International Journal of Dental Sciences and Research, 2015, Vol. 3, No. 3, 52-55
Available online at http://pubs.sciepub.com/ijdsr/3/3/3

DOI:10.12691/ijdsr-3-3-3

Nasopalatine Duct cyst: A Clinical Deception

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Received March 20, 2015; Revised March 29, 2015; Accepted April 07, 2015

Abstract The nasopalatine cyst is the most frequently occurring developmental, non- odontogenic epithelial cyst of the oral cavity that usually occurs in the maxilla. These cysts are usually asymptomatic unless they are secondarily infected. Symptomatic lesions can be associated with pain and swelling. Radiographically, it appears as a well-defined oval, round or Heart shaped radiolucency located in the midline of maxilla. The treatment of choice is complete enucleation of cyst with its lining. Histopathology shows a mixture of stratified non-Keratinized with pseudostratifiedepithelium. Here we report a rare case of Nasopalatine cyst in a 30 year old female patient found incidentally on routine clinical examination.

Keywords: *Nasopalatine duct cyst, Heart-shaped, Non-odontogenic, Maxilla, Pseudostratifiedepithelium, Epithelial remnants, Enucleation*

Cite This Article: Karthikeya Patil, Mahima V G, and S Shreenivas, "Nasopalatine Duct cyst: A Clinical Deception." *International Journal of Dental Sciences and Research*, vol. 3, no. 3 (2015): 52-55. doi: 10.12691/ijdsr-3-3-3.

1. Introduction

The nasopalatine cyst is the most frequently occurring developmental cyst accounting for about 0.8% to 33% of the nonodontogenic epithelial cysts occuring inoral cavity. [1,2,3,4] Incidence of Nasopalatineduct cyst is rare and occurs in 1% of the population [3].

This entity was first described by Meyer in 1914 who suggested that it arises as a result of an inflammatory process resulting in the abnormal growth of the remnant cells, resulting from the fusion of the primary palatal of the first branchial arch suggesting it to be a developmental cyst. [5] In the past, these lesions were regarded as fissural cysts. Nowadays according to the classification of the World Health Organization (WHO), these lesions are regarded as non-odontogenic cysts of the maxilla, along with maxillary midline cyst and nasolabial cyst. [6,7] According to literature, it is also referred by many names such as Nasopalatine canal cyst, nasopalatine cyst, incisive canal cyst, median palatine cyst, and median anterior maxillary cyst [8].

The etiology is however still debatable, as several authors say that it may arise from a vestigial organ (nasal-vomer Jacobson organ) present in some inferior mammals [2].

It has a wide age distribution, with most cases being discovered in the fourth to sixth decades, although there were cases among children up to 8 years old. It is three times more common among men than women. [8,9] It occurs in both human races: white and black [9].

It usually occurs in the maxilla with a prevalence up to 1% of all maxillary cysts [7,10]. In maxilla it typically occurs in the midline palate surrounding the incisive foramen [9].

These cysts are usually asymptomatic, but when secondarily infected, can be associated with pain and swelling [7].

Radiographically, it appears as a well-defined radiolucency located in the midline of maxilla that can be oval, round or Heart shaped. [1] The treatment of choice is total/ completeenucleation of cyst with lining [11].

The microscopic features of the epithelial linings of nasopalatine duct cysts are extremely inconstant. Stratified squamous, pseudostratified columnar, cuboidal, columnar, or primitive flat epithelium may be seen, individually or in combination [12].

Here, wereporta rare case of Nasopalatine duct cyst in a 30 year old female patient which was clinically diagnosed as radicular cyst but Clinicopathological correlation showed features suggestive of Nasopalatine duct cyst.

2. Case Report

A 30 year old female patient reported to our department with a chief complaint of Discoloration of her upper front teeth. Patient gave a past history of pain associated with palatal swelling in her upper front teeth region 1 year back not associated with any trauma for which Root Canal therapy and I&D was done by a Private dental practitioner as claimed by the patient. History of pain 1 week following the procedure for which medications were given and the pain subsided. Intraoral examination revealed a discolored 11, 21& 22 with incomplete Root Canal therapy. The teeth was asymptomatic with no evidence of vestibular swelling or tenderness. However, there was evidence of mild buccal cortical expansion on palpation. Palatally, a linear swelling was noted extending from the incisive papilla anteriorly to 7 mm anterior to fovea

palatine posteriorly, that seemed to have caused enlargement of both incisive papilla and nasopalatineduct. The swelling was non tender on palpation. Thus, a provisional diagnosis of Radicular cyst was given based on the history and clinical findings.

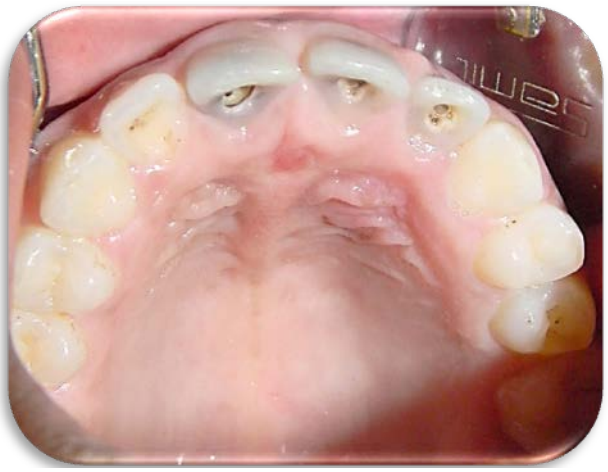

Figure 1. Showing Incomplete Root canal treatment in 11, 21 and 22

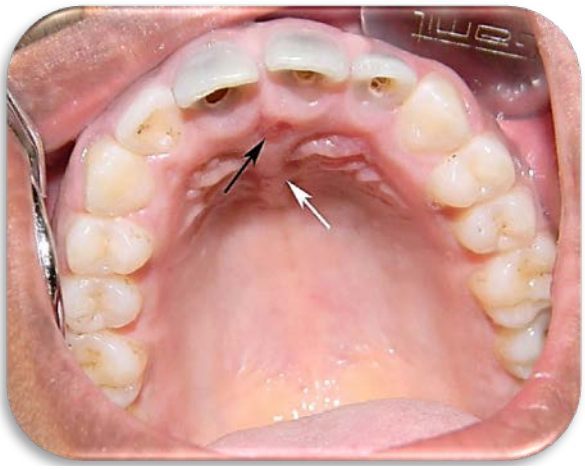

Figure 2. Showing a swelling in the incisive papilla (Black arrow) and swelling around the nasopalatine canal (White arrow)

2.1. Radiographic examination

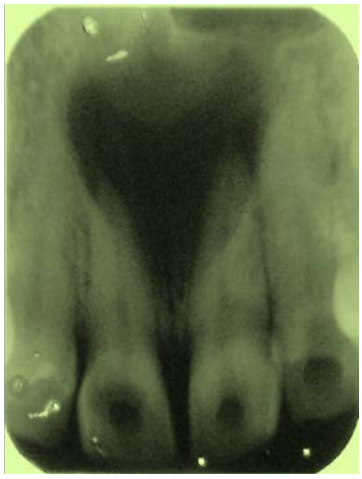

Figure 3. Showing Heart Shaped radiolucency in the periapical region of 11 and 21

Intraoral periapical radiograph of upper anterior teeth, Maxillary Cross sectional occlucal view and Digital Panoramic radiographrevealed a well-defined unilocular Heart Shaped radiolucency between the 2 maxillary central incisors, measuring roughly about 2.0 X 2.5 cms with sclerotic rim. The Lamina dura of 11 and 21 were visible except in the apical 3rd of mesial root surface of 21. The lesion seemed to have caused slight divergence of the roots of both the upper central incisors. Intraoral periapical radiograph of upper anterior teeth showed no evidence of interdental bone loss. Radiological findings were consistent with Nasopalatine cyst. Root canal therapy was carried out for incompletely treated 11,12, & 21.

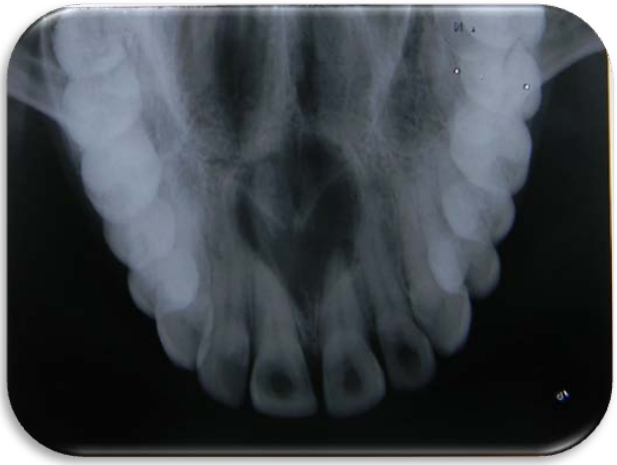

Figure 4. Maxillary cross sectional occlusal view showing well defined heart shaped radiolucency.

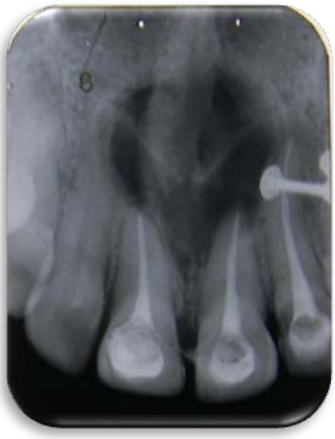

Figure 5. Showing no change in size of the lesion 4 months following endodontic treatment

Four months following the RCT of 11,21, & 22, a second IOPAR was taken, which showed no evidence of regression of swelling. Thus enucleation was of the cyst was done and sent for histopathological examination.

2.2. Histopathological Examination

Microscopic examination H&E stained section showed cystic lumen lined by pseudostratifiedcolumnar epithelium. Flask shaped goblet cells were seen dispersed within the epithelium. Underlying connective tissue was loose and edematous. No evidence of nerves, arteries and veins in the cystic wall.

Thus the clinicopathological findings were suggestive of Nasoplalatine Cyst.

Patient was monitored regularly for a period of 3 months but the patient failed to show for subsequent appointments.

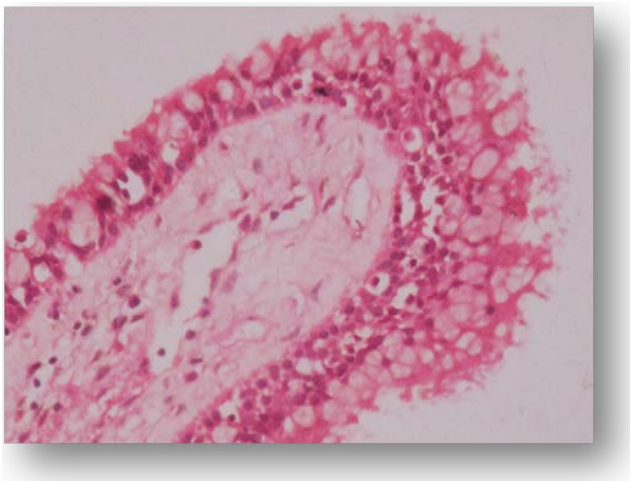

Figure 6. Histopathology of the Specimen showing cystic lumen lined by pseudo stratified columnar epithelium

3. Discussion

Nasopalatine duct cyst is the most common non-odontogeniccyst of the oral cavity occring in general population.The Nasopalatine duct can be divided into two types: cyst of the incisive canal and cyst of the incisive papilla, both showing the same pattern of growth [2].

The nasopalatine canal usually contains remnants of the nasopalatine duct, a primitive organ of smell, and the nasopalatine vessels and nerves. Occasionally a cyst forms in the nasopalatine canal when these embryonic epithelial remnants of the nasopalatine duct undergo proliferation and cystic degeneration.

These lesions are almost three times morefrequent in males than in females. [7] The gender was not in favour in our case although in a case series conducted by Escoda-Francolí J et al showed that NPDCs affected both males and females equally, with only a slight predominance among the former [4].

The majority of cases occur in the third to the sixth decade of life. [4] This was in agreement, as the age of the patient in our case was 30 years.

The aetiologyof this lesion is still uncertain, however NPDC are hypothesized to arise from spontaneous cystic degeneration of remnants of the nasopalatine duct and some genetic determinants have been suggested. [4] Although its etiology remains unknown, some agents are implicated as trigger factors especially trauma, infection and spontaneous proliferation. [1] A Case report of a pathologic process in the adjacent teeth with suspected dissemination to the nasopalatine duct have been reported in literature. [7] In our case, access opening was performed by a Private practitioner even before the patient reported to us but an Intraoral Periapical radiograph of maxillary central incisors showed that the lamina dura in apical 3rd of mesial root surface of 21 was not clearly visible. Thus a Periapical lesion was suspected which could have triggered the NPDC formation.

Testing the pulp vitality of the involved teeth and lamina dura analysis are very important aids in having correct diagnosis, especially to differentiate odontogenicperiapical lesions from NPCD, as in the nasopalatine duct cyst the lamina dura will be intact. [1] Pulp vitality was not performed in our case as access opening and pulp extirpation of 11, 21 was already performed by a Private dental practitioner even before the patient reported to us.

NPDC are usually slow growing, asymptomatic, with the lesion being detected on routine radiographs; however, many will present with one or more symptoms as in our case where the patient presented with pain. This could be attributed to an infection from a previously asymptomatic nasopalatine duct cyst or pressure of nasopalatinenerve. Also in our case the clinical working diagnosis of nasopalatine duct cyst was strongly established after a radiographic examination.

NPDC can be superficial or deep based on the Location of the cyst. Superficial swelling is usually fluctuant and blue if the cyst is near the surface. The deeper nasopalatine duct cyst is covered by normalappearing mucosa unless it is ulcerated from masticatory trauma [4].

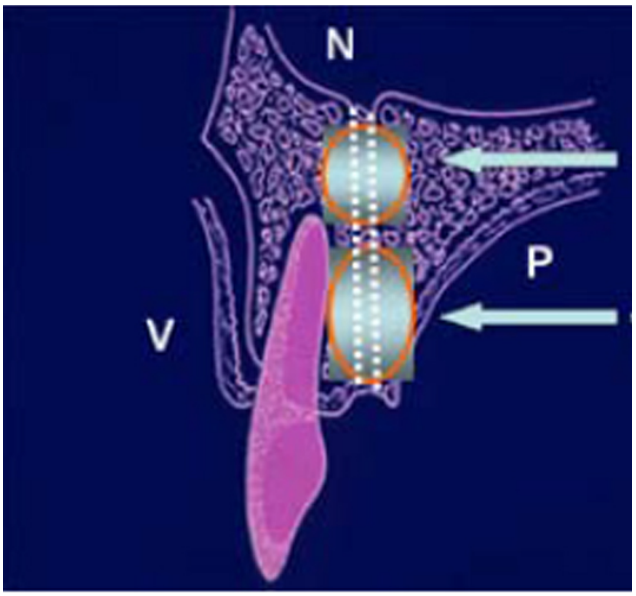

Figure 7. Showing two most frequent locations of NPDC [4]

In case series conducted by Escoda-Francolí J et al, the position of the NPDCs was mostly superficial or palatine (15 cases), while in the remaining 7 cases the lesions were located deep or in the nasal region. [7] The position of NPDC in our case was found to be deep.

Sometimes cyst may expand to penetrate the labial plate and produce a swelling below the maxillary labial frenum or to one side. [8] In our case there was buccal cortical expansion in the Upper Central incisor region.

Radiographically, NPDC's are seen as well-definedround or oval radiolucencies in the midline, although some lesions may appear heart-shaped, either because they become notched by the nasal septum during their expansion or because the nasal spine is superimposed on the radiolucent area. Our case also had a similar description [1,3,8,11].

The epithelial lining of nasopalatine duct cysts is highly variable. It may be composed of Stratified squamous epit helium, Pseudostratified columnar epithelium, Simple columnar epithelium, Simple cuboidal epithelium. Frequently more than one epithelial type is found in the

same cyst. Cilia and goblet cells may be found in association with columnar linings [11].

The type of epithelium may be related to the vertical position of the cyst within the incisive canal. Cysts developing within the superior aspect of the canal near the nasal cavity are more likely to demonstrate respiratory epithelium; those in an inferior position near the oral cavity are more likely to exhibit squamous epithelium. [11] Our case showed cystic lumen lined by pseudostratified columnar epithelium and Flask shaped goblet cells were seen dispersed within the epithelium suggesting that the cyst would have been placed deeply or could have originated within the superior aspect of the canal near the nasal cavity.

Nasopalatine duct cysts are treated by surgical enucleation. Biopsy is recommended because the lesion is not diagnostic radiographically; other benign and malignant lesions could to mimic the nasopalatine duct cyst which was similar to our case [11].

To conclude, Nasopalatine cyst is a clinical deception as it can mimic any odontogenic cysts and tumours in the anterior maxilla. As an Oral diagnostician, a thorough knowledge of this cyst is essential to give a diagnosis by both Clinico-radiographical correlation, although biopsy is recommended.

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