Case Report

Nasopalatine Duct Cyst: ‘Though Common, It’s Rare’- A Case Report

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Abstract:
Nasopalatine duct cyst (NPDC) is one of the common non-odontogenic cyst of the oral cavity but it only accounts for approximately 1% of the all maxillary cyst. NPDC’s are usually asymptomatic, but sometimes may cause swelling in the anterior part of the hard palate. It is usually detected as an incidental finding on radiographs. This case report provides an insight regarding the clinical manifestations, radiographic features and histologic features of Nasopalatine duct cyst, presenting as a swelling in the anterior part of the hard palate since three months. Proper diagnosis of NPDC is important in order to avoid unnecessary root canal treatment to vital maxillary incisors.

Keywords: Nasopalatine Duct Cyst (NPDC), Non-odontogenic cyst, Fissural cyst

Introduction
Nasopalatine duct cyst (NPDC) is considered as one of the most common non-odontogenic cyst of the oral cavity, first described by Meyer in 1914. It is also known as anterior middle cyst, maxillary midline cyst, anterior middle palatine cyst, and incisive duct cyst, which were considered as fissural cysts. Initially they were considered as fissural cysts, originated from the epithelium trapped during the fusion of embryological process, but lastly it is believed that NPDC is derived from proliferation of embryonic epithelial remnants of the nasopalatine duct. Hence at present as per World health organization (WHO) classification, it is regarded as a non-odontogenic developmental, epithelial cyst of maxilla.¹ ² ³ ⁴

Nasopalatine duct cyst account for approximately 1% of all the cysts of maxilla. The cyst being more common in males with the male to female ratio being about 3:1. The usual age of presentation is found to be between 40 to 60 years.¹ ² Though NPDC being more common, very few cases have been reported in the literature of the same.³ Here, we report a case of nasopalatine duct cyst in a female patient aged 50 years, with clinical, radiological and histology findings.

Case report:
A 50 year old female patient visited our institution with complain of painless swelling in relation to anterior part of hard palate since 3 months and occasional salty discharge from it. The swelling was round in shape, approximately 2 cm in diameter, firm in consistency and non-tender. [Figure 1]. The patient didn’t have any history of trauma. No discoloration of maxillary anterior teeth was noted. Electric pulp testing of all maxillary incisors showed normal response.

A Clinical diagnosis of nasopalatine duct cyst with a differential diagnosis of radicular cyst in relation to central incisor was considered. Intraoral radiographs revealed a single well defined heart shape radiolucency of size approximately 2 x 1.5 cm surrounded by a radiopaque border between central incisors causing distal displacement of roots, with no widening of PDL space or loss of lamina dura and no root resorption [Figure 2]. PA Waters view revealed that the lesion didn’t invade into the nasal floor, nor encroached the maxillary sinus [Figure 3].

Fine needle aspiration cytology revealed 1ml of brownish color aspirate which was non viscous and no purulent material was evident from it [Figure 4]. Contrast Enhanced CT scan revealed approximately 1.9x 2 x 2.2cm sized well defined expansile soft tissue density lesion in antero-median location in hard palate. It bulges infero-posteriorly into the oral cavity and superiorly up to the floor of nasal cavity. The lesion shows communication with the incisive foramen. [Figure 5]. Based on all investigations, a diagnosis of Nasopalatine Duct cyst was considered.

Complete surgical enucleation of the cyst under local anesthesia was done [Figure 6] suture were taken and the patient was advised to wear a palatal removable plate for 3 months to allow filling of the bone defect [Figure 7].

Histological features revealed cystic lining of pseudo-stratified ciliated columnar epithelium with connective tissue stroma and infiltrate of plasma cells and lymphocytes with diluted blood vessels and extravagated
RBCs, suggestive of nasopalatine duct cyst [Figure 8]. Regular follow-up was carried out and a maxillary occlusal radiograph was taken at 6 months which showed bone formation within the cyst cavity [Figure 9]. The patient was free of all symptoms in all follow-up visits till 1 year and didn’t showed any signs of recurrence [Figure 10].

Discussion

Nasopalatine ducts ordinarily undergoes progressive degeneration however, the persistence of the epithelial remnants may later become the source of epithelia that gives rise to NPDC, from either spontaneous proliferation or proliferation following trauma(e.g. removable dentures), bacterial infection or mucous retention. Considering the recent concept regarding pathogenesis of NPDC i.e. enlargement of the nasopalatine duct, the terminology Nasopalatine duct cyst seems more appropriate. Genetic factors have also been suggested. In our case we consider spontaneous proliferation of the nasopalatine duct remains as the possible etiologic factor.

Usually asymptomatic, NPDCs occurs as an incidental finding on radiographs or presents as a painless swelling in the anterior hard palate. The patient also complains of salty taste of discharge from the swelling. The pressure exerted by the cyst to nasopalatine nerves in the vicinity of the cyst can cause a sensation of burning or numbness of mucosa. Rarely, it clinically manifests as itching, ulceration, local infection, and fistulization due to secondary inflammation. In our case the patient complained of painless swelling in the anterior part of hard palate with occasional salty discharge from the swelling.

On radiographic examination, it appears as a round, ovoid or typical heart-shaped radiolucency. This type of heart-shaped radiolucency occurs due to superimposition of the nasal spine. This cyst can cause divergence of the root of anterior tooth but the lamina dura of these teeth remains intact. Similar radiographic findings were noted in our case. Asymptomatic radiolucency measuring under 6mm in size are regarded as enlarged incisive ducts of a non-pathological nature.
Figure 6: Specimen measuring approximately 2 x 1 cm in size.

Figure 7: Post-operative photograph with acrylic plate.

Figure 8: Histologic pictures reveals lining of pseudo stratified squamous cell epithelium with connective tissue stroma and infiltrate of plasma cells, neutrophils, red blood cells suggestive of Nasopalatine duct cyst.

Figure 9: 6 Month follow up Maxillary occlusal radiograph showing filling of the cystic cavity with bone.

Figure 10: The site of cyst at one year follow up.
CT-scan helps in determining the extent of the cyst and also in differentiating it from other odontogenic lesions. It presents as increased size of the incisive foramen with cystic changes and extension in the oral or nasal cavity surrounded by a hyper dense border. Magnetic resonance imaging (MRI) may also prove useful in establishing the diagnosis, and particularly contrast the interior of the NPDC with a high signal intensity. Specific axial T1-weighted imaging reflects the presence of fluid, viscous and protein material within the cyst, and abundant keratin at superficial level. Thus, MRI is highly reliable in diagnosing NPDCs, discarding root cysts or any other cysts of odontogenic origin. Our CT findings showed that the lesion was related to incisive foramen. The differential diagnosis such as an enlarged nasopalatine duct (less than 6 mm in diameter), central giant cell granuloma, a root cyst associated to the upper central incisors, a supernumerary tooth follicular cyst (normally mesiodens) should be considered. A thorough differential diagnosis must be established in order to avoid unnecessary treatments such as endodontic procedures in vital permanent upper central incisors Pulp vitality in our case suggests that the maxillary central incisors were vital, moreover intact lamina dura was noted in relation to maxillary central incisors which ruled out the possibility of radicular cyst. The treatment of choice is surgical excision of the cyst, although some authors propose marsupialization of large NPDC. Recurrence have been reported to be approximately 2-30%. The nasopalatine neurovascular bundle is a delicate and highly vascularized structure giving rise to profuse bleeding if inadvertently sectioned during surgery. Electrocoagulation is required in such cases. Paresthesia of the anterior palatal zone is a rare complication found in 10% of the cases, on removing nerve endings of the nasopalatine nerve along with the membrane of the cyst. No complication, nor recurrence was noted till 1 year in our case. The histological study of NPDCs normally only reveals squamous cell epithelium, though in some cases the latter is combined with other types of epithelium such as ciliary cylindrical cells. The cyst lumen usually contains an abundant inflammatory infiltrate with a great variety of neutrophils, secondary to chronic inflammation. In our case cyst lining was of pseudo-stratified ciliated columnar epithelium with rest other features being similar. Malignant transformation have been reported in some cases from nasopalatine duct cyst. Squamous cell carcinomas originating in maxillary bone are mainly due to the metaplasia experienced by the epithelial wall of a cyst or of the epithelial remains that participate in odontogenesis therefore there are cases in which NPDC gives rise to squamous cell carcinoma in the anterior zone of the upper maxilla. Hence early diagnosis of the NPDC is important.

Conclusion

In most of the cases Nasopalatine duct cyst is found as an incidental finding on the radiograph, however it may present as swelling in the anterior part of hard palate. It can be diagnosed clinically and by routine radiological investigations, however CT scan provides detail regarding increase in the size of the incisive foramen and extension of the cyst. Early diagnosis and treatment of Nasopalatine duct cyst should be carried out to prevent any complications.

References


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