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Nasolabial Cyst Associated with Anterior Maxillary Bone Remodeling: An Unusual Presentation and Literature Overview

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Abstract **Case Report**

Nasolabial cyst is a rare, non-odontogenic soft tissue cyst located in the nasolabial fold and typically affects middle-aged women, usually without causing bone changes on imaging. We report an unusual case of a 52-year-old hypertensive male who presented with a swelling adjacent to teeth 21 and 22. Clinical examination revealed a firm, painless mass in the left nasolabial fold. Panoramic radiography and cone-beam computed tomography showed no osteolytic lesion; however, a significant depression of the anterior maxillary bone was identified, representing an atypical presentation for this cystic lesion. The mass was surgically excised through a sublabial approach, and histopathological analysis confirmed the diagnosis of a nasolabial cyst. Postoperative follow-up at 12 months demonstrated complete healing and no recurrence. This case highlights that nasolabial cysts, although generally confined to soft tissues, may exceptionally induce pressure-related remodeling of the maxillary bone. Recognizing this variant is important to avoid misdiagnosis and to guide appropriate treatment planning, particularly when imaging findings mimic osseous pathology. This report contributes to the limited literature describing bone involvement associated with nasolabial cysts and emphasizes the need for clinicians to consider this entity when evaluating anterior maxillary swellings.

Keywords: Nasolabial cyst, non-odontogenic cyst, CBCT, bone depression, surgical excision.

INTRODUCTION

Nasolabial cyst is a rare, non-odontogenic soft tissue cyst located in the nasolabial fold and typically diagnosed in adults during the fourth and fifth decades of life, with a marked female predominance and a greater tendency for left-sided involvement [1], [3]. Although bilateral cases have been reported, they remain uncommon. The origin of this lesion is still debated, and three main theories have been proposed: persistence of epithelial remnants from the nasolacrimal duct, entrapment of epithelial cells during the fusion of the maxillary, medial, and lateral nasal processes, or invagination of the nasal mucosa [1], [4]. Clinically, patients generally present with a swelling in the nasolabial region leading to elevation of the nasal ala and obliteration of the nasolabial sulcus, while larger cysts may cause nasal obstruction or facial asymmetry. Intraorally, the lesion often manifests as a smooth, fluctuant or firm submucosal mass in the upper labial vestibule. Radiographically, nasolabial cysts are usually extraosseous and therefore remain invisible on panoramic radiographs or Cone Beam Computed Tomography (CBCT) [5]. However, in rare situations, long-standing or voluminous cysts may exert pressure on adjacent maxillary structures, resulting in cortical thinning or a concave remodeling of the bone, representing a secondary mechanical effect rather than a typical radiological feature [6]. Given the scarcity of such presentations, diagnostic confusion with odontogenic or intraosseous pathologies may arise. The present article reports an unusual case of nasolabial cyst associated with a significant depression of the anterior maxillary bone, emphasizing the diagnostic challenges and providing an updated overview of the current literature regarding its clinical features, classification, imaging characteristics, and management.

CASE REPORT

A 52-year-old male, with a history of hypertension well controlled under medical treatment, presented with a gradually enlarging, painless swelling in the anterior maxillary region, located in relation to

teeth 21 and 22. The lesion had been evolving slowly over several months, with no history of trauma, infection, or prior surgical intervention. Extraoral examination revealed a firm, well-defined mass in the left nasolabial fold, producing the elevation the ipsilateral nasal ala and distortion of the upper lip contour.

Intraorally, a smooth, fluctuant, dome-shaped submucosal swelling was observed in the left anterior labial vestibule, extending from the region of tooth 21 to tooth 22. The overlying mucosa appeared intact and of normal colour. No tenderness was elicited on palpation, and the involved teeth were vital.

Panoramic radiography **(Figure 1)** and CBCT **(Figure 2)** demonstrated no evidence of osteolytic lesion, root resorption or cortical perforation. However, an unusual and well-defined marked depression of the anterior maxillary bone beneath the nasal floor was evident, consistent with a pressure-induced remodeling effect. Based on the clinical and radiological findings, a provisional diagnosis of a nasolabial cyst was established.

Figure 1: Panoramic radiograph showing a localized area of bone rarefaction in the anterior maxilla, in relation to teeth 21 and 22

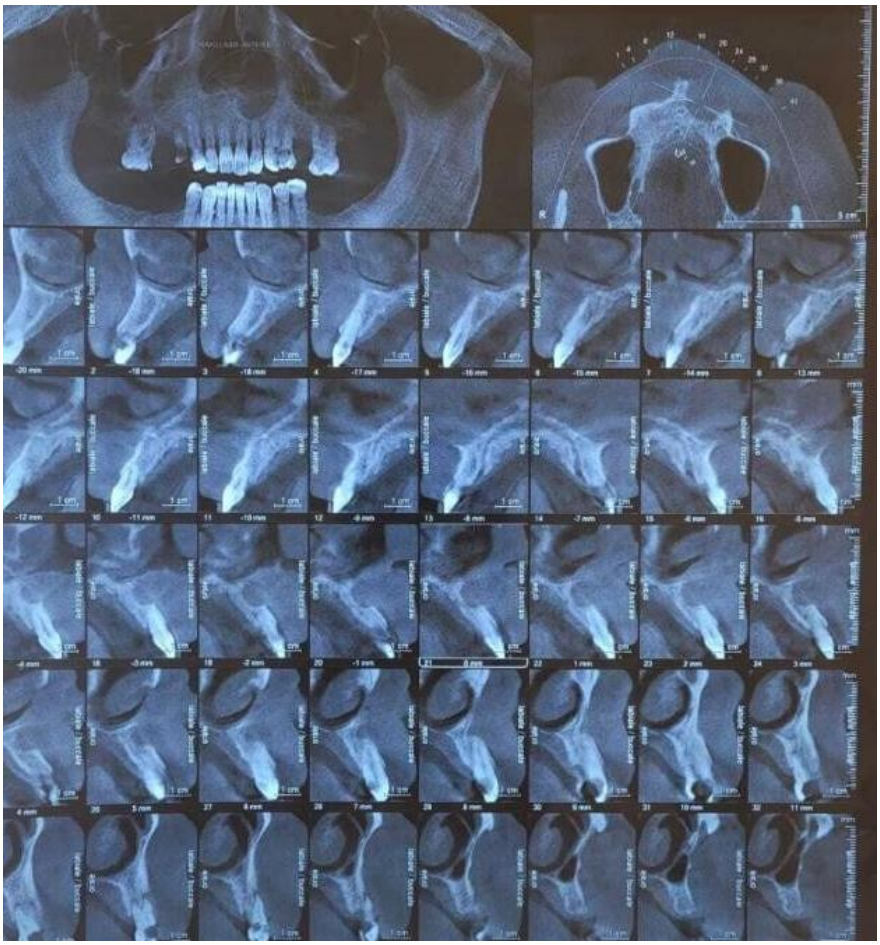

Figure 2: CBCT cross-sectional images demonstrating a well-circumscribed radiolucent lesion in the anterior maxilla, adjacent to teeth 21 and 22 producing a marked cortical depression

The lesion was surgically excised through a sublabial approach under local anesthesia **(Figure 3)**. Intraoperatively, a well-encapsulated cystic mass was identified and carefully dissected from the surrounding soft. The cystic capsule was removed intact **(Figure 4)**. The specimen was submitted for histopathological examination, which revealed a lining of pseudostratified columnar epithelium with goblet cells, confirming the diagnosis of a nasolabial cyst.

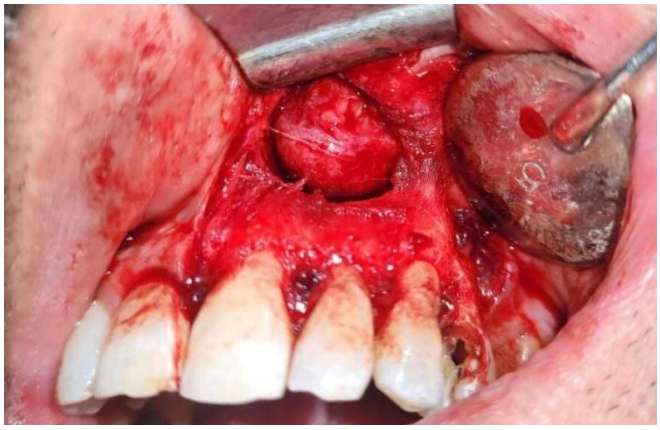

Figure 3: Intraoperative photograph showing the exposure of a nasoalveolar cyst in the anterior maxilla, located in relation to teeth 21 and 22, after mucoperiosteal flap elevation

Figure 4: Excised specimen of the nasoalveolar cyst after complete surgical enucleation, showing a well-encapsulated lesion suitable for histopathological examination

The postoperative course was uneventful, and at 12-month follow-up, complete healing was observed without recurrence. **(Figure 5)**

Figure 5: Postoperative intraoral view at 15 days, after suture removal, showing favourable healing of the surgical site in the anterior maxilla (teeth 21 and 22) region

DISCUSSION

Nasolabial cyst associated with anterior maxillary bone remodeling: an unusual presentation and literature overview

Pathogenesis and histopathology

Histologically, nasolabial cysts are lined by pseudostratified columnar epithelium with goblet cells and ciliated cells, resembling respiratory epithelium [1], [7]. Some cysts may also show squamous metaplasia, particularly in cases of chronic inflammation. These findings support the theory of origin from the nasolacrimal duct epithelium [4].

Radiological aspects and bone involvement

Most nasolabial cysts are not visible on conventional panoramic radiographs due to their extraosseous location [5]. Cross-sectional imaging, such as Computed Tomography or CBCT, is therefore essential to determine their size, extension, and potential effects on adjacent structures. In our case, imaging revealed a pronounced depression of the anterior maxillary bone beneath the nasal floor, consistent with long-standing pressure remodeling. Although a few similar cases have been reported [6], [8], such osseous changes remain exceptional.

Differential diagnosis

The clinical and radiological appearance of a nasolabial cyst can overlap with several other entities, necessitating careful evaluation. The main differential diagnoses include:

- Odontogenic cysts (radicular cyst, dentigerous cyst, odontogenic keratocyst),
- Non-odontogenic developmental cysts (nasopalatine duct cyst, dermoid cyst),
- Benign soft-tissue lesions (lipoma, mucocele, minor salivary gland tumors).

Accurate diagnosis requires correlation of clinical findings, imaging, and histopathological confirmation.

Treatment

Traditionally, sublabial surgical excision is the treatment of choice, offering direct access and complete removal of the cyst capsule with low recurrence rates [4], [5]. However, potential drawbacks include postoperative swelling, hematoma, and scarring.

In recent years, trans nasal endoscopic marsupialization has been introduced as a minimally invasive alternative [6], [9]. It is associated with reduced morbidity, shorter operative time, and faster recovery. Nonetheless, long-term outcomes and recurrence rates are not yet fully established, and most authors continue to regard complete surgical excision as the gold standard [5], [9].

Classification issues (WHO 2017 vs 2022)

According to the 2017 WHO Classification of Head and Neck Tumours, jaw cysts were divided into odontogenic inflammatory and odontogenic/non-odontogenic developmental cysts, including radicular cyst, dentigerous cyst, odontogenic keratocyst, calcifying odontogenic cyst, and nasopalatine duct cyst [10]. In the 2022 5th WHO edition, jaw cysts were listed broadly without this subdivision, and the surgical ciliated cyst was newly recognized [11]. Importantly, the nasolabial cyst was excluded from both editions, since it is an extraosseous lesion of the soft tissues rather than a true jaw cyst. This exclusion emphasizes the necessity for clinicians to remain vigilant in diagnosing such lesions, despite their absence from official classifications.

Clinical relevance of our case

Our case demonstrates that, while nasolabial cysts are generally benign and straightforward in their clinical course and management, they may occasionally present with unusual radiological features such as bone depression. Awareness of this rare presentation is essential to avoid misdiagnosis and to ensure the need to consider nasolabial cyst in the differential diagnosis of anterior maxillary swellings, even when osseous involvement is present.

CONCLUSION

Nasolabial cysts are uncommon benign lesions of the nasolabial fold and are typically confined to soft tissues without osseous involvement. This case illustrates that, although rare, long-standing or enlarging cysts may induce pressure-related remodeling of the anterior maxillary bone, potentially complicating the diagnostic process by mimicking intraosseous pathology. Awareness of this variant is essential for accurate assessment and appropriate management of anterior maxillary swellings. Complete surgical excision via the sublabial approach remains the gold standard, while endoscopic transnasal marsupialization represents a promising minimally invasive alternative. Further documentation of similar cases is needed to better understand the spectrum of radiological presentations and to refine therapeutic decision-making.

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