MAVEN

CASE REPORT

NASOPALATINE DUCT CYST – REPORT OF TWO CASES ALONG WITH REVIEW OF LITERATURE

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ABSTRACT:

The incisive canal cyst or nasopalatine duct cyst (NPDC) is a developmental, non-neoplastic cyst, most common of the non-odontogenic cyst of jaw bones. The nasopalatine duct cyst is fissural cyst. Clinically, incisive canal cyst is usually asymptomatic and is noted as an incidental finding upon examina- tion. Large cysts can be responsible for a variety of symptoms including swell- ing and pain. Radiographically, the lesion is well demarcated, usually with some decortication of the borders, located in or near the maxillary midline. The cyst may be round, ovoid, pear shaped or heart shaped. Enucleation of the cyst is generally the treatment of choice. Here two interesting case of na- sopalatine duct cyst along with review has been presented. (2017, Vol. 01; Issue 01: Page 56 - 63)

Keywords: Incisive canal cyst, nasopalatine duct cyst, Supernumerary para- nasal sinus.

INTRODUCTION:

The incisive canal cyst or nasopala- tine duct cyst (NPDC) is a develop- mental, non-neoplastic cyst that is considered to be the most common of the non-odontogenic cyst of jaw bones. It was first described by Meyer in 1914 as a "supernumerary paranasal sinus" (1-6).

The cyst can form either within the incisive canals located in the pala- tine bone just behind the alveolar process of the central incisors or in the soft tissue of the palate where the incisive canals open. Although it is a rare condition, it is the most common fissural cyst of the oral cavity (1,6) and has been reported

to comprise between 1.7 to 11.9% of all cysts in the oral region (5,7).

The nasopalatine duct cyst is fissu- ral cyst. It was previously thought that all fissural cysts originated from the epithelium that was en- trapped during the fusion of the embryologic processes. This con- cept has been discarded and it is now considered to be developmen- tal in origin. The nasopalatine duct cyst develops from the epithelial remnants of the oronasal duct pre- sent within the incisive canal (1-4, 6, 7).

The trigger for the proliferation of epithelial remnants and subse- quent cyst formation is unknown. Trauma, spontaneous proliferation and mucous retention may play a role. An extension of bacterial infec- tion from the nasopalatine canals could initiate and stimulate epithe- lial proliferation. Genetic factors have also been suggested. The mu- cous glands present among the pro- liferating epithelium can contribute to secondary cyst formation by se- creting mucous within the enclosed structure (1, 3, 6-9).

Nasopalatine duct cyst occurs over a wide range of patients (8-84 year), although they also occur in foe- tuses. The majority of cases occur between 40 to 60 years. Males are affected 1.8 – 2 times more often than females (1, 4, 8, 10, 11). Clin- ically, incisive canal cyst is usually asymptomatic and is noted as an incidental finding upon examina- tion. Large cysts can be responsible for a variety of symptoms including swelling (52-88%) and pain (20-23%). About 70% of patients expe- rience a combination of these symptoms (3, 4, 7, 11, 12).

Radiographically, the lesion is well demarcated, usually with some de- cortications of the borders, located in or near the maxillary midline. The cyst may be round, ovoid, pear shaped or heart shaped (1, 3, 7).

Enucleation of the cyst is generally accomplished via a palatal flap ap- proach and usually results in clini- cal and radiographic healing of the lesion with bone healing over sev- eral month to years (13).

Here two interesting case of na- sopalatine duct cyst along with re- view has been presented.

CASE REPORT: 1

An 18 year old female patient re- ported to dental OPD of Haldia In- stitute of Dental Sciences & Re- search with complaint of swelling in palate for last 4 months. Patient no- ticed an asymptomatic soft swelling in the palate about the size of a pea- nut that began spontaneously and gradually increased in size. For last 15 days, patient was suffering from pain which was continuous & pricking type. Pain was aggravated while eating when lower teeth im- pinged upon the swelling. There was no history of trauma in anterior teeth.

Clinical examination revealed a fluctuant diffuse swelling in ante- rior part of the palate measuring about 2x2.5 cm. extending antero- posteriorly from the palatal mar- ginal gingival behind 12 and 22 upto the level of 14 and 24, medi- olaterally from the inter maxillary suture up to area of 13 and 22 (Fig 1A) . Overlying mucosa appeared normal.

On palpation, swelling was soft and fluctuant. 21 and 22 was tender on vertical percussion.11, 12, 13, 21 & 22 were not discoloured.

After correlating the history and clinical features a provisional diag- nosis of nasopalatine duct cyst with

differential diagnosis of median pal- atine cyst and radicular cyst were made.

On aspiration, 1 c.c straw- coloured fluid was aspirated. Electric pulp test revealed normal positive re- sponse in 11, 12, 13 and 21, 22.

An anterior maxillary occlusal view and intra-oral periapical radio- graph of 11, 12, 13 and 21, 22, 23 along with complete haemogram were advised. All findings of blood investigations were within normal limit.

Anterior maxillary occlusal radio- graph revealed well circumscribed radiolucent area measuring about

1.5 x 3cm. in dimension arising in between roots of 11 and 21 extend- ing mediolaterally from the mesial aspects of 23 upto mesial aspect of

13 crossing the intermaxillary su- ture (Fig 1B). A well circumscribed radiopaque border was present sur- rounding the radioluscency. In- traoral periapical radiograph re- vealed well circumscribed, homoge- nous radiolucency on trabecular part above 11, 12, 13, 21, 22, 23 &

24.

The cystic lesion was surgically ex- cised by enucleation. After securing local anaesthesia, bilateral full thickness palatal mucoperiosteal flap was raised from 15 to 25 (Fig 2). After raising flap, a small defect in the anterior palatal bone was seen. After removing the bone around the defect, presence of cyst was revealed. Adequate amount of bone was removed and slowly the cyst lining was teased away from the bone. The entire cyst was enu- cleated in one piece. The cystic cav- ity was thoroughly toileted. Bony margins of the cavity were rounded off and flap was sutured back. The excised tissue was sent for histo- pathological evaluation. The section stained with H & E stain revealed presence of pseudostratified colum- nar & simple columnar epithelium supported by fibrous connective tis- sue (Fig 3). The supporting fibrous connective tissue exhibited pres- ence of small mucous glands and blood vessels. A mild grade of in- flammatory response is also noted in connective tissue wall.

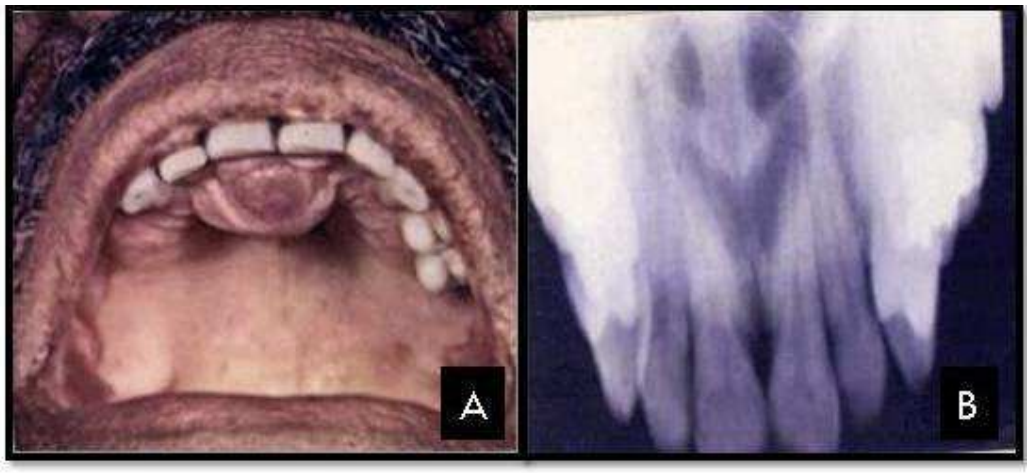

Fig 1: A- Intraoral view. B- Maxillary occlusal ardiograph

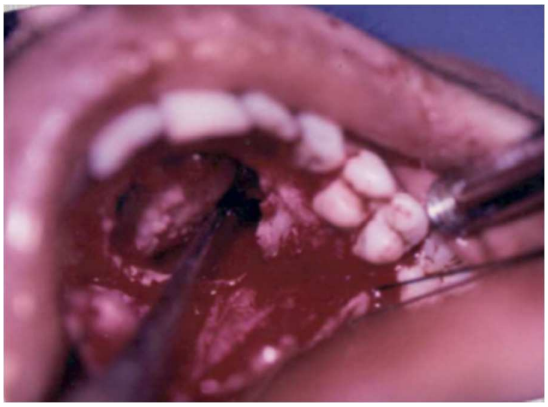

Fig 2: Surgical view

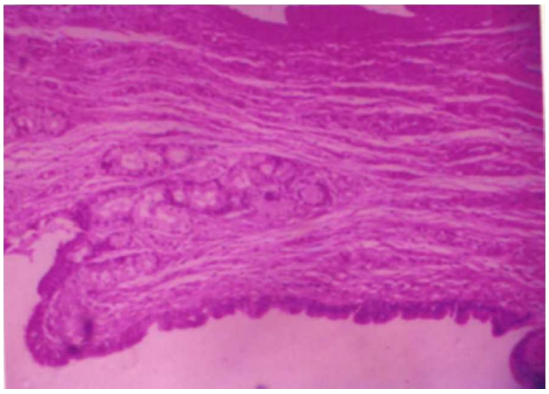

Fig 3: Photomicrograph (20X magnification)

CASE REPORT: 2

A 25 years male patient reported to Oral Diagnosis department with an asymptomatic swelling of the ante- rior part of palate for the last 6 months. About 6 months back, pa- tient noticed a swelling in palate that gradually increased in size but was painless. Clinical examination revealed a fluctuant swelling of 1 cm in diameter in the midline of an- terior part of hard palate (Fig 4A & 4B). The overlying mucosa ap- peared normal. There was no evi- dence of widening of the periodontal ligament space & discontinuation of lamina dura of either of the maxil- lary anterior teeth in IOPA radio- graph (Fig 4C). Results of the pulp testing of the central incisors were consistent with vital pulps. The le- sion was provisionally diagnosed as nasopalatine duct cyst and differ- entially diagnosed as cyst of incisive papilla & median palatine cyst. The cystic lesion was surgically excised by enucleation (Fig 4D). Histopath- ologic findings are similar to the previous case, suggestive of na- sopalatine duct cyst.

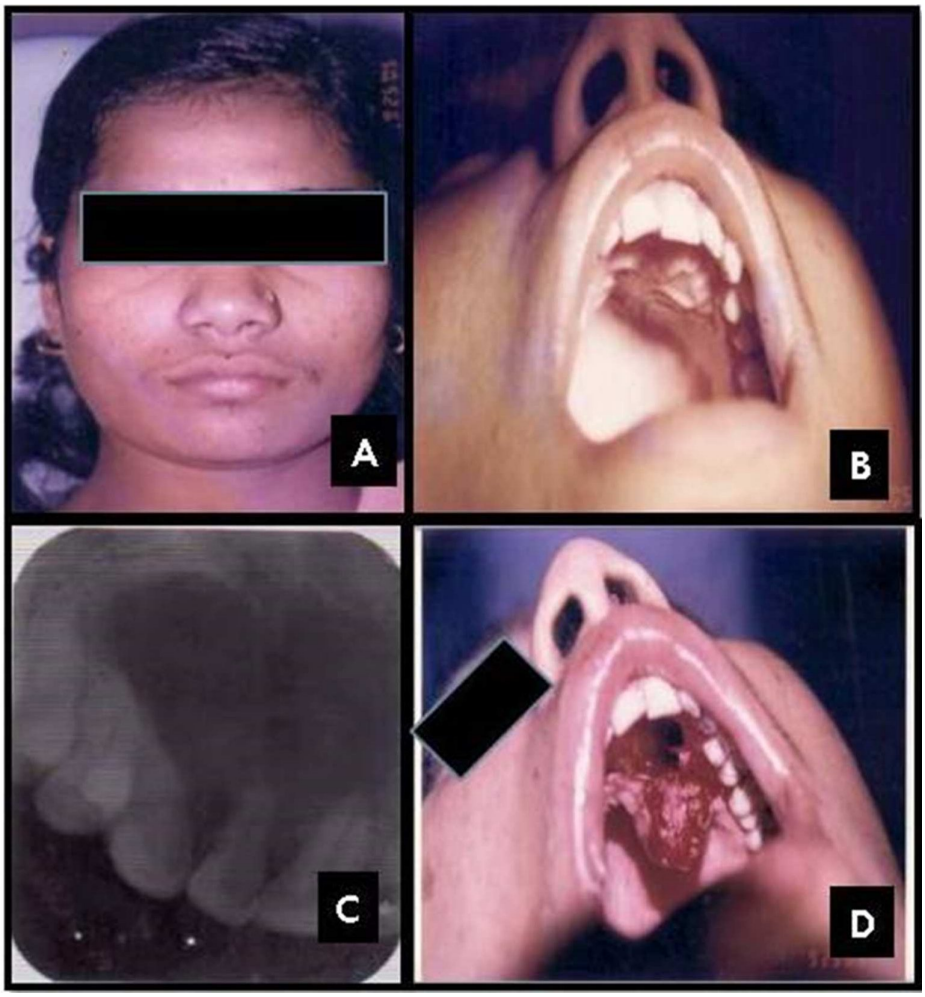

Fig 4: A- Extraoral view. B- Intraoral view. C- Intraoral periapical radio- graph. D- Surgical view.

DISCUSSION:

The Nasopalatine duct cyst is the most common non odontogenic cyst of the oral cavity. It occurs in or near the incisive canal (14). The de- velopment of the face and the oral cavity takes place between the 4th and 8th weeks of intrauterine life. The secondary palate is formed dur- ing 8th to 12th weeks. In the mid- line, between the primary and sec- ondary palates, 2 channels (the in- cisive canals) persist. The palatine processes probably partly overgrow the primary palate on either side of the nasal septum. Just incisive ca- nals usually fuse to form a common canal which is Y shaped. The fusion of facial processes in the embryo- logic development of the maxilla re- sults in the formation of a pair of epithelial strands (the nasopalatine duct) that traverse the incisive ca- nals downward and forward, con- necting the nasal and oral cavities (11).

The nasopalatine ducts ordinarily undergo progressive degeneration; however the persistence of epithe- lial remnants may later become the source of epithelia that gives rise to nasopalatine duct cyst (6, 11).

Abrams et. al. (10) stated that the nasopalatine duct cysts may occur

at any age, even in the foetus. How- ever diagnosis is most frequently made in the second to fifth decades of life (4, 6). Bodin et.al. reported a mean age of 45 years. In our cases patients were in second and third decade of their life (13).

A nasopalatine duct cyst can be asymptomatic in the early stage of its development. As the cyst en- larges, palatal swelling and pain are common complaints. Cyst is usu- ally detected during routine clinical and/or radiographic examination. Pain is fairly uncommon and when it occurs, it is supposed to be caused either by secondary infec- tion or by pressure transmitted to the sphenopalatine nerve (1, 3, 14). Abrams and co-workers reported clinical symptoms in their study as: Swelling (46%), drainage (36%) and
pain (17%) (10).

In the present case reports, symp- toms in the form of swelling and pain were evident in one case.

The typical radiographic appear- ance of the nasopalatine duct cyst is a well circumscribed, round,oval or heart shaped radiolucent area developing in the midline of the an- terior maxilla (4).

Sometimes it can be difficult to dif- ferentiate radiographically a NPDC and a normal anatomical incisive foramen. Roper-Hall suggested that any radiograph of the fossa, which shows a radiolucency less than 6 mm in diameter may be considered to be within normal limits, provided that the patient has no symptoms. However, Swanson et.al.considers the presence of symptoms as an in- dication for surgical intervention when the radiographic diameter of the lesion is less than 6 mm. Aspi- ration can be used to differentiate cyst from normal incisive foramen (6, 15).

Langlais & Langland reported that the incisive foramen, although radi- olucent lacks a corticated outline. Thus, when a corticated radiolu- cency is observed in the maxillary midline, even when the lesion is small, an NPDC should be sus- pected. However, the most unique appearance is heart shape, which is caused by the superimposition of the anterior nasal spine over the superior portion of the lesion (16). Aspiration of pathologic jaw radio- lucencies can provide useful infor- mation in distinguishing solid pro- cesses from cystic processes. A clear or straw coloured fluid aspi- rate is suggestive of NPDC; however other cystic processes (eg, lateral radicular cyst, cystic ameloblas- toma) can not be excluded on basis of this finding alone. Bloody fluid is more indicative of a central hae- mangioma, a central giant cell le- sion, arteriovenous malformation or an aneurysmal bone cyst. Nega- tive aspiration indicates a solid pro- cess (eg, odontogenic myxoma, ameloblastoma). In addition, pulp vitality tests may be of considerable value to exclude the possibility of a pulpal-periapical inflammatory pathogenesis (eg, lateral radicular cyst, periapical cyst, periapical granuloma, periapical abscess). Teeth associated with a nasopala- tine duct cyst will generally respond normal to vitality tests (11, 17, 18). The main diagnostic difficulty posed by the median palatine cyst and NPDC is that both the lesions originate from closely adjoining ar- eas of the anterior maxilla & palate and display almost similar clinical & radiographic manifestations. GingeII JC et.al. stated that radio- graphically median palatine cyst is circular, whereas nasopalatine duct cyst are quite often heart shaped,

due to their anterior location and superimposition of anterior nasal spine. Cysts of the incisive canal are also usually limited in size while median palatine cyst involved much of the hard palate (19).

Nasopalatine and other anterior cysts usually show the presence of mucous glands histologically as well as large vascular spaces, nerve trunks and occasionally hyaline cartilage. These structures have not been observed in median palatine cyst (19).

In our cases, the lining of cyst ex- hibit presence of varied types of ep- ithelial lining viz stratified colum- nar, simple columnar & pseudo- stratified columnar. The fibrous connective tissue wall exhibited presence of small mucous glands, blood vessels and mild grade of in- flammatory response but presence of nerve & hyaline cartilage could not be elicited.

The nasopalatine duct cyst is gen- erally treated by surgical excision (enucleation) via a palatine or buc- cal approach (11). Marsupilization is indicated in very large cysts (20). During cyst enucleation, if compo- nents of long sphenopalatine nerve are removed, may cause paresthe- sia to the anterior palate (11, 13).

In majority of the cases, the prog- nosis is good and complete bone re- generation occurs (11, 20). The na- sopalatine duct cyst has a low re- currence rate, reported between 0- 11% of patients (6, 11, 13). Only 2 cases of malignant change in lining epithelium have been published (21, 22). In our cases, cysts were re- moved by enucleation.

In conclusion, correct diagnosis of nasopalatine duct cyst is depend- ent on clinical, radiological and his- topathological observations. It is advisable to enucleate the nasopal- atine duct cyst at an early stage in order to minimize the risk of pre and post operative complications.

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