Intranasal Tooth—An Ectopic Eruption of Mesiodens in Nasal Cavity: A Case Report and Review

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ABSTRACT
An intranasal tooth (INT) is an ectopic tooth erupting into the nasal cavity. It is a rare clinical entity. Ectopic and supernumerary teeth may be present in many regions of maxillofacial skeleton. Ectopic teeth may be supernumerary, deciduous or permanent. The clinical manifestations of intranasal tooth are quite variable and they may cause a variety of symptoms and complications. Their clinical and radiographic presentations are classical, posing little challenge to the diagnostician. The identification of such teeth can be important since they have potential to cause considerable morbidity. Here, we describe a case of intranasal tooth along with possible etiopathogenesis, clinical and radiographic features, differential diagnosis, potential complications and treatment modalities.

Keywords: Supernumerary teeth, Mesiodens, Nasal tooth.

INTRODUCTION
Ectopic eruption of teeth in nondental sites is a rare phenomenon. Ectopic and supernumerary teeth may be present in many regions of maxillofacial skeleton. Commonly seen in palate and maxillary sinus, they have also been reported in nasal cavity, orbit, mandibular condyle, coronoid process, facial skin, ethmoid sinus and as teratomas in ovary, testes, anterior mediastinum and presacral regions. The conditions commonly associated with increased prevalence of ectopic teeth include cleft lip and palate, cleidocranial dysplasia and Gardner syndrome.

An INT is an ectopic tooth erupted into the nasal cavity. It occurs in only 0.1 to 1% of general population. The age of patients ranged from 3 to 68 years. Ectopic teeth may be supernumerary, deciduous or permanent. In human, 65% of intranasal teeth are supernumerary teeth. Ectopic teeth may sometimes appear in an inverted form. Inverted teeth are heterotopic teeth, whose roots are reverted (toward the alveolar ridge).

The etiology of INT remains obscure; it seems that a supernumerary tooth (inverted mesiodens) grows into the floor of the nasal cavity. Other etiologies include the trauma, rhinogenic maxillary infection, dental infection, maxillary cysts, obstruction to the dental eruption and developmental disorder such as palatine fissure. In rarest cases it is associated with osteomyelitis, traumatic impaction and squamous cell carcinoma. The prevalence of tooth in nasal cavity among the patients with cleft lip and palate is of 0.48%.

INT may be asymptomatic or cause a variety of signs and symptoms and it may produce potential complications including rhinitis caseosa with septal perforation, aspergillosis and naso-oral fistula. The diagnosis of nasal teeth can be made on the basis of clinical and radiographic findings. Radiographically, the nasal teeth appear as radiopaque lesions with the same attenuation as that of the oral teeth. Removal of nasal teeth is generally advocated to alleviate the symptoms and prevent complications. Here, we report a case of intranasal tooth.

CASE REPORT
An 8-year-old girl reported to the hospital with the complaint of swelling in nose and nasal obstruction since 2 months. She
also complained of pain in upper labial frenum and philtrum area since one month. The swelling was gradual in onset preceded by nasal obstruction and pain. She visited a physician for the same and was prescribed analgesic and antihistamine but did not get any relief. Later, she was referred for dental checkup.

Extraoral examination exhibited no noticeable swelling or tenderness in the region of nasal septum, bridge of nose and maxillary sinus. Intranasal examination was conducted using nasal retractor, magnifying lens and periodontal probe. A conical-shaped white hard mass was found projecting into right nasal cavity (Fig. 1). The left nostril was clear. Regional lymphadenopathy was absent. Intraoral examination revealed mixed dentition and erupting 11, 21 with history of exfoliated 52, 62. Medical history, familial history, and personal history were noncontributory. Patient systemic health was reviewed and found satisfactory.

A provisional diagnosis of ‘calcified mass in nasal cavity’ was made. Differential diagnoses included nasolith, impacted foreign body, osteoma, calcified polyp and erupted inverted supernumerary tooth (mesiodens). Maxillary topographic occlusal radiograph revealed a well-defined radiopaque mass apical to unerupted 12 visible 6 mm lateral to nasal septum in the nasal cavity (Fig. 2). Orthopantomograph showed a conical radiopaque mass apical to 12 that was faintly delineated, projecting inside the nasal cavity. Similar radiographic findings were confirmed on lateral cephalogram with linear radiolucency inside the radiopaque mass suggestive of root canal (Fig. 3). A radiodiagnosis as an ‘ectopic eruption of inverted mesiodens inside the right nasal cavity (nasal tooth)’ was given.

Surgical removal of nasal tooth was done under general anesthesia. The gross specimen resembled, like tooth having crown and root (Fig. 4), that was further sent for histopathological examination. Histopathology depicted well-organized enamel, dentine, and central portion composed of pulp tissue in coronal portion of tooth. In the radicular portion there was dentine covered by cementum with pulp canal.

**DISCUSSION**

The existence of tooth in nose was originally described in 1897. All types of teeth have been found as INT the most common being mesiodens (malformed, peg-like tooth that occurs between the maxillary central incisors). The prevalence of hyperdontia is between 0.1 to 3.8% in various population and mesiodens accounts for one-third of cases. The incidence of supernumerary teeth in Indian children is reported to be 2.5%. The prevalence is higher in male children and vegetarians. A large percentage of anterior supernumerary teeth remain unerupted. It has been stated that only 25% of maxillary anterior supernumeraries erupt. The etiology of supernumerary teeth is not completely understood. Both genetic and environmental factors have been considered. Atavism, dichotomy theory and dental lamina hyperactivity theory were suggested. Most literatures have supported dental lamina hyperactivity theory.

INT may appear in the palate or in the nasal cavity. They may be in vertical, horizontal or inverted position. The literature would tend to suggest a male predominance, and around half of patients are diagnosed before adulthood. Heredity may play a role for the increased incidence in some families. The etiology of INT though not completely understood. The etiology of INT may be divided into two groups; the first may be a problem in tooth germ’s development and second may be a problem in tooth germ’s migrations. Some ectopic teeth may also develop from aberrant, extraodontogenic epithelium. However, some factors regarding the origin of supernumerary teeth have been proposed, including obstruction at the time of tooth eruption, secondary
to crowded dentition, persistent deciduous teeth, dense bone, a genetic predisposition, developmental disturbances, such as a cleft palate, infections and displacement as a result of trauma, cysts or operations.\textsuperscript{5,6,28,29}

Mechanisms of ectopic eruption are not completely understood. However, some theories have been proposed, including a development resulting from a reversion to the dentition of extinct primates which had three pairs of incisor teeth,\textsuperscript{7} a defect in migration of neural crest derivatives destined to reach the jaw bones,\textsuperscript{29} or a multistep epithelial-mesenchymal interaction.\textsuperscript{29,30} Considering these situations, the more plausible theory is epithelial-mesenchymal interaction. Ectopic and supernumerary teeth may erupt in different sites.\textsuperscript{5}

Ectopic teeth may be asymptomatic or may present with a variety of symptoms. These include facial pain, nasal discharge, external deformities, recurrent epistaxis, foul-smell in the nose and mouth, rhinorrhea and headaches.\textsuperscript{10} The diagnosis of nasal teeth is made on the basis of clinical and radiographic findings. Clinically, an intranasal tooth may be seen as a white mass in the nasal cavity surrounded by granulation tissue and debris.\textsuperscript{17,18} Plain film imaging may be adequate for localizing the ectopic tooth (as in this case) but where inadequate, computed tomography is the modality of choice to confirm the diagnosis and to avoid unnecessary medical treatment.\textsuperscript{31,32}

The differential diagnosis of nasal teeth includes radiopaque foreign body, rhinolith, inflammatory lesions due to syphilis, tuberculosis or fungal infection with calcification, benign tumors including hemangioma, osteoma, calcified polyps, enchondroma, dermoid cyst and malignant tumors, such as chondrosarcoma and osteosarcoma.\textsuperscript{10}

When an extra tooth is in the nasal cavity, the procedure is usually a minor operation.\textsuperscript{17} Some authors have recommended endoscopic surgery for removal of INT. Extraction of the INT under endoscopic guidance has the advantages of good illumination, clear visualization and precise dissection. It is a more convenient, effective and safer method.\textsuperscript{33} When a tooth has a bony socket in the floor of the nose, it may be extremely difficult to extract.\textsuperscript{34} CT is useful to evaluate the depth of the eruption site. The best time to remove the tooth is after the roots of the permanent teeth have completely formed, to avoid injury during their development.\textsuperscript{35} In case of asymptomatic tooth, a close follow-up is advised especially when patient is unwilling for surgery.\textsuperscript{5,9,18,35}

**CONCLUSION**

A rare case of INT in 8-year-old girl was presented. Their clinical and radiographic presentations are classical, posing little challenge to the diagnostician. Such cases should be identified, differentiated and treated at the earliest, so that further morbidity will be prevented.

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