CASE REPORT

Nasopalatine duct cyst: A case report

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Abstract

Incisive canal cyst or nasopalatine duct cysts (NPDCs) are the most common non-odontogenic and developmental cysts of the maxilla. These developmental NPDC are usually asymptomatic and are discovered during routine radiological examination done for some other diagnosis. A cone-beam computed tomography (CBCT) is a valuable tool to localize a cyst within the nasopalatine canal. CBCT enables analysis of the dimension of the NPDC, analysis of the involvement of neighboring anatomical structures and assists in treatment planning. Histopathology shows non-keratinized epithelium with pseudo stratification, ciliation with neuro-vascular bundle in the capsular wall. Surgical approach with enucleation of the cyst is the mainstay in the treatment of NPDC. Since these lesions show diagnostic dilemma in clinical and radiological study, a definitive diagnosis is made by histopathology. Here we report a case of 27-year-old male patient with NPDC along with brief literature review.

Keywords

Anterior maxilla, nasopalatine duct cyst, non-odontogenic, trauma

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Introduction

Various synonyms were used previously in the literature for nasopalatine duct cysts (NPDC) as cystis canalis nasopalatini, cystis canalis incisive. It is the most common non-odontogenic cyst occurring in the oral cavity. Most common site will be anterior palate in the midline around the incisive foramen from debris of nasopalatine duct’s epithelium. It was first described by Meyer in 1914, in the past, known as the fissured cyst, now according to the World Health Organization classification it is defined as a non-odontogenic, developmental, epithelial cyst of the maxilla. In most of the cases, it develops in the midline of the palate near the incisive foramen.¹ During fetal development, the duct gradually narrows until one or two central clefts are finally formed on the midline of the upper maxilla. The nasopalatine neurovascular bundle is located within the duct, and emerges from its intrabony trajectory through the nasopalatine foramen.²

Etiology is still debatable, as some say it may arise from a vestigial organ (nasal-vomer Jacobson organ) present in some inferior mammals. Various triggering factors for cyst development are infection (38%), trauma (16%), minor salivary mucus retention, inflammatory stimulus. It results in the abnormal growth of the remnant cells which is derived from the fusion of the primary palate of the first branchial arch. It is a developmental cyst.³ The case report here was in a dilemma whether it was a residual cyst or incisive canal cyst. Many NPDC were diagnosed during routine periapical or occlusal radiographs.⁴ The definitive diagnosis of the cyst should be based on clinical, radiologic and histopathologic findings. Hence, we report a case of NPDC in the male patient, along with a review of the literature.

Case Report

A 27-years-old male patient reported in the department with the chief complaint of swelling in the upper front tooth region since 3 months. Pain was insidious in onset with swelling gradually increased to the present size. Patient gave the history of trauma with extraction of his upper front tooth 3 months back. Extraorally there was no abnormality, and no lymphadenopathy detected.

Intraoral examination revealed swelling in the incisive papilla region. Swelling measured 1.5 cm × 1.5 cm in the midline of the hard palate and extended posteriorly to the mesial aspect of the upper canine. Cone-beam computed tomography (CBCT) of the maxilla was advised. Axial, sagittal and coronal sections were obtained; lateral sections along the arch and buccolingual sections were made and assessed to make the following report:
CBCT of maxilla showed missing 11, 21 and a radiolucent lesion in anterior maxilla. A well-defined unilocular radiolucent lesion was seen in the anterior maxilla in 11 and 21 region [Figure 1]. The lesion extended from the incisive canal opening to the floor of the nasal fossa superoinferiorly, from labial to palatal cortical plate labiopalatally and from 12 to 22 regions [Figure 2]. The lesion was roughly oval in shape, measures about 13 mm mesiodistally, 13 mm supero-inferiorly, 12 mm laterally. The lesion was bordered by very thin sclerotic margin except for few areas. The lesion was uniformly radiolucent within, had caused expansion, thinning and perforation of labial cortical plate in particular, it also caused perforation of the floor of the nasal fossa.

On the basis of clinical and radiographic evidence, provisional diagnosis of NPDC was made. All preliminary investigations were done, and the results were within normal range. Cyst enucleation was done under general anesthesia [Figures 3 and 4], and specimen was sent for histopathological examination for the confirmation of provisional diagnosis.

Microscopic examination revealed non-keratinized stratified squamous epithelium of with moderate inflammatory infiltrate in the connective tissue wall with few areas of pseudostratified epithelium. Capsular wall shows endothelial lined capillaries, muscular arteries, nerve fiber bundles/neurovascular bundles are seen in the connective tissue wall with areas of hemorrhage, and peripheral vital bone is seen [Figures 5 and 6]. The histopathologic feature in conjunction with the site of the lesion suggested NPDC in the anterior maxilla.

**Discussion**

Usually it is difficult to distinguish normal incisive canal and foramen from small NPDC which is associated with vital tooth. It is more difficult when it is associated with non-vital tooth to differentiate from radicular cyst and existing NPDC. In accordance with the literature, the radiolucency in the incisive canal region measuring <0.6 cm in diameter should not be considered as a cyst in the absence of other symptoms.\(^5\)

The exact etiology of NPDC is of uncertain origin, but trauma, bacterial infections, or mucous retention has shown its role in etiology. NPDC shows the peak incidence between the fourth and the sixth decades of life. NPDC is the most common non-odontogenic cyst of the jaw bones, representing up to 1% of all maxillary cysts. Etiology of the present case is unknown.
with no history of trauma or infection. NPDC shows high male predilection which is synchronizing with our case. It mainly manifest during fourth to sixth decades of life, but our patient was in the third decade of his life which is rare.\(^6\)

NPDCs originated from the trapping of epithelium during fusion of the embryological processes. NPDC is now thought to be develop from the epithelial remnants of the nasopalatine ducts present within the incisive canals.\(^7\)

The lesion usually detected on routine radiographs with no clinical symptoms, however many will present with one or more symptoms. Complaints are often found to be associated with an infection as swelling, drainage and pain in the region.\(^6\) Our patient was presented with the swelling on the anterior palate in the midline without pain or drainage.

The mean size of the NPDC varies from 6 to 17 mm,\(^9\) whereas our case showed a swelling that is 1.5 mm × 1.5 mm. It is easy to approach definitive diagnosis of a nasopalatine cyst by plain film, but computed tomography, and magnetic resonance imaging are being used to differentiate this entity from other lesions.\(^1\)

Radiographically, NPDC are well-circumscribed radiolucency which is round, ovoid or heart-shaped in the anterior maxilla.\(^9\) The radiographic diameter of our case was 13 mm × 13 mm.

The differential diagnosis should concern the supernumerary tooth appearing in this area the mesiodens in the follicular cyst and also it should concern the primary cyst, the giant-cell granuloma, the ostitis with the palatal fistula and also nasopalatine and palatal-sinus connections.\(^2\)

Histologically, the type of cystic epithelium varies according to the location involved. A squamous cell epithelium is always observed with occasional ciliary respiratory epithelium when the lesion is located higher up or nasally. Few cases show both squamous cell epithelium and ciliary respiratory epithelium as seen in the present case suggesting its palatal and nasal origin.\(^7\)

Surgical enucleation was usually considered as the main mode of treatment. The present case showed typical clinical, radiographical, and histopathological features of an NPDC.

**Conclusion**

NPDC can occur in approximately 1% of the population with a peak incidence between fourth and sixth decades. The lesions may be asymptomatic, but it may manifest with few symptoms as swelling, pain, and drainage from the anterior hard palate. It shows a well-circumscribed radiolucency in the anterior midline palate on radiograph. CBCT easily visualizes the radio-transparency on the midline, with well-defined sclerotic margins, and informs of the exact location of the lesion. In addition, it facilitates planning of the best surgical approach.

**References**


