Natal and neonatal teeth: Literature review and report of seven cases in a Nigerian Tertiary Hospital

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Abstract

Teeth that are present in newborn infants are called "natal teeth" while teeth that erupt within the first 4 weeks after birth are called "neonatal teeth". The incidence of the appearance of natal and neonatal teeth has been reported to be between one in every 1000 and one in every 6000 births. Natal teeth may be uncomfortable for a nursing mother and present a risk of aspiration and swallowing by the infant if they are loose. Also, they may cause irritation and trauma to the infant's soft tissues. Under these circumstances, these teeth need to be extracted. This paper presents 7 cases of natal and neonatal teeth. Three of the cases presented with natal molar teeth which are rare. The clinical features, complications and management are discussed.

Key words: Primary dentition, natal tooth, neonatal tooth, treatment

Introduction

Several terms have been used in the literature to designate teeth that erupt before the normal time, such as congenital teeth, fetal teeth, predecidual teeth, and dentitia praecox[1]. According to the definition presented by Massler and Savara[2], taking only the time of eruption as reference, natal teeth are those observable in the oral cavity at birth and neonatal teeth are those that erupt during the first 30 days of life. This definition has been accepted and utilized by most authors[2-8]. The incidence of natal and neonatal teeth has been investigated in different studies, ranging from 1:716 to 1:30,000[1]

Aetiology

The aetiology of natal and neonatal teeth is still unknown but it has been related to several factors such as superficial position of the tooth germ [9], infection or malnutrition [10], febrile states [11], eruption accelerated by febrile incidents or hormonal stimulation [12], hereditary transmission of a dominant autosomal gene [13], osteoblastic activity inside the germ area related to the remodelling phenomenon[14], and hypovitaminosis [15]. Some investigators, however, suggested that natal teeth may be associated with some syndromes such as Hallerman-Streiff [16], Ellis-van Creveld [17], craniofacial dysostosis, multiple steacystoma [18], congenital pachyonychia, Sotos syndrome [19], cleft palate and Pierre Robin syndrome.

There are no studies available that confirm a causal relationship with any of the theories proposed thus far. However, the superficial position of the germ associated with a hereditary factor seems to be the most accepted possibility. There is general agreement in the literature that the aetiology of natal and neonatal teeth requires further study [11].

Beliefs

There are so many beliefs, myth and assumptions that surround the presence of natal and neonatal teeth. These beliefs have been as far back as 59 B.C, where Titus Livius considered natal teeth to be a prediction of disastrous events. Caius Plinius Secundus, 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 [20-22]. In Poland, India, and Africa, superstition prevailed for a long time, and in many African tribes children born with teeth were murdered soon after birth because they were believed to bring misfortune to all they would contact [20]. In Nigeria it is believed that the condition is an indication of an evil child and that sacrifices should be made to appease the gods and some believe that the family should get rid of the child[23]. The presence of teeth at birth was considered a bad omen by the families of Chinese children, who believed that when these natal teeth would start to bite, one of the parents would die[23]. In England, the belief was that babies born with teeth would grow to be famous soldiers, whereas in France and Italy the belief was that this condition would guarantee the conquest of the world [1, 20, 24].

Clinical characteristics

Natal and neonatal teeth may be conical or may be of normal size and shape and opaque yellow/brownish in color [25]. The terms natal and neonatal tooth proposed by Massler and Savara were limited only to the time of eruption and not to the anatomical, morphological and structural characteristics[2]. Spouge and Feasby [26] recognized the need to classify these teeth. On the basis of clinical characteristics. These teeth were then classified into:

Mature—when they are fully developed in shape and comparable in morphology to the primary teeth; immature—when their structure and development are incomplete.

The term mature may suggest that the tooth is well-developed compared to the remainder of the primary dentition and that its prognosis is relatively good. In contrast, the term immature assumes the presence of an incomplete structure and implies a poorer prognosis for the tooth in question. On the basis of literature data, Hebling et al classified natal teeth into 4 clinical categories [27]:

1. Shell-shaped crown poorly fixed to the alveolus by gingival tissue and absence of a root;
2. Solid crown poorly fixed to the alveolus by gingival tissue and little or no root;
3. Eruption of the incisal margin of the crown through gingival tissue;
4. Oedema of gingival tissue with an unerupted but palpabletooth.

Histology
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 vascularised pulp, irregular dentine formation, and lack of cementum formation[9,14,15]. Microscopically irregular interglobular areas with structures resembling osteodentine 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[9].

Diagnosis
Diagnosis of natal and neonatal teeth should be made by taking a good history and the use of clinical and radiographic investigations in order to determine whether these teeth belong to the normal dentition or are supernumerary, so that no indiscriminate extractions would be carried out [2,3,16,27]. It should be pointed out that most natal and neonatal teeth are primary teeth of the normal dentition and not supernumerary teeth [28]. These teeth are usually located in the region of the lower incisors [3,16,20], are double in 61% of cases and correspond to teeth of the normal primary dentition in 95% of cases, while 5% are supernumerary [24,29]. Multiple natal teeth are extremely rare. However, some rare reports are available in the literature about the involvement of natal molars and canines [6,30,31].
In Nigeria natal molar teeth were reported by Sote and Egri-Okwaji [31].

Complications
The presence of natal and neonatal teeth may cause several complications such as:
1. Traumatic injury to the tongue -Riga and Fede histologically described the lesion and is now being called Riga-Fede disease [32]. Although Coldarllin was the first to describe the lesion in 1857 [33].
2. Possibility of their being swallowed or aspirated, by the infant during feeding[34]
3. Inconveniences during suckling due to degree of mobility [2,3,34].
4. Injury to the mother's breast and interference with breast feeding.
5. Discolouration of teeth.

Treatment
If the erupted tooth is diagnosed as a tooth of the normal dentition, the decision of whether to maintain it in the oral cavity or not will depend on some factors, such as implantation and degree of mobility, inconveniences during suckling, interference with breast feeding, possibility of traumatic injury [3].
The presence of natal tooth may lead to numerous complications as mentioned above. Hence the purpose of this paper was to present a literature review and emphasize clinical features, complications and management techniques for natal and neonatal teeth.

Case Reports

This paper presents seven cases of natal and neonatal teeth among 5940 patients who presented at the paediatric unit of the Lagos University Teaching Hospital from January 2007 to January 2011. The average age of the infants at presentation was 21days and the male to female ratio was 5:2. The table shows the age, gender, the type of tooth (anterior or posterior), nature of tooth (natal/neonatal), clinical features, complaint by mother, other associated features such as orofacial cleft and the treatment carried out **(Table 1)**.
A total of twelve teeth were observed amongst which 7 were natal teeth and 5 neonatal teeth. Eight of the teeth were incisors and four were molars. Three of the cases presented with multiple teeth **(cases 1, 4 and 6).** One case showed both types of teeth (case 4). The primary complaint by the mothers was difficulty in breast feeding. Two of the cases also presented with clefts **(1 and 3)**. There was a case of multiple congenital anomalies such as syndactyly of the hands and feet **(Figures 2b, 2c and 2d).** All the teeth except one were extracted under topical anaesthesia. The extracted teeth were devoid of roots **(Figure 3).**
Histological examination was carried out following extractions. They were fixed in 10% formaldehyde for 48 hours. Following a decalcification process by 10% formic acid, routine pathological tissue examination was undertaken. Cross-sections having 5-micron thickness were taken from the paraffin blocks and stained with hematoxylineosin (HE). The sections were evaluated under light microscope. Light microscope examination shows a mass of dentine comprising loosely packed dentine tubules surfaced in areas by enamel matrix. Pulpal areas showed cells consisting of plumped shaped fibroblasts, vascular channels and inflammatory cells predominantly neutrophils as seen in **(Figure 4).** These were consistent with immature teeth.

Figure 1. Clinical photograph of a 6 day old infant showing natal and neonatal teeth in the mandibular anterior region.

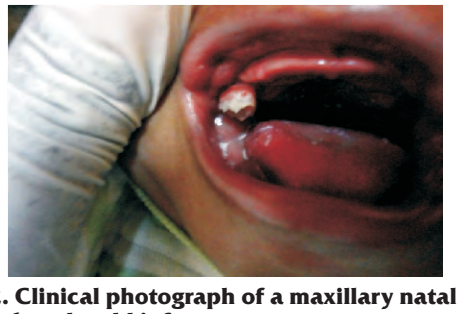

Figure 2. Clinical photograph of a maxillary natal molar tooth in 6weeks old infant.

Table 1. Natal and neonatal teeth reported in the study

Case	Age at Presentation	Gender	Tooth	History	Clinical Features	Associated Features	Treatment
1	42 days	Female	Neonatal 51, 61 52, 62	Teeth erupted 2 weeks after birth. Difficulty in sucking the breast milk.	Mobile teeth, inflamed gingival and opaque white in colour.	Bilateral complete cleft lip and palate	Extraction
2	40 days	Male	Natal 54	Tooth present at birth. Baby cries a lot but feeds normally.	Mobile, shell like tooth. Yellowish brown in colour.	-	Extraction
3	49 days	Female	Natal tooth 54	Teeth present at birth, difficulty in feeding in sucking of breast milk.	Mobile tooth, shell shaped crown fixed to the alveolus by gingival tissue, yellowish brown in colour.	Low birth weight Multiple congenital anomalies, cleft of palate and uvular, syndactyly of feet and hands.	Extraction
4	6 days	Male	Natal tooth 71 Neonatal tooth 81	Tooth 71 present at birth, tooth 81 erupted five days after birth.	Solid crown of 71 poorly fixed to the alveolus with little or no root. Oedema of gingival tissue with an unerupted but palpable tooth (81)	Baby had jaundice	Extraction
5	3 days	Male	Natal tooth 71 Neonatal tooth 81	Tooth present immediately after birth, there was trauma to the mother's nipple during feeding.	Shell-like tooth poorly attached to the alveolus by gingival tissue and mobile. Opaque white in colour.	-	Extraction
6	13 days	Male	Natal teeth 55,65	Teeth were present at birth. History of bleeding around the gingival of both teeth, baby cries a lot.	Poorly formed shell-like tooth, attached to the alveolus by gingival with no roots. Mobile and yellowish brown in colour.	Presence of Bohn's nodules in the lower jaw.	Extraction
7	3 weeks	Male	Natal tooth 81	Teeth were present at birth.	Solid crown of tooth, not mobile well attached to the alveolus. Opaque white in colour.	-	Tooth left in place and was observed to be the normal compliment of the primary dentition.

Figure 2b. Clinical photograph of infant with associated cleft of the palate.

Figure 2c. Clinical photograph of infant showing syndactyly of both feet.

Figure 2d. Clinical Photograph of infant showing syndactyly of the hand.

Figure 3. Extracted molar tooth devoid of root.

Figure 4. Photomicrograph shows a mass of dentine comprising loosely packed dentine tubules surfaced in areas by enamel matrix. Pulpal areas show cells consisting of plumped shaped fibroblasts, vascular channels and inflammatory cells predominantly neutrophils. (H&E X40)

Discussion

The occurrence of natal or neonatal tooth is rare and the aetiology still unknown. The association of natal and neonatal teeth with two cases of cleft lip and palate and one craniofacial dysostosis in this report is consistent with previous reports suggesting that the condition may be associated with some syndromes.

The most common site of eruption is the mandibular incisor region [2] , with the reported incidence from different studies ranging from 1:700 to 1:30,000, depending on the region where the study was carried out [1,8]. The prevalence of natal and neonatal teeth in Nigeria is not known and may not be easily determined because of the prevailing sociocultural beliefs in the society [3,4,5,23,31]. There are conflicting reports on sex predilection. Some authors observed a higher incidence in females [2,20,24,29], while some did not find a difference [32]. However, based on this report, there were more males than females in the ratio, of 5:2, and this is consistent with the reports by two other Nigerian studies [5,31].

According to Bodenhoff and Gorlin, 85% of the teeth involved are mandibular incisors, 11% are maxillary incisors, 3% are mandibular canines and molars, and only 1% are maxillary canines and molars[20]. However in this report 8(66.7%) of the twelve teeth were found in the maxilla and 4(33.3%) were found in the mandible. Also 66.7% of the teeth were incisors while 33.3% were molars. Three of the eight patients seen had multiple natal teeth **(Table 1).**

Contrary to reports in the literature that these teeth are of the normal dentition the radiographic investigation of all the teeth revealed little or no roots. Light microscope examination of the teeth also confirmed that they were immature. All the teeth were extracted except for one which was well formed and firmly attached to the alveolus. The extracted teeth were extremely mobile and reattachment was unlikely. The teeth were extracted after 10 days of birth to prevent haemorrhage due to hypoprothrombinaemia.

Dental lamina cysts and Bohn's nodules are oral conditions that may be confused with natal and neonatal teeth and should be differentiated by radiographic examination. It is important to maintain 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].

The maintenance of these teeth in the mouth is the first treatment option, unless this would cause injury to the baby [3,17]. 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 [3,9,11].Although many investigators have mentioned the possibility of aspiration of these teeth, this risk, in reality, is an unlikely possibility since there are no reports in the literature of the actual occurrence of aspiration. However, cases of spontaneous tooth exfoliation have been reported [34].

The risk of dislocation and consequent aspiration, in addition to traumatic injury to the baby's tongue and/or to the maternal breast, have been described as reasons for removal [24,25,34]. Smoothing of the incisal margin can be done to prevent injury to the maternal breast during breast feeding.

Some authors reported that there was no relationship between wounding of the mother's nipple and the presence of natal teeth since the tongue is interposed between these teeth and the nipple during breast feeding [1,34]. Thus, traumatic injury would occur only to the baby's tongue [1,34]. Natal and neonatal teeth can also be treated by covering the incisal portion of the tooth with composite and treatment of Riga-Fede disease by covering the incisal margin with photopolymerizable resin, which aids rapid healing of the ulcers [35].

If the treatment option is extraction, this procedure should not pose any difficulty since these teeth can be removed with a pair of forceps or even with the fingers. However, precautions 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 [20,25].

This waiting period before performing tooth extraction is due to the need to wait for the commensal flora of the intestine to become established and to produce vitamin K, which is essential for the production of prothrombin in the liver. If it is not possible to wait then it is advisable to evaluate the need for administration of vitamin K with a paediatrician, if the newborn was not medicated with vitamin K immediately after birth [24,25].

Concerns such as premature loss of a primary tooth is a function of the possible loss of space for the permanent. Other concerns expressed include the need for prevention of dental caries by controlling bacterial plaque and via periodic fluoride application, since in these teeth which erupt prematurely, mineralization is not complete [10,39].

There is possibility of continuous dentin formation by the remaining dental papilla, with the permanence of part of the radicular epithelial sheath of Hertwig retained on the sides of the papilla soon after crown extraction, representing the necessary epithelial stimulus [11,28].

On rare occasions following spontaneous loss or extraction of the teeth, there may be continued root development necessitating further treatment[36].

So it is suggested by some authors that if natal and neonatal teeth require extraction then routine curettage of the underlying tissues of the dental papillae is indicated to prevent formation of residual teeth[1,37,38].

However, if it is possible to remove the tooth with topical anaesthetic, then no curettage is recommended and the child should be monitored for the possible development of residual [36].

A consistent follow-up is however very important as a "reactive fibrous hyperplasia" has been associated with a retained natal tooth[40].

Conclusion

The occurrence of natal and neonatal tooth is rare and the aetiology still unknown. The most commonly involved tooth is the mandibular incisor. They could be supernumerary teeth or be part of primary dentition; there may be associated problems such as difficulty in breast feeding by mother and sociocultural issues. The decision to keep or to extract a natal and/or neonatal tooth should be evaluated in each case, keeping in mind scientific knowledge, clinical common sense, and parental opinion after the parents are properly informed about all aspects involved in this situation. Periodic follow up is also very important.

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