Nasopalatine duct cyst (npdcs) case study

Abstract

Incisive canal cyst or Nasopalatine duct cysts (NPDCs) are the most common non-odontogenic 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 pseudostratification, ciliation with neuro-vascular bundle in the capsular wall. Surgical approach with enucleation of the cyst is the treatment of choice. Since these lesions show diagnostic dilemma in clinical and radiological study, the definitive diagnosis is made by histopathology. Our case report shows nasopalatine duct cyst in a 27 year old male patient along with brief literature review.

Keywords: Nasopalatine duct cyst, Non-odontogenic , Trauma, Anterior maxilla.

INTRODUCTION

Various synonyms were used previously in the literature for NPDC as cystis canalis nasopalatini, cystis canalis incisive, is the most common non-odontogenic cyst occurring in the oral cavity. Most common site will be midline palate 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 WHO classification it is defined as a non-odontogenic, developmental, epithelial cyst of maxilla. In most of

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 resulting in the abnormal growth of the remnant cells, derived from the fusion of the primary palatal 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 nasopalatine duct cyst were diagnosed during routine periapical or occlusal radiographs. [4] The definite diagnosis of the cyst should be basedon clinical, radiological and histopathologic findings. Hence, we report a case of nasopalatine duct cyst in a 33year old male patient, along with a review of 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 a swelling in the incisive papilla region. Swelling was measuring 1. 5 cm x 1. 5 cm in the midline of the hard palate and extended posteriorly to the mesial aspect of upper canine. 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 anteriormaxilla. A well-defined unilocular radiolucent lesion seen in the anterior maxilla in11, 21, region.(Fig 1). The lesion extends from the incisive canal opening to the floor of nasal fossa superoinferiorly, from labial to palatal cortical plate labiopalatally and from 12 to 22 regions. (Fig 2) The lesion is roughly oval in shape, measures about 13 mms mesiodistally, 13 mms supero-inferiorly, 12 mms laterally. The lesion is bordered by very thin sclerotic margin except for few areas. The lesion is uniformly radiolucent within, has caused expansion, thinning and perforation of labial cortical plate in particular, also caused perforation of the floor of nasal fossa.

On the basis of clinical and radiographic evidence of incisive canal cyst was made. It was decided to enucleate the cyst under general anesthesia. Prior to surgery all preliminary investigations were done and results were within normal range. Cyst was enucleated (Fig 3, 4) and specimen was sent for histopathological examination for the confirmation of provisional diagnosis.

Microscopic examination revealed non keratinized stratified squamous epithelium of variable thickness 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.(Fig 5, 6) These histological features, in conjunction with the site of the lesion, suggested incisive canal cyst.

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. Some clinicians follow the thumb rule that radiolucency of the incisive canal measuring less than 0. 6 cm in diameter should not be considered cystic in the absence of other symptoms. [5]

The exact etiology of NPDC is of uncertain origin but idiopathic or secondary to trauma, bacterial infections, or mucous retention has been shown with peak incidence between the fifth and the sixth decades of life. NPDC is the most common non-odontogenic cyst of the gnathic bones, representing up to 1% of all maxillary cysts. Etiology of present case is idiopathic with no history of trauma or infections. NPDC has high predilection for male which is synchronizing with our case. NPDC mainly manifest during fourth to sixth decades of life, but our patient was 27 years old and very few cases have been reported in the third decade of life. [6]

As far as pathogenesis concerned, it was previously thought that the NPDCs originated from the trapping of epithelium during fusion of the embryological processes. This concept has been discarded, and currently NPDC is thought

to develop from the epithelial remnants of the nasopalatine ducts present within the incisive canals (canals of Stenson). [7]

Patients may be asymptomatic, with the lesion being detected on routine radiographs, however many will present with one or more symptoms. Complaints are often found to be associated with an infection of a previously asymptomatic nasopalatine duct cysts and consist primarily of swelling, drainage and pain. [8] Our patient was presented with swelling on the midline of the palate without pain or drainage.

The mean size of the NPDC variesfrom 6 to 17 mm, [9] whereas our case showed a swelling that is 1. 5 × 1. 5mm. Even though definitive diagnosis of a nasopalatine cyst is more easily made on plain film so the advanced imaging modalities such as computed tomography and magnetic resonance imaging are being used to differentiate this entity from other lesions. [5]

Radiographically, NPDC are wellâ€‘ circumscribed round, ovoid or heart-shaped radiolucency in the anterior maxilla. [10] The radiographic diameter of our case was 13 × 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 naso-palatine and palatal-sinus connections. [2]

Histologically, the type of cystic epithelium varies according to the location involved (palatine, nasal, or intermediate). A squamous cell epithelium is

almost always observed, although ciliary respiratory epithelium can be seen when the lesion is located higher up or nasally. Some cases rarely show the combination of squamous cell epithelium with ciliary respiratory epithelium as seen in the present case suggesting intermediate to palatal and nasal epithelial origin. [7]

Surgical enucleation was considered as the choice of treatment. The present case had typical clinical, radiographic, and histopathological features of a nasopalatine duct cyst.

CONCLUSION

Nasopalatine duct cysts occur in approximately 1% of the population with mean age of 42. 5 years. The lesions may be asymptomatic or may manifest as swelling, pain, and drainage from the hard palate. A well-circumscribed, round, ovoid or heart-shaped radiolucency is seen on radiograph. Cone-beam computed tomography 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.