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Giant Pleomorphic Adenoma of the Nasal Septum: A Case Report and Review of Diagnostic and Surgical Considerations

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Abstract | **Case Report**

Introduction: Pleomorphic adenoma is the most common benign tumor of the salivary glands, typically arising in the major salivary glands but occasionally found in minor salivary glands within the oral cavity. Its occurrence in the nasal cavity is exceptionally rare and may mimic more common nasal lesions, posing a diagnostic challenge. ***Case Presentation:*** We report the case of a patient presenting with progressive unilateral nasal obstruction. Endoscopic examination revealed a polypoid mass in the nasal cavity, and imaging studies were performed to assess its extension. Complete surgical excision was carried out via a combined approach. Histopathological analysis confirmed the diagnosis of pleomorphic adenoma originating from the minor salivary glands of the nasal cavity. ***Conclusion:*** Although extremely rare, pleomorphic adenoma of the nasal cavity should be considered in the differential diagnosis of nasal masses. Early diagnosis and complete surgical excision are essential for favorable outcomes. This report aims to highlight the diagnostic and surgical challenges associated with this unusual presentation in light of current literature.

Keywords: Pleomorphic adenoma, nasal cavity, minor salivary glands, benign tumor, endoscopic surgery.

BACKGROUND

Salivary gland tumors account for approximately 3% of all head and neck neoplasms, with pleomorphic adenoma being the most frequent benign subtype, representing nearly 70% of these tumors [1,2]. Although predominantly found in major salivary glands—especially the parotid—pleomorphic adenomas can also arise from minor salivary glands located in the palate, buccal mucosa, and upper lip [2,3]. Ectopic presentation in the respiratory tract, particularly within the nasal cavity, is extremely rare and represents less than 1% of all pleomorphic adenomas [4]. Given this atypical localization, clinical presentation is often non-specific and may mimic more common nasal pathologies such as inflammatory polyps, inverted papillomas, or even malignant tumors [5]. Additionally, pleomorphic adenomas in the nasal cavity may display a predominance of epithelial or myoepithelial components with limited stromal content, potentially complicating histopathological diagnosis [6]. Awareness of this rare entity is crucial for accurate identification and appropriate surgical management.

CASE PRESENTATION

A 52-year-old female patient, with no notable medical history, presented to our department with a progressively enlarging mass occupying the entire left nasal cavity. The mass was prolapsing into the nasal vestibule, extending laterally toward the cheek, and displacing the nasal septum medially, resulting in visible deformation of the nasal pyramid. Clinically, the patient reported bilateral nasal obstruction, chronic left-sided epiphora, and intermittent episodes of minor epistaxis.

Based on the clinical and endoscopic findings, an initial diagnosis of inverted papilloma was considered. A biopsy was performed, and histopathological examination revealed features consistent with a pleomorphic adenoma.

Magnetic resonance imaging (MRI) demonstrated a well-circumscribed, lobulated, and expansile tumor of the left nasal cavity, displacing adjacent structures without signs of invasion. The lesion exhibited intermediate hyperintensity on T2-weighted images, hyperintensity on T1-weighted images, and a diffusion-weighted imaging (DWI) hypersignal with low apparent diffusion coefficient (ADC) values [Fig.1-2].

Post-contrast sequences showed Type A dynamic enhancement. The tumor caused bilateral pansinus opacification secondary to obstruction but the precise site of origin within the nasal cavity remained uncertain.

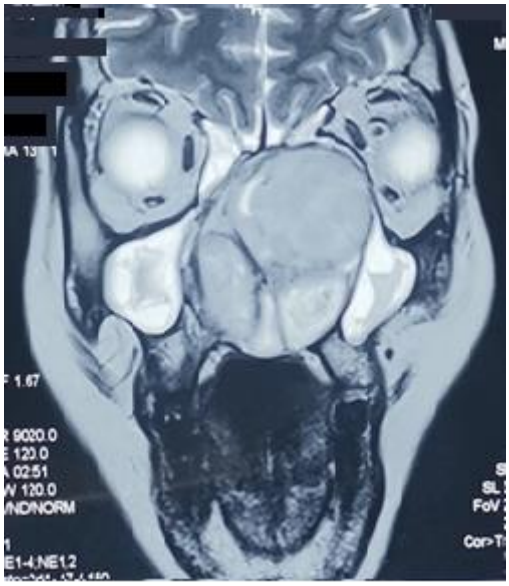

Figure 1. Coronal T1-weighted magnetic resonance imaging (MRI) of the nasal cavity. The image shows a well-circumscribed, lobulated, and expansive mass occupying the left nasal cavity. The tumor displaces the nasal septum medially and extends laterally towards the left cheek, causing deformation of the nasal pyramid. Adjacent structures, including the orbits and maxillary sinuses, are compressed but show no signs of invasion.

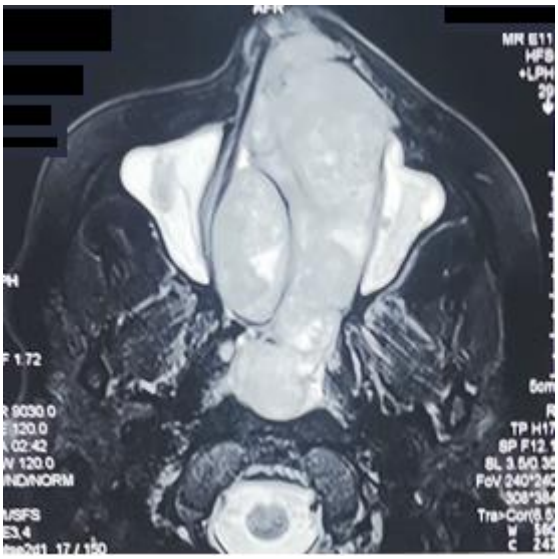

Figure 2. Axial T2-weighted MRI demonstrating a hyperintense lobulated lesion occupying the left nasal cavity with lateral extension. The high signal intensity highlights the tumor's myxoid and cellular components, typical of pleomorphic adenoma, without evidence of infiltration into surrounding tissues

The patient underwent a complete surgical excision of the tumor via a lateral rhinotomy incision combined to an endoscopic endonasal approach under general anesthesia. The postoperative course was uneventful. She received a 7-day course of antibiotics and paracetamol as needed for pain management. In addition, nasal wash sprays were prescribed to promote mucosal healing, minimize crust formation, and clear residual blood and debris. The patient was discharged home in stable condition.

A follow-up endoscopic examination performed 10 days after surgery showed good mucosal healing with no signs of residual tumor. Final histopathological analysis confirmed the diagnosis of pleomorphic adenoma originating from minor salivary gland tissue [Fig.3]. A structured clinical follow-up protocol was initiated, with endoscopic evaluations scheduled every three months during the first year and every six months thereafter. The patient remains symptom-free to date, with no evidence of recurrence.

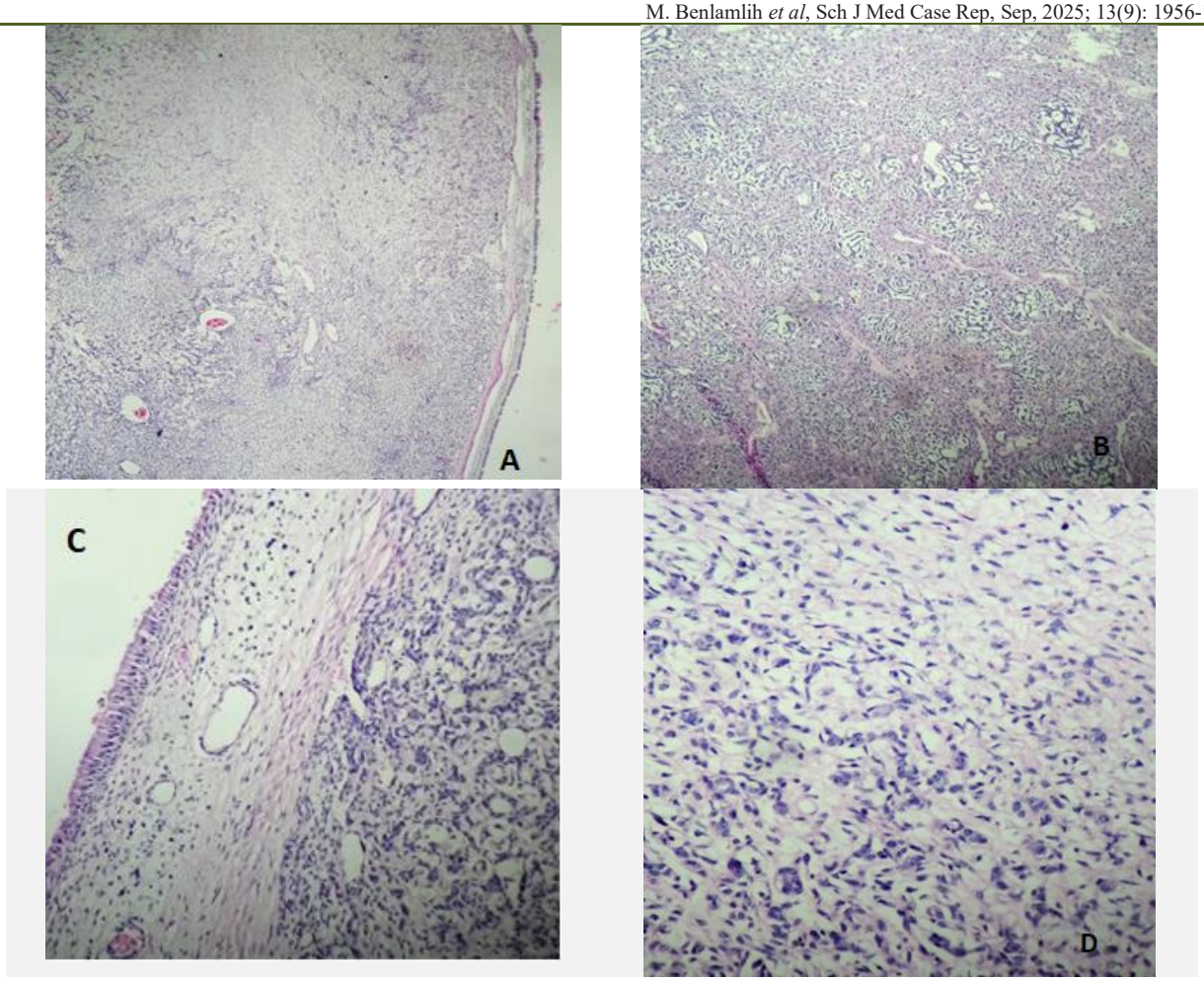

Figure 3: Histological findings:

(A): well-limited tumor proliferation with the intact overlying respiratory mucosa is visible on the right edge of the image. (Hematoxylin and eosin stain (HES) x40).

(B): the proliferation is composed of epithelial and myoepithelial cells within a fibromyxoid stroma, characteristic of pleomorphic adenoma with No signs of cellular atypia or malignancy are observed. (HESx100).

(C): Demonstrating ductal structures and cellular nests in a chondromyxoid matrix. The fibrous capsule and adjacent respiratory epithelium are clearly delineated, consistent with benign pleomorphic adenoma. (HESx200).

(D): High-power view (HES×400) highlighting the myxoid stroma with scattered myoepithelial cells and spindle-shaped nuclei. No evidence of atypia or malignancy is observed.

DISCUSSION

Pleomorphic adenoma (PA) is the most frequent benign salivary gland neoplasm, accounting for approximately 60–70% of such tumors, and most commonly affects the parotid gland [7,8] followed by the submaxillary gland in 15% of the cases [9]. Approximately 10% of cases arise from minor salivary glands—principally located in the palate and oral cavity [7,9]. PA of the nasal cavity remains exceedingly rare, constituting less than 1% of all cases and often presenting diagnostic challenges due to its nonspecific symptoms and unusual site [4, 10].

The largest case series to date include those by Compagno and Wong (40 cases) [4] and Wakami *et al.,* incorporating 41 previously reported cases [10]. These studies noted a slight female predominance and typical presentation in the third to sixth decades of life. Most intranasal tumors originated from the nasal septum despite the more abundant presence of minor salivary glands along the lateral nasal wall [9,11]. Common presentations include progressive unilateral nasal obstruction, epistaxis, and visible nasal mass or deformation—findings mirrored in our patient's presentation, which also included anosmia, epiphora and facial distortion due to tumor mass effect.

Imaging such as CT scan or Magnetic resonance imaging (MRI) are valuable in defining lesion origin, margins and other characteristics such as extension and impact on adjacent structures. In our case, MRI revealed a well-circumscribed, lobulated lesion that displaced—but did not invade—adjacent structures, with T1 and T2 hyperintensity, diffusion restriction, and Type A enhancement kinetics, all suggestive of a benign, highly cellular tumor [8,12]. However, the tumor's size

prevented precise identification of its site of origin within the nasal cavity.

Histopathologically, PAs are characterized by a mixture of epithelial and myoepithelial cells within a myxoid, chondroid, or fibrous stroma [12]. Intranasal variants often exhibit higher epithelial cellularity and reduced stromal components compared to PAs in major glands, which can complicate diagnosis by mimicking more aggressive lesions [9, 11].

Despite being benign, PAs carry risks of local recurrence and rare malignant transformation. In one hand, the recurrence rate in intranasal PAs is estimated up to 10%. This is typically attributable to incomplete excision, capsular invasion or rupture, irregular capsule contours, and multinodular growth patterns [9, 11,12, 13]. The general recurrence rate for PAs in major glands is similar but lowers with complete, radical excision [4]. In the series of Campagno and Wong, recurrence after radical surgery was noted in only 7.5% of cases [4].

In the other hand, malignant transformation into carcinoma ex-pleomorphic adenoma (CXPA) remains rare but is a critical concern, particularly for sinonasal tumors—estimated between 2.5% and 10%—with various carcinoma subtypes reported [9-12,13]. The mechanisms underlying this malignant transformation remain poorly understood, and no consensus has been reached on predictive histological features yet. However, immunohistochemical studies have begun to offer insights: MUC1 overexpression has been identified as a marker associated with recurrence, while HMG1 and MDM2 may be linked to malignant progression [13]. In this matter, one case of metastasis has been described, after 17 years after primary surgery, likely due to hematogenous or lymphatic dissemination [9,14]. Furthermore, multiple recurrences significantly raise the risk of malignant transformation [15].

A complete resection with clear margins remains the standard of care. Endoscopic approaches are favored for their minimal invasiveness and superior visualization; However, from a surgical perspective, the resection of giant pleomorphic adenomas of the nasal cavity presents several complex challenges. Extensive tumor size frequently distorts anatomical landmarks, complicates surgical orientation, and limits visibility [9,12], particularly via endoscopic approaches. In cases where the lesion extends anteriorly into the nasal vestibule or laterally toward the facial soft tissues, or exhibit a pseudocapsulated growth pattern and may contain multinodular components, external access becomes necessary to achieve adequate exposure and ensure complete resection with clear margins [12]. In addition, tumor-induced displacement of the nasal septum, turbinates, and nasolacrimal duct requires meticulous dissection to preserve function while avoiding structural injury. The exact point of origin is often difficult to identify intraoperatively due to the mass effect and mucosal stretching. Hemostasis is also a critical consideration, as vascular congestion and mucosal friability may result in significant intraoperative bleeding, particularly in large, highly vascularized tumors. Controlled bipolar cautery, suction diathermy, and meticulous subperiosteal dissection are essential for managing intraoperative blood loss and maintaining a clear surgical field. It is also important to mention that large resections can cause mucosal trauma, some crusting or even synechiae which requires careful postoperative care with nasal irrigations, antibiotics and a thoughtful endoscopic follow-up for debridement to promote mucosal healing.

In our case, given the tumor's extensive involvement of the left nasal cavity, with medial septal displacement and lateral facial extension, an external para-latero-nasal approach was selected. This route enabled complete en bloc excision, preservation of adjacent anatomical structures, and effective hemostasis throughout the procedure. The patient did not experience significant cosmetic deformity postoperatively, and her symptoms—obstruction, epiphora, and facial swelling—resolved completely. This favorable outcome reinforces the importance of selecting a surgical route tailored to tumor characteristics rather than strictly adhering to minimally invasive techniques.

Finally, long-term follow-up is essential for early detection of local or regional recurrence. While endoscopic examination remains the frontline tool, imaging modalities such as CT and MRI are crucial when recurrence is clinically suspected [9,12].

Conclusion

In conclusion, although rare, pleomorphic adenoma of the nasal cavity should be considered in the differential diagnosis of unilateral nasal masses. Accurate diagnosis relies on imaging and detailed histopathological evaluation. A timely surgical approach with clear margins provides excellent outcomes, and long-term follow-up remains essential to detect recurrences or malignant changes [15,16].

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