly into left frontal & ethmoid sinuses.

Figure 6 shows DNE of Angiofibroma showing a polypoidal mass in left nasal cavity between septum and middle turbinate which appears to be coming from sphenoid sinus. CT PNS shows Irregular heterodense lesion enhancing on contrast seen in left ethmoid sinus. Bone destruction seen in left maxillary sinus, left ethmoid sinus, left sphenoid sinus.

Table: 1 show that out of 14 cases, 4 cases were diagnosed as Angiofibroma.

Angiofibroma:

All the four cases of angiofibroma were excised endoscopically. After endoscopic excision two cases needed Modified Denker's approach and in one case Draf type IIA surgery was done for complete removal of mass.

Inverted papilloma

3 cases were diagnosed as inverted papilloma, one of which was an recurrence case. In 2 of the cases needed Caldwell luc procedure for complete removal of mass. In one case endoscopic excision was done for the removal of mass.

Glomangiopericytoma

2 cases were diagnosed as Glomangiopericytoma, both were removed endoscopically using coblation.

Adenocarcinoma.

2 cases were diagnosed as Adenocarcinoma. One was High grade Adenocarcinoma; the other was Low grade Papillary Adenocarcinoma. Both were removed by endoscopic excision.

One patient was diagnosed with Mucosal Melanoma, one patient with Respiratory Epithelial Adenomatoid Hamartoma and one patient with Schwannoma as masses. In all the 3 cases endoscopic excision of mass was done.

Out of 14 patients, 12 were found to be benign. Only 2 patients were found to have neoplastic/ malignant lesions, out of which one is High grade Adenocarcinoma and the other one is Low grade Papillary Adenocarcinoma. Both were removed by endoscopic excision, and then patients were referred for radiotherapy and chemotherapy.

## Discussion

In the present study it was observed that Sinonasal masses have a predilection for female with a Male to female ratio of **1: 1.8**. Similar findings were reported from a study done by **Bakari A et al.**<sup>6</sup> done in Nigeria where male to female ratio of **1:1.2**. This may be due to smaller samples size and single study setting and shorter study duration. In contrast in **Rokade V et al**<sup>7</sup> study Sinonasal masses had predilection for males, demonstrating a male to female ratio of 1.6:1. It was higher (male-to female ratio of 1.7:1) in the study by **Zafar et al** from India.<sup>7,8</sup>

In the present study most of the patients were females belonging to 41-50 years age. The mean age of the patients was 50 years. Whereas in a study done by **Rokade V et al**<sup>7</sup> majority of the patients were in the age groups 21-40 year 33 (47%). The 2nd to 4th decades of life is the most vulnerable period for development of sinonasal masses. **Bakari et al** had reported a peak incidence of 33 years, while for **Zafar et al** the mean age of presentation was 22.5 years.

In the present study, 3 cases were diagnosed as inverted papilloma, one of which was an recurrence case. In 2 of the cases needed Caldwell luc procedure for complete removal of mass. In one case endoscopic excision was done for the removal of mass. Inverted papillomas are comparatively rare, but this morphological variant is the most encountered lesion of all sinonasal papillomas.<sup>9</sup> Inverted papilloma formed 37% of all benign neoplastic masses, which was marginally higher from the findings of **Humayun et al**<sup>10</sup> and **Bakari et al**. Inverted papilloma was associated with squamous cell carcinoma of the sinonasal cavity in 6 (21.4%) of the 28 cases studied by **Califano et al in USA**<sup>11</sup>.

In the present study, all the four cases of angiofibroma were excised endoscopically. After endoscopic excision two cases needed Modified Denker's approach and in one case Draf type IIA surgery was done for complete removal of mass. **Pradhananga et al** reported 9 cases of angiofibroma over a period of two years in **Nepal**.<sup>13</sup>

The incidence of sinonasal malignancy is approximately 3.5 per 100000 populations per year.<sup>14</sup>

In the present study, the turbinate's is the most common site of origin, while the most common histological type is Angiofibroma. In study done by **Fasunla AJ et al** maxillary sinus was the most common site of origin, while the most common histological type was squamous cell carcinoma.<sup>15,16</sup>

In the present study Histological investigation revealed Out of 14 patients, 12 were found to be benign. Only 2 patients were found to have neoplastic/ malignant lesions, out of which one is High grade Adenocarcinoma and the other one is Low grade Papillary Adenocarcinoma. Both were removed by endoscopic excision, and then patients were referred for radiotherapy and chemotherapy. In

the present study reported 14.28 % of the sinonasal masses were found to be malignant. In a study done by **Rokade V et al**<sup>7</sup> study Histological investigation revealed squamous cell carcinoma in 75% (n=3) of all malignant neoplastic sinonasal masses, and only 1 slide was identified to be transitional cell carcinoma which is an unusual. **Pradhananga et al**<sup>13</sup> reported 6.3% of their sinonasal masses to be malignant, while for **Fasunla et al** malignant sinonasal tumors constituted 59.4% of the 138 sinonasal neoplasms seen.<sup>15</sup> **Svane-Knudsen et al**<sup>17</sup> have similarly reported squamous cell carcinoma to be the most encountered malignancy of sinonasal tract in Denmark.

In the present study reported 5<sup>th</sup> and 6<sup>th</sup> decade was the most affected age group for malignancies of the sinonasal tract. Whereas in a **Polish study by Zylka, Bieñ, Kamiński et al** reported 71-80 years to be the most affected age group for malignancies of the sinonasal tract.<sup>18</sup>

Most of non-neoplastic and benign neoplastic nasal masses require surgical excision, while malignant neoplastic nasal masses require wide surgical excision, radiotherapy, or chemotherapy either alone or in combination.

### Limitations:

As the sample size was very small the results obtained cannot be generalized. Furthermore, number of studies should be conducted for getting valid conclusions.

### Conclusion:

Sinonasal masses have various differential diagnoses. Malignancy should be distinguished from non-malignant lesions. Nasal obstruction and epistaxis are the most common complaints.

Benign conditions showed a peak during fourth decade of life, while malignancy is generally observed in 6th decade. Detailed clinical history, examination, diagnostic nasal endoscopy, and imaging studies, including CT and MRI scans will help in the early diagnosis of nasal masses. The definitive diagnosis, is better established with histopathological diagnosis.

Surgery is the treatment of choice for benign lesions, while a combination of surgery, chemotherapy and radiotherapy are helpful in malignant conditions.

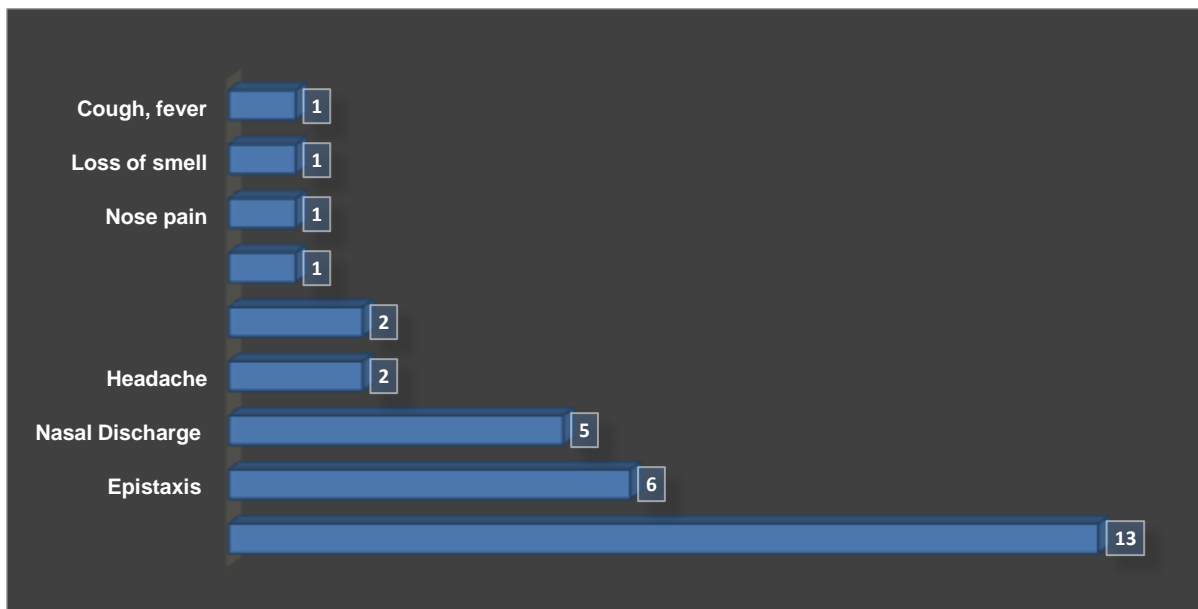


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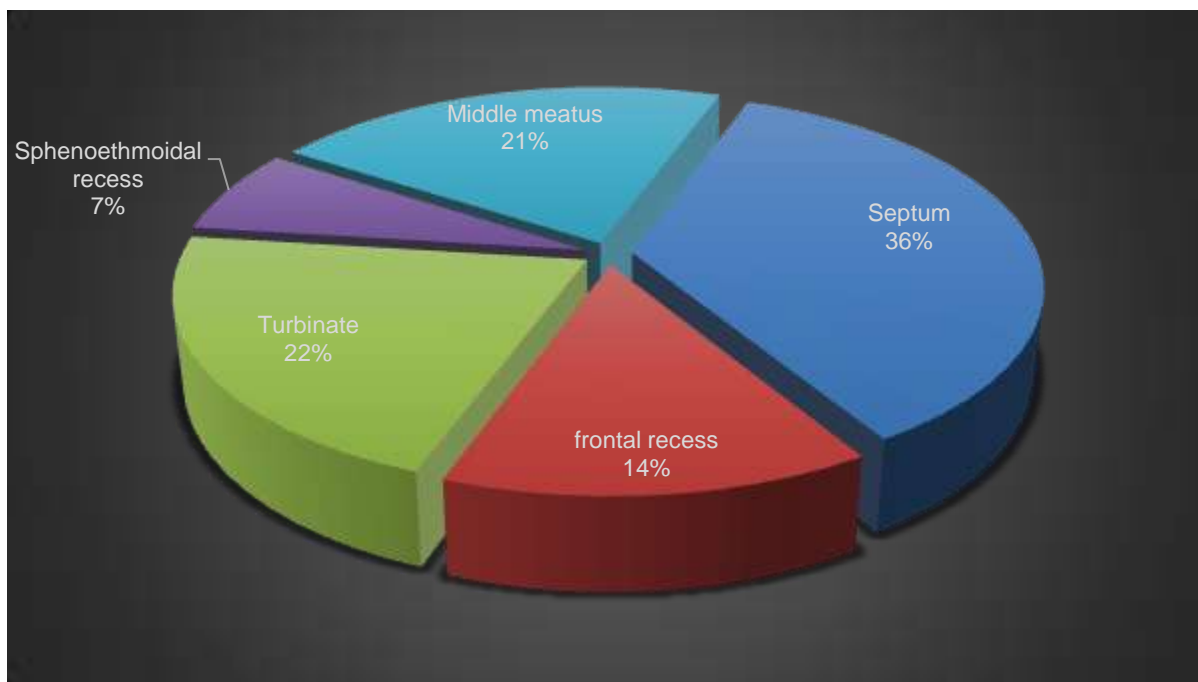
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## Figures & Tables

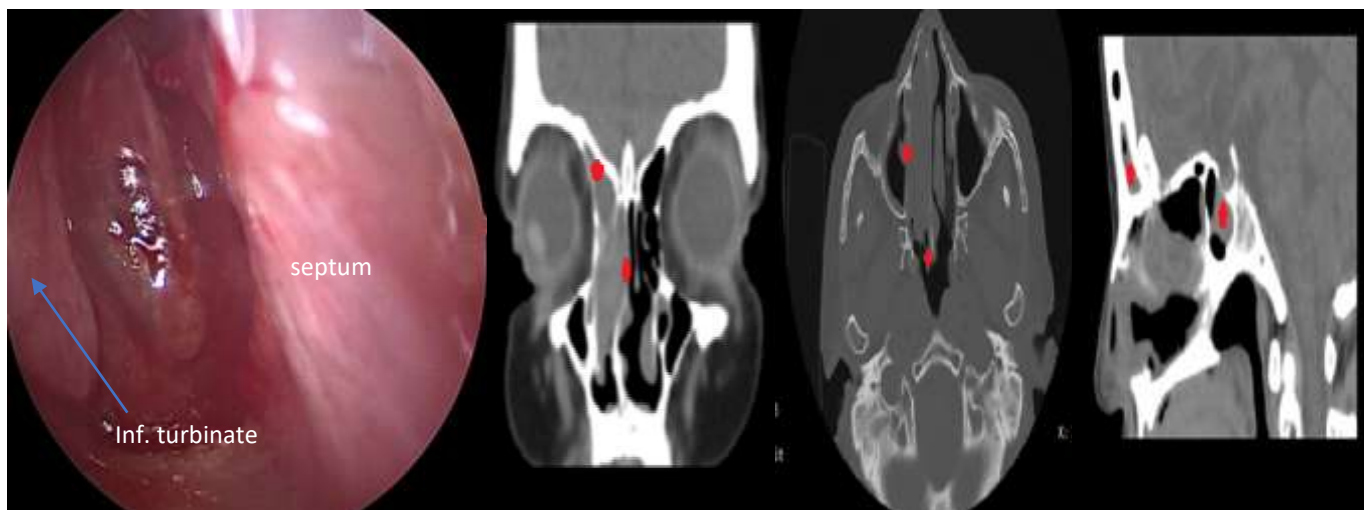
**Figure:1 Distribution of patients based on symptoms**



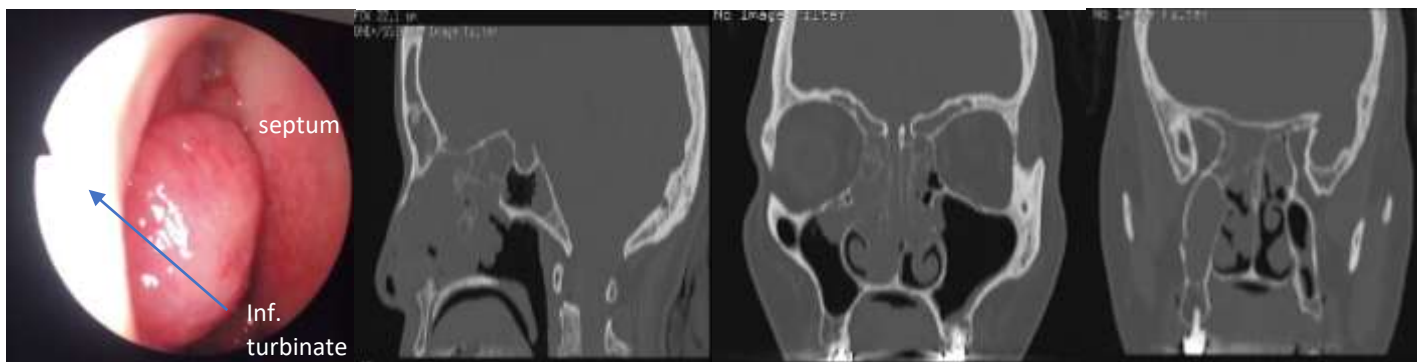
**Figure:2 Distributin of patients based on origin of mass**



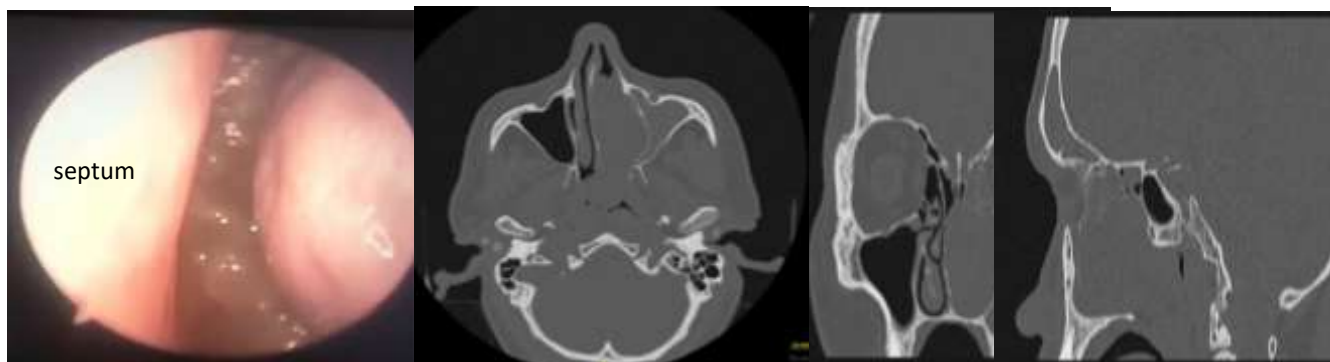
**Figure:3 Endoscopy picture and CT PNS of right Glomangiopericytoma**

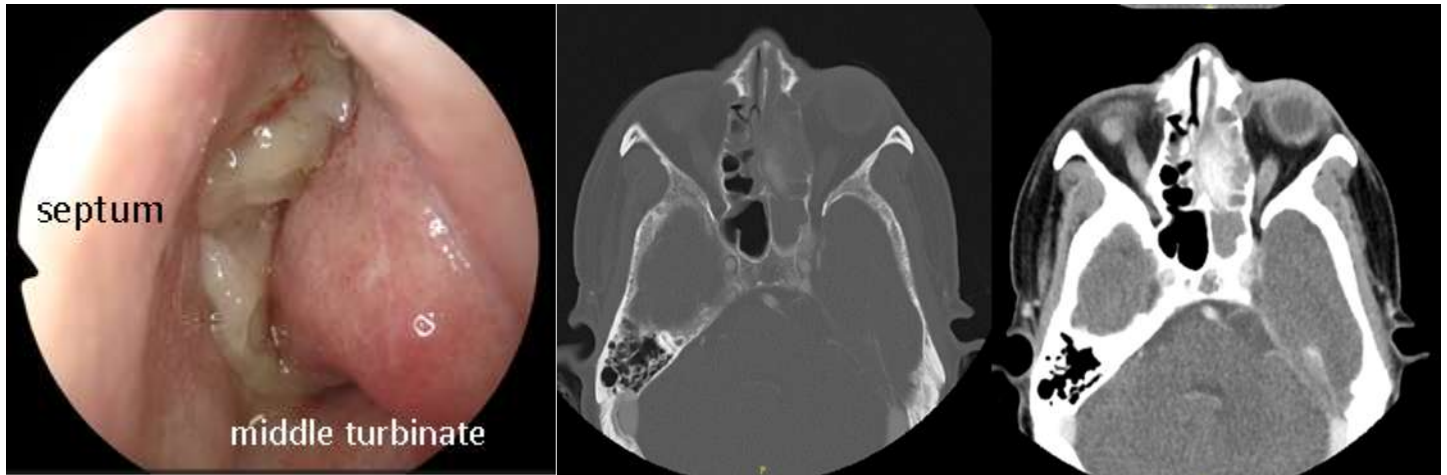


**Figure: 4 Endoscopic picture and CT PNS of Respiratory Epithelial Adenomatous Hamartoma**



**Figure:5 Endoscopic picture and CT PNS of a schwannoma**



**Figure:6 Endoscopic picture and CT PNS of Angiofibroma****Table:1 Distribution of 14 cases based on Histopathological diagnosis and surgery performed**

<b>CASES (14)</b>	<b>Histopathological diagnosis</b>	<b>Surgery performed</b>
<b>1</b>	<b>Angiofibroma</b>	<b>ESS+ MODIFIED DENKER'S</b>
<b>2</b>	<b>Angiofibroma</b>	<b>ESS+ DRAF TYPE IIA</b>
<b>3</b>	<b>Angiofibroma</b>	<b>Endoscopic excision</b>
<b>4</b>	<b>Angiofibroma</b>	<b>Endoscopic excision</b>
<b>5</b>	<b>Inverted Papilloma</b>	<b>ESS + CALDWELL LUC</b>
<b>6</b>	<b>Inverted Papilloma</b>	<b>ESS + CALDWELL LUC</b>
<b>7</b>	<b>Inverted Papilloma</b>	<b>Endoscopic excision</b>
<b>8</b>	<b>Glomangiopericytoma</b>	<b>Endoscopic excision</b>
<b>9</b>	<b>Glomangiopericytoma</b>	<b>Endoscopic excision</b>
<b>10</b>	<b>Adenocarcinoma</b>	<b>Endoscopic excision</b>
<b>11</b>	<b>Adenocarcinoma</b>	<b>Endoscopic excision</b>
<b>12</b>	<b>Mucosal Melanoma</b>	<b>Endoscopic excision</b>
<b>13</b>	<b>Respiratory Epithelial Adenomatoid Hamartoma</b>	<b>Endoscopic excision</b>
<b>14</b>	<b>Schwannoma</b>	<b>Endoscopic excision</b>