

Nasopalatine Duct Cyst: A Case Report

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Abstract:

Introduction: NPDCs are the most common non-odontogenic cysts of the oral cavity; its location is peculiar and specific in that it affects the midline anterior maxilla. NPDC though frequently asymptomatic may be a rare cause for severe orofacial pain.

Case Report: A 68 year old female patient reported with a chief complaint of pain and pus discharge from anterior palatal region of the jaw since 3 months. On intra oral examination no swelling seen in anterior palate but the area was tender on palpation. All anterior maxillary teeth are non tender, vitality tests revealed a positive response. Occlusal radiograph showed a single well circumscribed oval shaped radiolucency of 1x 1.2 cm in size with well corticated borders. Complete enucleation of cystic lining was done and sent to histopathological examination.

Discussion: NPDCs are the most common non-odontogenic cysts of the oral cavity, representing up to 1% of all maxillary cysts. Although pathogenesis of this lesion is still uncertain, the lesion most likely represents a spontaneous cystic degeneration of the remnants of nasopalatine duct. The treatment of choice is surgical excision of the cyst, although some authors propose marsupialization of large NPDCs

Conclusion: NPDC is usually asymptomatic and detected on routine radiographic examination, but unusual pain may render it to irrational endodontic treatment. The final diagnosis could only be performed after histological analysis. Following resection, relapse is unlikely, though a postoperative follow-up of at least one year is indicated in all cases.

Keywords: Nasopalatine duct cyst; Cyst of incisive papilla.

I. Introduction

Nasopalatine duct cyst (NPDC) is the most common nonodontogenic, developmental cyst of non neoplastic nature. Its location is peculiar and specific in that it affects the midline anterior maxilla (1).

The nasopalatine duct communicates the nasal cavity with the anterior region of the upper maxilla. 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. Nasopalatine duct cyst (NPDC) was first described by Meyer in 1914. It is also termed as incisive canal cyst, arising from embryologic remnants of nasopalatine duct. The extrabony cyst that develops within the soft tissue of incisive papilla is called as 'cyst of incisive papilla' (2). NPDC though frequently asymptomatic may be a rare cause for severe orofacial pain. Rarely this cyst will expand the overlying mucosa. The nasopalatine duct cyst rarely becomes large enough to destroy bone; therefore, no surgical treatment is necessary for an asymptomatic small cyst. If the cyst shows signs of infection or shows progressive enlargement, then surgical intervention may be warranted. In addition NPDC may also be at a risk for malignant transformation reinforcing the need for their detection and accurate diagnosis (3).

II. Case Report

A 68 year old female patient reported with a chief complaint of pain and pus discharge from anterior palatal region of the jaw since 3 months. Pain was continuous dull in nature, which got aggravated during mastication. There was history of recurrent swelling and pus discharge in anterior maxillary region. On intra oral examination no swelling seen in anterior palate but the area was tender on palpation (Figure 1). All anterior maxillary teeth are non tender, Vitality tests revealed a positive response with respect to 11, 21, 13, 21, 22 and 23. Radiological examination by intraoral occlusal radiograph showed a single well circumscribed oval shaped radiolucency with well corticated borders. Size was 1x1.2 cm, location was in midline of anterior maxilla apical to the roots of central incisors (Figure 2). On the basis of clinical and radiological basis the provisional diagnosis of incisive papilla cyst, nasopalatine duct cyst was made.

After preliminary blood investigation, palatal mucoperiosteal flap (curtain flap) was raised from premolar to premolar. Flap was dissected out from cystic lining exposing the complete cyst. Complete enucleation of cystic lining was done and sent to histopathological examination. Through curettage of cystic cavity was done and surgical wound was closed by 3-0 mersilk suture. Microscopic examination Pathological findings revealed squamous and respiratory cell types, infiltrated by inflammatory cells (Figure 5). The histological diagnosis was nasopalatine duct cyst.

III. Discussion

NPDCs are the most common non-odontogenic cysts of the oral cavity, representing up to 1% of all maxillary cysts (1,4). These lesions, also known by other names such as anterior middle cyst, maxillary midline cyst, anterior middle palatine cyst, and incisor duct cyst, were regarded as fissural cysts in the past. At present, according to the classification of the World Health Organization (WHO), these lesions are regarded as developmental, epithelial and non-odontogenic cysts of the maxilla, along with nasolabial cysts. Trauma, infection of the duct and mucous retention of the adjacent minor salivary gland have been mentioned as possible etiological factors, but the role of each have been questioned. Although pathogenesis of this lesion is still uncertain, the lesion most likely represents a spontaneous cystic degeneration of the remnants of nasopalatine duct. These lesions are almost three times more frequent in males than in females. The maximum incidence is between 40 and 60 years of age. 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 cyst and consist primarily of swelling, drainage of pus and pain (5,6). Tanaka et al (7) in 2008 reported unusual case of large nasopalatine duct cyst causing abnormal protrusion of nasolabial region. In present case, patient came with complaint of pain recurrent swelling and salty discharge. The vitality of nearby teeth i.e. both central incisors is not affected; however, it is not uncommon to see evidence of endodontic therapy because the nasopalatine duct cyst has been previously clinically misdiagnosed as a periapical cyst or granuloma. The differential diagnosis is established with the following conditions: an enlarged nasopalatine duct, central giant cell granuloma, a central incisor root cyst or other maxillary cysts, osteitis fistulizing in the palatine direction, or a bucco-nasal and/or buccosinonasal communication (8,9).

Radiographically, the cyst presents as a well-delineated rounded, ovoid, inverted pear-shaped or heart-shaped radiolucency in the mid-line of the anterior maxilla. Superimposition of the anterior nasal spine explains the heart-shape presentation of the lesion. Francoli et al in 2008 reported that most are round or oval in appearance (8). The normal size of the normal foramen is highly variable, but most authors agree that 6 mm should be regarded as the upper limit for a normal incisive canal. Radiolucencies larger than this diameter should be considered potentially pathologic and merit further investigation.¹⁰ However, the incisive foramen, by convention, is not expected to exceed 6 mm in diameter, making the detection of a small nasopalatine duct cyst difficult. An average diameter of NPDC is 1.5 to 1.7 cm. with an intergender difference in mean diameter of 4 mm (8). In present case, an occlusal radiograph shows well demarcated and corticated unilocular, oval radiolucency measuring 1x1.2 cm in size in anterior maxilla.

Other diagnostic techniques can be used to radiologically assess lesions of this kind, such as multimodal tomography, which in addition to exposing the patient to lesser radiation doses employs crossed and sectional tomographic acquisitions in the sagittal plane to yield three dimensional images. 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 (2,8).

Histologically, the nasopalatine duct cyst is lined by stratified squamous epithelium alone or in combination with pseudostratified columnar epithelium (with or without cilia and/or goblet cells), simple columnar epithelium, and simple cuboidal epithelium. The fibrous wall generally contains nerves, arteries and veins. Additionally, minor salivary gland tissue and small islands of cartilage may be found. Finally, if the cyst is infected, acute and chronic inflammatory cells will be seen throughout the specimen (1,4).

The treatment of choice is surgical excision (enucleation) of the cyst, although some authors propose marsupialization of large NPDCs (1,4,6). 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. Recurrence is rare and attributed to incomplete removal (2,4-6,8). Paresthesia of the anterior palatal zone is a rare complication found in 10% of the cases, on removal of nerve endings of the nasopalatine nerve along with the membrane of the cyst. Tagaki et al (3) in 1996 reported case of squamous cell carcinoma probably originating from NPDC lining.

IV. Conclusion

NPDC is the most common nonodontogenic cyst, particularly found in anterior maxilla. It is usually asymptomatic and detected on routine radiographic examination, but unusual pain may render it to irrational endodontic treatment. Systematic history, pulp vitality test, clinical and radiographic evaluation are sufficient but computed tomography and MRI should also be considered whenever necessary. The final diagnosis could only be performed after histological analysis. Following resection, relapse is unlikely, though a postoperative follow-up of at least one year is indicated in all cases.

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Figures:

Figure 1: Pre-Operative Clinical Photograph



Figure 2: Pre-Operative Maxillary Occlusal Radiograph

Figure 3: Intra-Operative Photograph



Figure 4: Cystic Lining



Figure 5: Histopathological Slide

