

Review Article

A Comprehensive Update: Predeciduous Teeth (Natal and Neonatal)

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Abstract

Teeth which are present in the oral cavity at the time of birth are called natal teeth and neonatal teeth are those that erupt during the first 30 days of life. . Natal teeth are more frequent than neonatal teeth. The most common location for natal and neonatal teeth is the region of the lower central incisors, and posterior teeth are extremely rare. Early detection and treatment of these teeth are recommended because they are uncomfortable to the feeding mother and may induce trauma of tongue, dehydration, less nutrients intake by the infant and thus results in growth retardation, the pattern and time of eruption of teeth and their morphology. With this paper Authors tried to give a comprehensive review regarding terminology, etiology, classification, clinical presentation and management of natal and neonatal teeth.

Keywords: Natal teeth, Neonatal teeth, Predeciduous teeth, Congenital teeth

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Introduction:

Usually an anxiously awaited event by all the parents in the first year of a their children life is the emergence of the first tooth in the oral cavity. Tooth eruption at about 6 months of age is a common known milestone which is considered, both in terms of functional and psychological changes in the child's life, and an emotional event for the parents. Eruption of the first tooth normally occurs around the sixth month of a child's life. Teeth that erupt prematurely have been postulated as natal teeth or which are seen in the oral cavity at

birth, and neonatal teeth, which erupt during the first 30 days of life. The majority of natal teeth belong to the normal series and only small percentages are supernumerary. The most common location for natal and neonatal teeth is the lower central incisors area, and posterior teeth are very rare. The etiology of this anomaly remains unknown or called as multifactorial. Clinically, natal and neonatal teeth can be normal in size and shape, or conical, with enamel hypoplasia and a yellow-brownish coloration Paediatricians

are, usually, the first who find natal and neonatal teeth and early consultation with paediatric dentist can prevent complications. As these teeth do not appear frequently, proper evaluation and diagnosis are necessary for the best treatment option.^{1,2}

Historical review:

By Titus Livius, in 59 B.C., these teeth are considered to be a prediction of future disastrous events. Caius Plinius Secundus (the Elder), in 23 B.C., believed that a splendid future awaited male infants with natal teeth, whereas the same phenomenon was a bad omen for girls. In Poland, India, and Africa, superstition prevailed for a long time, and in many African tribes children born with teeth were killed after birth because they were thought to bring bad luck to their near and dear ones. Also the presence of teeth at birth was considered a bad omen by the family of Chinese children, who believed that when these natal teeth would start to bite, death one of the parents is invited. On the other hand in England, it was believed that babies born with teeth would grow to become famous soldiers, whereas in France and Italy the belief was that these children will become conquerors of the world of the world.^{3,4}

Synonyms:

Dentitia praecox, dens connatalis, congenital teeth, fetal teeth, infancy teeth, predeciduous teeth, and precocious dentition are some of the terminologies used previously. Lack of specificity and accuracy in description of the condition leads to subsequent discontinuity of these terms. The analogous terms of "natal" and "neonatal" teeth described by Massler and Savara are now most accepted. These terms broadly describe the teeth that are erupted at birth or shortly thereafter.^{5,6}

Prevalence and incidence:

Natal teeth are three times more common

than neonatal teeth. The incidence of natal and neonatal teeth ranges from 1: 2,000 to 1: 3,500. Only 1% to 10% of natal and neonatal teeth are supernumerary. More than 90% of natal and neonatal teeth are prematurely erupted deciduous series of teeth, whereas less than 10% are supernumerary. While considering gender, there was no difference in prevalence between males and females. However, a predilection for females was cited by some authors with Kates et al (1984) reporting a 66% proportion for females against a 31% proportion for males.^{3,5,7}

Classification:

The most commonly followed classification of natal and neonatal teeth was proposed by Hebling in 1997, who classified them according to appearance of each natal tooth in the oral cavity⁸, as the teeth emerge in the oral cavity: 4 clinical categories are given-

- (1) shell-shaped crown poorly fixed to the alveolus by the gingival tissue and absence of a root;
- (2) solid crown poorly fixed to the alveolus by the gingival tissue and little or no root;
- (3) eruption of the incisal margin of the crown through the gingival tissues;
- (4) edema of the gingival tissue with an unerupted but palpable tooth.

Also Spoug and Feasby have suggested that, clinically, natal and neonatal teeth are further classified according to their degree of maturity⁵:

- (1) A mature natal or neonatal tooth is the one which is nearly or fully developed and has relatively good prognosis for maintenance.
- (2) The term immature natal or neonatal teeth, on the other hand, implies a tooth with incomplete or substandard structure; it also implies a poor prognosis.

Etiological aspects:

The etiology is multifactorial. It has been related to several factors, such as superficial position of the germ, infection or malnutrition, febrile states, eruption accelerated by febrile incidents or hormonal stimulation, hereditary transmission of a dominant autosomal gene, osteoblastic activity inside the germ area related to the remodeling phenomenon, and hypovitaminosis. There is no conclusive evidence of a correlation between early eruption and some systemic condition or syndrome. Literature also had shown their presence commonly in syndromes such as Ellis-Van Creveld (Chondroectodermal Dysplasia), Pachyonychia Congenital (Jadassohn-Lewandowsky), Hallermann-Strei (Oculomandibulodyscephaly with Hypotrichosis), Rubinstein-Taybi, Steatocystoma Multiplex, Pierre-Robin, Cyclopia, Pallister-Hall, Short Rib-Polydactyly (type II), Wiedemann-Rautenstrauch (Neonatal Progeria), Cle Lip and Palate, Pfeifer, Ectodermal Dysplasia, Craniofacial Dysostosis, Multiple Steatocystoma, Sotos, Adrenogenital, Epidermolysis-Bullosa Simplex including Van der Woude, Down's Syndrome, and Walker-Warburg Syndromes.^{3,9,10}

Environmental factors are also thought to play an important role in eruption of neonatal teeth. Polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*-*dioxins (PCDDs), and dibenzofurans (PCDFs) seem to cause the eruption of natal teeth. The only environmental factor that may be regarded as a causative factor of natal teeth is the toxic polyhalogenated aromatic hydrocarbons: PCBs, PCDDs, and PCDFs. They cross the placenta, and concentrations of PCDD/Fs in the adipose tissue of a newborn are correlated with those in mother's milk.^{5,11}

Clinical characteristics:

When morphologically seen, natal and

neonatal teeth may be conical or may be of normal size and shape and opaque yellow-brownish in color. The dimensions of the crown of these teeth are smaller than those obtained by Lautrou (1986) for primary teeth under normal conditions. The natal teeth or neonatal teeth manifest usually with variable shape and size ranging from small, conical and may also resemble normal teeth. The appearance of these teeth is dependent on the degree of maturity, but most of the time they are loose, small, discoloured, and hypoplastic as in the cases presented here. They may show enamel hypoplasia/hypomineralization and a small root formation suggestive of an immature nature. The majority of natal teeth may exhibit a brown-yellowish-/whitish-opaque colour. They are attached to the oral mucosa in many instances as the root development is incomplete or defective. This leads to the mobility in teeth, with the risk of being swallowed or aspirated by the child. The mobility also may lead to degeneration of Hertwig's sheath which is responsible for the formation of root, thus resulting in further incomplete root development and stabilization.^{3,5,12,13}

Histology:

Histological considerations have reported that most of the crowns of natal and neonatal teeth are covered with hypoplastic enamel with varying degrees of severity, absence of root formation, ample and vascularized pulp, irregular dentin formation, and lack of cementum formation. Microscopically irregular interglobular areas with structures resembling osteodentin have been observed, as well as an atypical arrangement of dentinal tubules and a gradual decrease in the number of dentinal tubules from the crown to the cervical region. Dentino-enamel junction is not scalloped which similar to that found in deciduous teeth.

Cervically dentin becomes atubular with spaces and enclosed cells. Irregular dentinal tubules through the dentin along with calcospherites and predentin of various thicknesses could be present. Pulp canal and pulp chamber become wider in most of the cases. Vascularised pulps along with few inflammatory cells were also reported.^{3,4,5,13,14}

Diagnostic approach:

The importance of a correct diagnosis of natal and neonatal teeth has been pointed out by several doctors who used clinical and radiographic findings in order to determine whether these teeth belonged to the normal dentition or were supernumerary, so that no indiscriminate extractions would be performed. A radiographic verification of the relationship between a natal and/or neonatal tooth and adjacent structures, nearby teeth, and the presence or absence of a germ in the primary tooth area would determine whether or not the latter belongs to the normal dentition. It should be verified that most natal and neonatal teeth are primary teeth of the normal dentition and not supernumerary teeth. These teeth are commonly located in the region of the mandibular anterior region, are double in 61% of cases and correspond to teeth of the normal primary dentition in 95% of cases, while 5% are supernumerary. They may be commonly confused with the dental conditions like cysts of the dental lamina and Bohn nodules, and a radiographic examination is necessary to differentiate. According to the above citations, diagnosis is important for the maintenance of natal and neonatal teeth of the normal dentition, since the premature loss of a primary tooth may cause a loss of space and collapse of the developing mandibular arch, with consequent malocclusion in permanent dentition.^{3,15}

Complications and management:

A major complication from natal/neonatal teeth is ulceration on the ventral surface of the tongue caused by the tooth's sharp incisal edge. This condition is also known as Riga-Fede disease or syndrome. The other major complication is the possibility of swallowing and aspiration. Other complications which are of important concern are injury to mother's breast and inconvenience during suckling. The consequences seen with the teeth include carious lesions, pulp polyp, or premature eruption of successor teeth.^{5,16}

If the erupted tooth is diagnosed as a tooth of the normal dentition, each of the other situations mentioned above should be considered. The maintenance of these teeth in the mouth is the first treatment option, unless this would cause injury to the baby. When well implanted, these teeth should be left in the arch and their removal should be indicated only when they interfere with feeding or when they are highly mobile, with the risk of aspiration.³

According to Allwright (1958) and Zhu and King (1995), the Riga-Fede disease does not represent, by itself, an indication for extraction since an acute incisal margin can be relieved by smoothing. Goho (1996) reported his treatment of a natal tooth as covering the incisal portion of the tooth with composite resin. Tomizawa et al (1989) reported two cases of treatment of Riga-Fede disease by covering the incisal margin with photopolymerizable resin, which aided rapid healing of the ulcers.^{17,18}

If the treatment option is extraction, this procedure should not pose any difficulties since these teeth can be removed with a forceps or even with the fingers. However, the cited author emphasized the precautions that should be taken when extracting natal and/or neonatal teeth: avoiding extraction up to the 10th day of life to prevent hemorrhage, assessing the need to

administer vitamin K before extraction, considering the general health condition of the baby, avoiding unnecessary injury to the gingiva, and being alert to the risk of aspiration during removal.³

Conclusion:

When natal or neonatal teeth are encountered by ant Dental or Medical physician, confirmation of the diagnosis and accomplishment of the correct therapy based on the individual characteristics of each case are important. When dealing with natal or neonatal teeth belonging to the normal series that reveal no other clinical problems, every effort should be made to retain the teeth. Periodic follow-up by pediatric dentists is of fundamental importance, as also are recommendations to the parents with respect to home dental hygiene and the use of fluoride.

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