

CASE REPORT

Nasal polyp with bizarre stromal cells mimicking malignancy: a diagnostic pitfall

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ABSTRACT

Bizarre stromal cells in sinonasal polyps represent a rare reactive phenomenon that may closely mimic malignancy and lead to diagnostic pitfalls. We report the case of an 18-year-old male presenting with progressive unilateral nasal obstruction and a history of prior endoscopic sinus surgeries. Imaging revealed a large polypoid lesion occupying the left maxillary sinus and extending into the nasopharynx. Histopathological examination demonstrated an edematous, inflamed stroma with prominent vascular proliferation and scattered markedly atypical stromal cells showing pleomorphic, hyperchromatic to vesicular nuclei, prominent nucleoli, multinucleation, and focal rhabdoid-like features. Mitotic figures were absent. Immunohistochemically, the atypical cells were positive for vimentin and desmin, with focal pancytokeratin expression and a low Ki-67 proliferation index. Complete excision was performed, and no recurrence was observed at 5 years. Recognition of this benign reactive process, particularly in limited specimens, is essential to avoid misdiagnosis as malignancy and prevent unnecessary aggressive treatment.

Keywords: Nasal polyp; bizarre stromal cells; reactive lesion; sinonasal tract

ÖZET

Belirgin bizar stromal hücreler içeren nazal polip: Maligniteyi taklit eden nadir bir tanısal tuzak

Sinonazal poliplerde görülen bizar stromal hücreler, maligniteyi yakından taklit edebilen ve tanısal yanılgılara yol açabilen nadir bir reaktif durumdur. Bu olgu sunumunda, ilerleyici tek taraflı burun tıkanıklığı ve daha önce endoskopik sinüs cerrahisi öyküsü bulunan 18 yaşındaki bir erkek hasta sunulmaktadır. Görüntüleme incelemelerinde, sol maksiller sinüsü dolduran ve nazofarenkse uzanan büyük polipoid bir lezyon saptandı. Histopatolojik incelemede, belirgin vasküler proliferasyonun eşlik ettiği ödemli ve inflamatuvar bir stroma içerisinde; pleomorfik, hiperkromatikten veziküler görünüme değişen çekirdeklere, belirgin nükleollere, multinükleasyona ve fokal rabdoid benzeri özelliklere sahip, yaygın olmayan ancak belirgin derecede atipik stromal hücreler izlendi. Mitotik figür saptanmadı. İmmünohistokimyasal incelemede atipik hücreler vimentin ve desmin ile pozitif boyanırken, fokal pansitokeratin ekspresyonu gösterdi ve Ki-67 proliferasyon indeksi düşük bulundu. Lezyon tamamen eksize edildi ve 5 yıllık takip süresince nüks izlenmedi. Özellikle sınırlı biyopsi örneklerinde bu benign reaktif sürecin tanınması, malignite ile yanlış tanıyı önlemek ve gereksiz agresif tedavilerin uygulanmasını engellemek açısından büyük önem taşımaktadır.

Anahtar kelimeler: Nazal polip; Bizar stromal hücreler; Reaktif lezyon; Sinonazal bölge

INTRODUCTION

Nasal polyps are common benign mucosal proliferations of the sinonasal tract, affecting approximately 1–4% of the general population and frequently associated with chronic rhinosinusitis, asthma, and allergic rhinitis [1]. They represent the most common non-neoplastic lesions of the nasal cavity and paranasal sinuses [2]. Histologically, nasal polyps are characterized by stromal edema, inflammatory cell infiltration, fibroblastic proliferation, and varying degrees of vascularity [3].

In rare instances, nasal polyps may exhibit marked stromal atypia, including the presence of so-called bizarre stromal cells. These cells display striking nuclear pleomorphism and may mimic malignant neoplasms, creating a significant diagnostic pitfall [4–6]. Despite their alarming morphology, these changes are considered reactive and are often associated with prior trauma, ulceration, ischemia, or repeated surgical manipulation [5].

Herein, we report a case of a nasal polyp with prominent bizarre stromal cells in a young patient with a history of prior surgeries, emphasizing the histopathological features, differential diagnosis, and clinical significance of this uncommon entity.

Cite as: Çelik M, Uğraş NS. Nasal polyp with bizarre stromal cells mimicking malignancy: a diagnostic pitfall. *Troia Med J* 2026;7(3):191–194. DOI: 10.55665/troiamedj.1985505

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Date of arrival: 02.07.2026

Date of acceptance: 07.09.2026



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CASE REPORT

An 18-year-old male presented with a six-month history of progressive left-sided nasal obstruction and intermittent nasal discharge. His medical history was notable for two prior endoscopic sinus surgeries for similar complaints. Laboratory findings were within normal limits.

Computed tomography revealed a large polypoid lesion filling the left maxillary sinus and extending into the nasopharynx (Figure 1A). The lesion was excised via endoscopic sinus surgery.

Grossly, the specimen consisted of a lobulated mass measuring $11 \times 5.3 \times 5$ cm with a smooth, partially mucosa-covered surface. The cut surface was edematous and translucent, with focal cystic change and hemorrhage.

Microscopically, the lesion was predominantly ulcerated, with focal areas lined by pseudostratified ciliated respiratory epithelium showing squamous

metaplasia (Figure 1B). The stroma was markedly edematous and contained numerous thin-walled vascular channels, some with intraluminal thrombi, along with a mixed inflammatory infiltrate composed of eosinophils, lymphocytes, plasma cells, and neutrophils (Figure 1C–D).

Scattered stromal cells exhibited marked cytologic atypia, including enlarged pleomorphic, hyperchromatic to vesicular nuclei, prominent nucleoli, multinucleation, and occasional intranuclear pseudoinclusions (Figure 2A–D). Rhabdoid-like cells with abundant eosinophilic cytoplasm were also observed. Mitotic figures were not identified.

Immunohistochemically, the atypical stromal cells were positive for vimentin and desmin, with focal pancytokeratin expression. The Ki-67 proliferation index was low (Figure 3A–D).

The postoperative course was uneventful, and the patient remained symptom-free with no evidence of recurrence at 5 years.

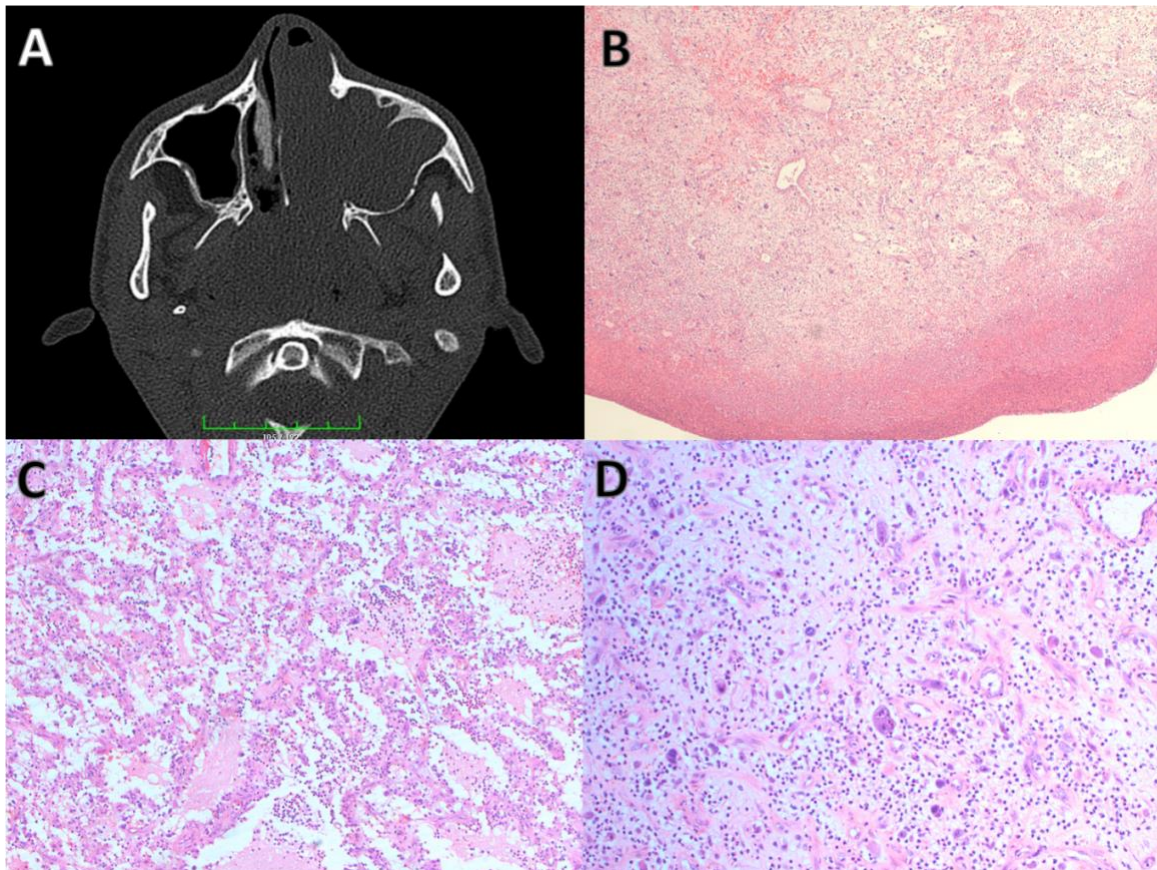


Figure 1. (A) Computed tomography demonstrating a polypoid lesion filling the left maxillary sinus and extending into the nasal cavity (B) Ulcerated surface epithelium with underlying stromal cells showing marked nuclear atypia (H&E, $\times 50$) (C) Edematous subepithelial stroma containing numerous irregular, thin-walled vascular channels (H&E, $\times 100$) (D) Mixed inflammatory infiltrate composed of eosinophils, lymphocytes, plasma cells, and neutrophils (H&E, $\times 200$)

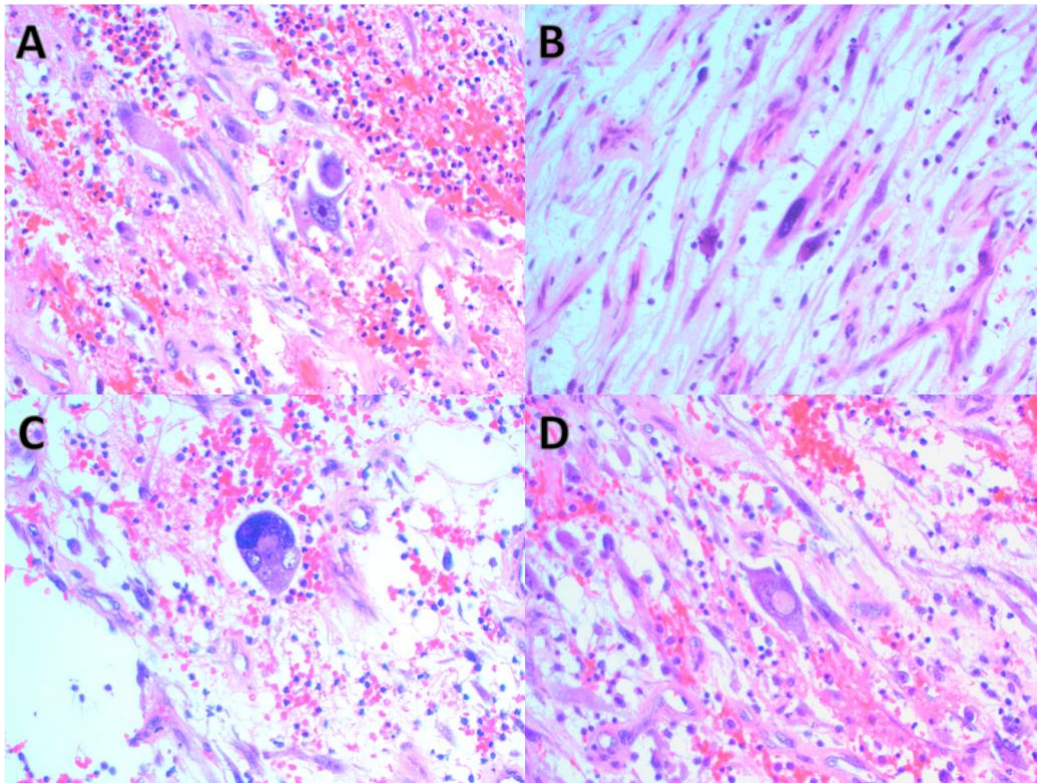


Figure 2. (A) Stromal cells with markedly pleomorphic, polygonal nuclei (H&E, $\times 400$) (B) Spindle-shaped stromal cells exhibiting nuclear atypia (H&E, $\times 400$) (C) Multinucleated giant cells within the stroma (H&E, $\times 400$) (D) Stromal cell showing an intranuclear pseudoinclusion (H&E, $\times 400$).

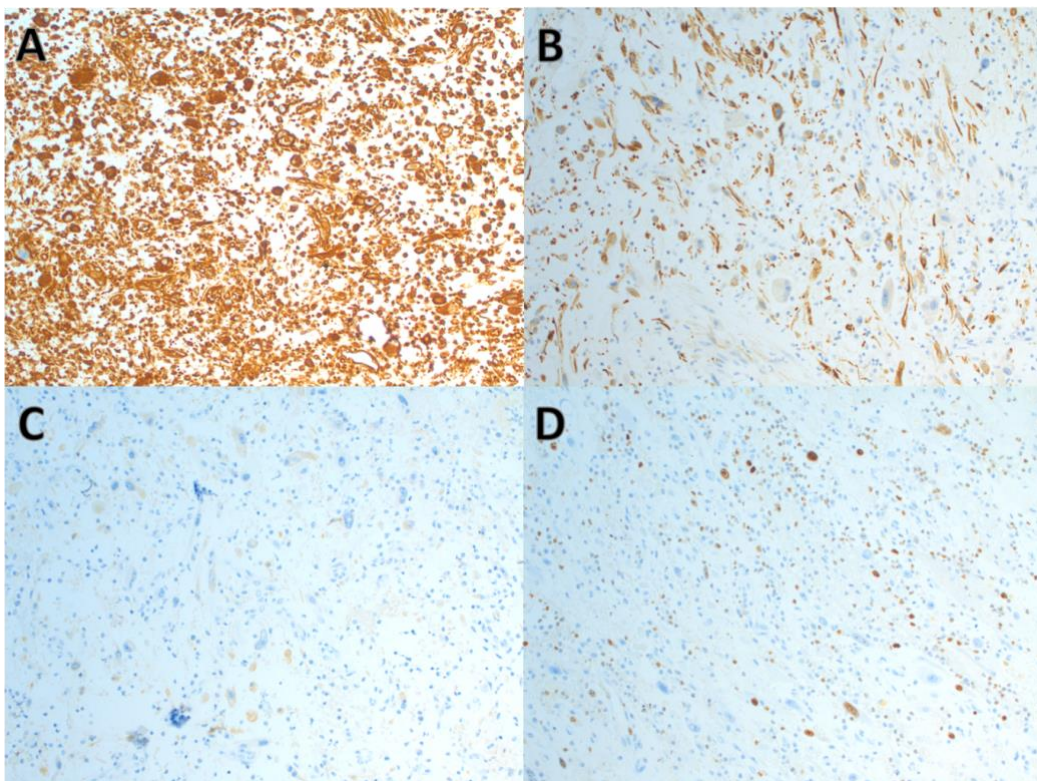


Figure 3. Immunohistochemical findings of bizarre stromal cells: (A) Positive staining for vimentin. (B) Focal positivity for pancytokeratin (PanCK) (C) Positive staining for desmin (D) Low proliferative activity demonstrated by Ki-67

DISCUSSION

The presence of markedly atypical or bizarre stromal cells in sinonasal polyps represents a rare but well-recognized reactive phenomenon that may closely mimic malignancy, particularly in limited or fragmented biopsy specimens. These changes are most often associated with prior trauma, ulceration, ischemia, or repeated surgical interventions, all of which may induce reactive alterations in stromal fibroblasts or myofibroblasts [5-9]. In the present case, the history of prior surgeries likely contributed to the development of these striking cytologic features.

Histologically, bizarre stromal cells are characterized by marked nuclear pleomorphism, hyperchromasia or vesicular chromatin, prominent nucleoli, and occasional multinucleation. Rhabdoid-like morphology and intranuclear pseudoinclusions, as observed in our case, may further heighten concern for malignancy. However, these atypical cells are typically distributed within a background of edematous stroma, prominent vascular proliferation, and mixed inflammatory infiltrate, supporting a reactive rather than neoplastic process. Importantly, mitotic figures and atypical mitoses are absent.

The main diagnostic challenge lies in distinguishing this entity from malignant neoplasms of the sinonasal tract. The differential diagnosis includes spindle cell (sarcomatoid) carcinoma, rhabdomyosarcoma, and inflammatory myofibroblastic tumor. Spindle cell carcinoma generally demonstrates diffuse cytokeratin expression, increased proliferative activity, and an associated epithelial component. Rhabdomyosarcoma shows skeletal muscle differentiation with expression of myogenic markers such as myogenin and MyoD1, along with frequent mitoses. Inflammatory myofibroblastic tumor typically exhibits a more cellular architecture and may show ALK expression [5-9].

In contrast, the atypical stromal cells in nasal polyps show immunoreactivity for vimentin and desmin, while cytokeratin staining, if present, is usually focal. A low Ki-67 proliferation index and absence of mitotic activity strongly support a benign reactive process. Careful integration of morphologic, immunohistochemical, and clinical findings is essential for accurate diagnosis.

From a clinical standpoint, correct recognition of this entity is critical to avoid overtreatment. Misinterpretation as malignancy may lead to unnecessary aggressive interventions. In contrast, simple excision is sufficient, and prognosis is excellent. The absence of recurrence at 5 years in our case supports the benign nature of this lesion.

In summary, bizarre stromal cells in sinonasal polyps represent a benign reactive change that can closely simulate malignancy. Awareness of this entity is particularly important in small biopsy samples to prevent overdiagnosis and inappropriate management.

Conflict of interest: None.

Funding: This study was not supported by any funding.

Ethics declarations: The article was conducted in accordance with ethical rules. Consent was obtained from the patient. Written informed consent was obtained for publication of this case report and the accompanying images.

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