

Incisive Canal Cyst/Nasopalatine Duct Cysts (NPDC)

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Overview/Demographics

The most common nonodontogenic cyst in the oral cavity, making up around 12% or less of jaw cysts, is the nasopalatine duct cyst (NPDC), often referred to as the incisive canal cyst. Initially documented in 1914 by Meyers, these cysts usually arise in the anterior maxilla's midline, close to the incisive foramen between teeth #8 and #9. Benign diseases can mimic NPDCs while frequently seeming distinctive. The average age of diagnosis is around 30-60 years of age, and they are more common in men, occurring more frequently in the fourth and sixth decades (Cavalcante et al.). It's



important to note that age alone should not be used as a factor to exclude incisive canal cysts, as instances have been reported in children as young as seven (Lake et al.). A great example would be one of my patients/really close friends: a young female in her 20s with a “squishy” incisive canal. Dr. Brown came in to look and stated a PA should be taken of the area, as a result, shows the

start of an incisive canal cyst.

Etiology

Though the etiology remains unclear, It is theorized that the remains of embryonic tissue spontaneously develop to form the origin of these cysts. Trauma, ill-fitting dentures, infections, heredity, and ethnicity are among the contributing variables. Surprisingly, there is a connection between the positioning of dental implants

and the rapid growth of asymptomatic cysts, which could compromise the stability of nearby implants, which I found very surprising. (Aparna et al.).

Clinical Presentation

Small, asymptomatic lesions found by coincidence in routine radiographs to bigger cysts generating symptoms such as palate swelling, maxillary pain, tooth displacement, and nasal or oral discharge are all part of the clinical symptoms of Incisive canal cysts. The vitality of teeth might differ, and pain can sometimes take the form of a burning feeling that is frequently linked to an infection in that area. Practically speaking, the growth of a big cyst can cause infiltration into the nasal cavity floor, changes in tooth alignment, and damage to surrounding bone, depending on the severity and size. Just because there is an incisive canal cyst doesn't mean your teeth will fall out, and it will travel to your nasal cavity. It must be monitored with radiographs, which I'll talk about later.(Lemus, Morgan, et al.)

Biopsy / Histology / Radiographs

A biopsy is an essential diagnostic procedure for NPDCs or nasopalatine duct cysts. A biopsy involves taking a sample of tissue from the cyst's lining so that it can be examined. This aids in determining the type of cyst, rules out cancer, and directs the choice of the best course of treatment. Histologically, NPDCs exhibit a cyst wall made of squamous cell epithelium encircled by connective tissue. There may be ciliary cylindrical cells, columnar cells, and cuboidal cells, among other epithelial forms. Melanin remnants, erythrocytes, and a polymorphonuclear leukocyte and plasma cell inflammatory infiltrate are found in the cyst wall. Radiographic examinations such as occlusal, periapical, and panoramic show a unique radiolucency in the midline maxilla,

which can be shaped like a heart, pear, ovoid, or spherical. A 6 mm or smaller incisive canal diameter is considered normal; higher radiolucencies must be checked for any pathologic lesions, such as NPDCs. Multimodal tomography, MRI, and CT scanning are examples of complementary approaches. Three-dimensional imaging is used to help in surgical planning and differentiation. Aspiration is not diagnostic; it only separates solid masses from cystic lesions. Although it is not a diagnostic method in and of itself, aspirating radiolucencies may be helpful in differentiating solid masses from cystic lesions. An NPDC is suggested, for instance, by an aspirate that is clear or straw in color. On the other hand, this kind of aspirate may potentially indicate a cystic ameloblastoma or a lateral radicular cyst (Kurnatowski).

Differential Diagnosis

When differentiating between NPDC and nonodontogenic tumors (central giant cell granuloma), odontogenic cysts (radicular cysts, periapical granulomas), developmental cysts (median palatine cyst), osteitis, an enlarged nasopalatine duct, and nevoid basal cell carcinoma syndrome are all taken into account. Tooth vitality tests are used to identify odontogenic cysts. For the diagnosis of nasopalatine duct cysts, immunostaining is not required. Small to medium-sized nerves, arteries, veins, and distinctive characteristics like hyaline cartilage are visible in surgical specimens, setting it apart from other cysts (Lang et al.).

Treatment

The main treatment for NPDC is surgical enucleation or a minor surgical procedure called marsupialization, depending on its need. Following surgery, bone regrowth is anticipated. Treatment options for bigger cystic defects include platelet-rich

fibrin, thrombin, patient blood treated with antibiotics, xenograft bone, recombinant bone morphogenetic protein-2, and synthetic materials ((Perumal and Jerome 100). If it's smaller and not of great concern (yet), as mentioned and seen in the picture, it looks like the start of the Cyst, and it's recommended to take a PA of that area probably once a year to monitor and make sure that patient doesn't have any pain, but it's also important to inform the patient always.

Prognosis

Anterior palate paresthesia sensation is one of the complications. Malignant transformation is an extremely uncommon consequence, and recurrence is infrequent. With timely surgical intervention, the prognosis for nasopalatine duct cysts (NPDCs) is favorable, minimizing morbidity and recurrence. Unpredictable growth in untreated NPDCs can result in symptoms and problems such as bone loss and dental deformation. For a better outcome and to reduce associated risks, prompt treatment is essential. (Szubert et al. 508-512). As well as always monitoring the area depending on size, as mentioned before.

Professional Relevance

As a Dental Hygienist, identifying NPDC signs at the time of a regular checkup permits prompt action to avoid orthodontic problems. Patients who are informed about non-prescription dental cysts (NPDCs) are more aware of oral health issues and are more likely to work together to manage these cysts. Comprehensive patient treatment in the dental hygiene practice is facilitated by maintaining knowledge about oral conditions, especially NPDCs. Always inform and ask questions if, objectively, the

patient's incisive canal cyst looks red and “squishy.” If needed, ask if a PA can be taken, of course, if the patient is due for radiographs.

Citations

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