CASE REPORT

Nasoalveolar cyst: an enigma for the dentist

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SUMMARY

A nasoalveolar cyst is a rare, non-odontogenic soft tissue cyst encountered in the anterior maxillary labial sulcus as an asymptomatic soft tissue swelling. Often, patients with these cysts report them to the dental clinic where they are mistaken for odontogenic lesions by the dental surgeon, especially if concomitant dental problems are present. They cannot be detected by routine conventional dental radiography as they are peripheral, lying within the mucosa thereby posing a diagnostic challenge. We document a case of a 47-year-old woman with a nasoalveolar cyst.

BACKGROUND

A nasoalveolar cyst (NC), or nasolabial cyst, which it is commonly known as, represents only about 0.7% of all cysts in the maxillofacial region, that is, about 2.5% of all non-odontogenic cysts.¹ Whenever a fluctuating mass is felt in the nasal alar region, a NC should be suspected. Often, the lesion is excised without radiographic evidence and later histopathological evaluation reveals the cyst. The present case highlights the use of radiopaque contrast media in conventional dental radiography for the diagnosis of soft tissue lesions even in the absence of multiplanar imaging modalities.

CASE PRESENTATION

A 47-year-old woman presented to the dental hospital with a 3-month complaint of swelling in the right side of the nose. History revealed that the swelling was gradually increasing in size. There was no pain or tenderness associated with the swelling. Medical, dental, surgical, personal and family history were non-contributory.

On clinical examination, a diffuse swelling was seen on the right side of the ala of the nose (figure 1), obliterating the nasolabial sulcus; it was soft, fluctuant and non-tender on palpation. Intraorally, a well-circumscribed ovoid swelling was present in the labiobuccal sulcus in relation to 13-11 region obliterating the sulcus. The swelling was soft, fluctuant and freely movable under the mucosa, and non-tender on palpation (figure 2). Extensive abrasion was seen in 11, 21.

On the basis of history and clinical findings a provisional diagnosis of periapical cyst was performed.

INVESTIGATIONS

- Electric pulp test was performed on maxillary teeth, which revealed all teeth to be vital.
- Fine-needle aspiration cytology was done and the aspirate revealed a straw coloured fluid.

Figure 1 Diffuse swelling on the right of the face with elevation of the right ala of the nose.

- Periapical radiograph, maxillary cross-sectional occlusal radiograph (figure 3) and panoramic radiograph (figure 4) revealed slight erosion of the nasal floor.
- Cystography was performed by injecting iodinated contrast media into the swelling, and maxillary cross-sectional occlusal radiograph revealed a well-defined ovoid uniformly radiopaque mass in the periapical region of 11–13

Figure 2 Swelling in right gingiva-buccal sulcus in relation to 13-11 obliterating the buccal sulcus.

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Figure 3 Maxillary cross-sectional occlusal radiograph showing no bony abnormality.

superimposing on the roots and crowns of 14, 15 with mild erosion of the nasal floor (figure 5).

- ▶ Panoramic radiograph after cystography revealed a well-defined ovoid uniformly radiopaque mass in the periapical region of 11–13 (figure 6).
- ▶ CT of the maxilla revealed a well-defined hyperdense lesion located anterior to the right maxilla measuring 2.4×2.3 cm with no evidence of bone erosion (figure 7).
- ▶ Excisional biopsy was performed (figure 8) and the specimen (figure 9) was subjected to histopathological examination, which revealed cystic lining consisting of pseudostratified columnar epithelium of variable thickness (figure 10). Presence of inflammatory cell infiltrate, predominantly neutrophils, within the cystic lumen was seen. The underlying dense connective tissue wall showed clusters of chronic inflammatory cell infiltrate and seromucous acini (figure 11), ducts and moderate vascularity (figure 12). The surface epithelium was parakeratinised stratified squamous epithelium of variable thickness.

The lesion was diagnosed as a NC correlating with the clinical, cystographic and histopathological features.

DIFFERENTIAL DIAGNOSIS

- ▶ Periapical cyst
- ▶ Lipoma
- ▶ Salivary gland neoplasm
- ▶ Epidermoid cyst

Figure 4 Panoramic radiograph showing no bony abnormality.

Figure 5 Maxillary cross-sectional occlusal radiograph with contrast reveals well-defined ovoid radiopacity 2 cm in greatest diameter superimposed on the crowns of 1514 and roots of 13-11.

- ▶ Sebaceous cyst
- ▶ Furuncle

TREATMENT

The cyst was surgically enucleated completely with the lining under conscious sedation.

OUTCOME AND FOLLOW-UP

The bony defect healed without any complication when the patient was followed up after 3 months and there was no recurrence.

DISCUSSION

The oral and maxillofacial region presents with a bewildering variety of cystic lesions that may either be odontogenic or non-odontogenic. NCs are rare non-odontogenic developmental cysts arising from the maxilla. They were first described by Zukerkandl in 1882 and initially thought to be retention cysts. They are also known by other names: nasolabial cysts, nasal vestibular cysts, nasal wing cysts and Klestadt's cysts. Over the years different theories have been proposed for the pathogenesis of these cysts, however, currently the most accepted theory is that they arise from the epithelium of the nasolacrimal duct.²

NCs occur in adults especially in the fourth and fifth decades of life. They have a definite female gender predilection, with a male to female ratio of 1:3. About 10% of NCs occur bilaterally. They generally present as facial swellings or asymmetry, for

Figure 6 Panoramic radiograph showing dome-shaped well-defined radiopacity superimposed on the roots of 13-11.

Figure 7 Axial CT scan of maxilla showing a well-defined ovoid hypodense lesion in the right anterior maxillary soft tissues without any bone erosion.

example, elevation of the ala of the nose, inferior turbinate or upper lip, with obliteration of the nasolabial fold.³ The cyst is painless unless secondarily infected. Sometimes the cyst wall ruptures spontaneously and drains into the oral or nasal cavity via a fistula.

NCs are undetected by routine dental radiography because they are present entirely in the soft tissues. However, large expansile lesions can cause maxillary bone erosion that can be detected on a radiograph. Hence the way to detect the cyst in a dental set-up cost effectively and conveniently is by injecting radiopaque contrast media in the cystic cavity after aspirating the cystic fluid so that the exact extent and size of the lesion is imaged. This procedure is known as Cystography. Care must be taken to inject the same volume of contrast media as the amount of cystic fluid aspirated to prevent rupture of the cyst.⁴ CT or MRI are useful in delineating the margins of a NC as they provide images of the soft tissues.

CT provides effective contrast resolution with good soft tissue definition and is more cost-effective than MRI. A well-defined hyperdense lesion is usually seen lateral to the pyriform aperture without any bony erosion.⁵ MRI have better soft tissue resolution compared to CT. It has been reported in the literature that hypointense to isointense T1-weighted images and

Figure 9 Excised cystic specimen.

hyperintense T2-weighted images are obtained in cases of NC.⁶ However, Kato *et al*⁷ reported the intensity in MRI of NC depends on the viscosity of the cystic contents.

Ultrasonography (USG) is a cost-effective non-invasive imaging modality that can be used in the diagnosis of soft tissue lesions such as NCs. Akinbami *et al*⁸ reported that USG is valuable for differentiating between cysts, tumours, haemangioma and soft tissue swellings in the cervicofacial region. Specific sonographic and Doppler patterns aid in establishing the anatomic origin, the local extension and the correct diagnosis in indeterminate cases, obviating other diagnostic imaging in soft tissue swellings of the anterior nasal fossa.⁹

The occurrence of NC in a consistent location of the maxillary soft tissues, undetected by plain radiographs, is not pathognomonic and hence numerous lesions can be considered in the differential diagnosis. Mucous retention cysts, salivary gland neoplasms, periapical granulomas or cysts, globulomaxillary cysts, other odontogenic cysts or tumours may also be considered.³

Definitive diagnosis of NC is established by histopathological and clinical correlation. Usually, the cystic cavity is lined by pseudostratified columnar epithelium with areas of stratified epithelium and goblet cells or cilia suggestive of the cysts origin from the nasolacrimal duct.⁴

The most accepted treatment option is surgical enucleation, but needle aspiration, cauterisation, injection of sclerosing

Figure 8 Intraoperative photograph after enucleation of the cystic contents showing the cystic cavity.

Figure 10 H&E section showing cystic lining consisting of pseudo-stratified columnar epithelium (original magnification 10×).

Figure 11 H&E section showing cystic lining of pseudo-stratified columnar epithelium with numerous inflammatory cells in the cystic lumen (original magnification ×40).

Figure 12 H&E section showing connective tissue wall with clusters of chronic inflammatory cell infiltrate and seromucous acini, ducts and moderate vascularity (original magnification ×40).

agents, marsupialisation, and incision and drainage are also used. Endoscopic marsupialisation was tried by Su *et al*¹⁰ as a novel mode of treating NCs and, recently, complete excision

using a transnasal approach through endoscopy was performed successfully¹¹

Learning points

- ▶ A nasoalveolar, or nasolabial, cyst is a rare non-odontogenic cystic lesion of the maxillary soft tissues.
- ▶ It is most likely to be reported to a dental surgeon as an anterior maxillary swelling.
- ▶ It cannot be normally detected by conventional dental radiography.
- ▶ Complete enucleation is usually curative.

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