Management of Natal Teeth in a Preterm Neonate - A Case Report

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Abstract: A 24 day old preterm neonate was referred to the dental clinic by his paediatrician. Subsequent to an extra and intra oral clinical assessment he was diagnosed with an erupted, grade III mobile mandibular right natal tooth and an unerupted mandibular left natal tooth. Subsequently the right natal tooth was extracted, preventive advice imparted and a follow up for extraction of the erupted left natal tooth was advised. Hence this case report elucidates the identification of natal teeth in neonates and highlights the clinical management of natal teeth with respect to their underlying systemic considerations.


1. INTRODUCTION

Paediatric dentistry delivers primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence, inclusive of special health care need [1]. The purpose of a child’s dental examination entails disease identification in conjunction with assessment of growth and development in physical, cognitive and psychosocial spheres. Dentists are often the first clinicians to recognize significant disease and anomalies [2] and decide on an appropriate treatment. In addition emergency care for infants, children and adolescents is essential for every dentist [3].

Natal teeth are defined as teeth, which are present at birth whereas neonatal teeth are those erupting during the first 30 days of life [4,5] and the anterior natal and neonatal teeth are a part of the normal set of dentition [4,5]. The teeth erupting earlier are also referred to as congenital teeth, fetal teeth, predecidual teeth and dentitia praecox [6,7]. They diverge from 1:6000 to 1:800 cases with an incidence from 1:700 to 1:30,000 with a predilection for females [8]. Natal teeth are three times more common than neonatal teeth with the localization being the mandibular region of central incisors (85%), followed by maxillary incisors (11%), mandibular cuspids or molars (3%) and maxillary cuspids or molars (1%). Natal teeth are a rare manifestation [9]. A strong predilection for the lower central incisors is their normal eruption sequence. Clinical features like mobility raise concerns about possible ingestion or aspiration by infants during nursing. Full infant care during the first year of life maintains child oral health and addresses the dental needs in a more preventive conduct.

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It is important to understand the difference between early eruption and premature eruption. Although several theories exist about why the teeth erupt prematurely, none of the current studies have been able to confirm a causal relationship with any of the theories suggested. The most accepted possibility seems to be the superficial tooth germ position associated with a hereditary factor [5]. Natal and neonatal teeth can present a challenge when deciding on appropriate treatment. Hence medically necessary dental care prevents and eliminates pain, infection and orofacial disease, restores dentition form and function and corrects facial disfiguration or dysfunction. This not only increases the probability of good health and wellbeing but also decreases unfavorable outcomes [10].

This case is unique with reference to the relevant literature because it apprises that a paediatric dentist should be able to prudently identify full term and preterm infants with prematurely erupted teeth with underlying systemic consideration; aptly assess, examine, diagnose, treat and manage a preterm child with heritable dental developmental anomalies with due hematological considerations and parental counseling for the holistic wellbeing of a child.

CLINICAL CASE

A 24 day old preterm Asian boy referred to the AKUH Dental Clinic by his pediatrician at AKUH attended with parental concerns of a baby tooth since birth and an external feeding tube. Medical history indicated a single live born preterm baby boy delivered by a cesarean section at 33-34 weeks of gestation weighing 1.16kg with Apgar scores 7 at the 1st minute and 9 at the 5th minute. Other conditions associated with preterm birth comprised of an intra-ventricular hemorrhage Grade 1, sepsis of new born, neonatal hypoglycemia, transitory tachypnea of newborn and an undescended testis and neonatal jaundice after 24
hours. The baby was shifted from the Operating Room to Neonatal Intensive Care Unit for low birth weight and care of prematurity. Oxygen inhalation was initiated and tapered off. The 1st dose of IV antibiotics and dexamethasone were administered twenty three hours later, single phototherapy for neonatal jaundice and low platelets, polycythemia, hypernatremia and sepsis of new born were managed by a parenteral nutrition infusion of concentrated nutritional substances, Omeprazole 5MG/SYR, Domperidone 1MG/ML, Normal Saline vial 25ML/vial and cefotaxime and amikacin sulphate 50, G/ML AMP. Feeding commenced after shifting to step down. Cot was shifted after the incubator trial and he was discharged on attaining stability. Social history indicated a middle income background and a history of consanguineous parents.

The baby was placed supine and assessed clinically. An erupted right mandibular incisor prenatal tooth with a pale translucent crown, grade III mobility with a risk of aspiration and an unerupted left mandibular natal tooth were noticed on intraoral examination. His head was stabilized by his mother and the mouth opened with gentle but firm digital pressure. A gauze was placed lingual to the natal tooth, Topical Benzocaine 20% applied locally on the gingiva surrounding the mobile right mandibular prenatal tooth to achieve analgesia and the root less tooth extracted to allay risk of aspiration Hemostasis was achieved by gentle digital pressure on moist gauze. A follow up for the extraction of lower left mandibular prenatal tooth subsequent to its eruption was advised. Preventive advice included appropriate oral hygiene instructions as the primary teeth begin to erupt and dietary recommendations to ensure good general health, nutritional, developmental, psychological, social, economic, and environmental advantages and decreasing risk of acute and chronic diseases. The parents however did not comply for a follow up visit despite a telephonic reminder.

DISCUSSION

Premature/Preterm children are born in less than 37 weeks of gestation whereas full term is birth in 37-42 weeks of gestation or after 42 weeks. About 5-10 % of all childbirths are preterm. Causes of low birth weight may include primary predictors: infection, severe anemia, heart and renal disease, multiple pregnancies, maternal smoking, preeclampsia, diabetes, stress, family history, domestic violence, young mothers, low BMI and low socioeconomic status. Secondary indicators include IVF, low maternal weight, multiple fetuses, hydroaminosis, inadequate fetal care and other causes [34].

Figure 1: Extraoral view of a natal tooth.
Problems in Preterm and low birth weight depend on the degree of prematurity. They may suffer from apnoea or irregular breathing (hyaline membrane disease and respiratory insufficiency), hyperbilirubinemia, necrotizing enterocolitis, cerebral intraventricular haemorrhage, oxygen retinopathy, inactivity, weak cry, poor feeding, lanugo (shiny wrinkled skin with fine body hair), flexible ear cartilage, enlarged clitoris or small scrotum, less able to maintain body temperature and hemostasis. Long term sequelae include low IQ, coordination problems, respiratory problems, behavioral disorders and feeding problems [11,12].

Preterm underlying systemic disturbances often lead to typical clinical manifestations which have to be identified and managed accordingly. Hyperbilirubinemia leads to intrinsic tooth staining, trauma from intubation (laryngoscopy) causes enamel hypoplasia/ hypocalcification in the maxillary central incisors typically while chronological opacities or hypoplasia manifest as an alteration in amelogenesis, hypoglycaemia & hypocalcemia with pseudohyperparathyroidism. Children have multiple complex problems as their dental conditions affect both form and function and can have significant psychological impact. These conditions may present early in life and require both immediate intervention and management of a protracted nature including coordination of multi-disciplinary care [12].

Any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition are considered as special health care needs requiring medical management, health care intervention, and/or use of specialized services or programs [13]. Perinatal health commences with the completion of 20th through 28th week of gestation and concludes one to four weeks after birth. It depends on the overall health and well-being of pregnant women [14]. Infant oral health is a fundamental upon which age-appropriate preventive education and dental care must be built to augment the prospect for a lifetime free from preventable oral disease. By the age of six months an infant should receive oral health risk assessment from primary health care providers or qualified health care professionals to evaluate the patient’s risk of developing oral diseases of soft hard tissues, include caries-risk assessment, provide education on infant oral health and evaluate and improve fluoride exposure [14,15].

Developmental abnormalities and syndromes including Ellis-van Creveld (chondroectodermal dysplasia), pachyonychia congenita (Jadassohn-Lewandowsky), Hallerman-Streiff (occulo-mandibulo dyscephaly with hypotrichosis), Rubinstein-Taybi, steatocystoma multiplex, Pierre-Robin, cyclopia, Pallister-Hall, short rib-polydactyly type II, Wiedeman-Rautenstrauch (neonatal progeria), cleft lip and palate, Pfeiffer, ectodermal dysplasia, craniofacial dysostosis, multiple stacystoma, Sotos, adrenogenital, epidermolysis bullosa simplex including van der Woude and Walker-Warburg Syndromes are frequently associated with natal and neonatal teeth [16-23].
Morphologically natal teeth are conical or maybe of usual size and shape, brown-yellowish/whitish opaque in color and immature with enamel hypoplasia and small root formation. The crown is smaller than primary teeth and attached to soft tissue above the alveolar ridge, maybe covered by mucosa with resultant magnified crown mobility. Degree of maturity by Spoug and Feasby (1966) defines a mature natal tooth as fully developed in shape and comparable to primary tooth morphology with a good prognosis for maintenance whereas an immature tooth having an incomplete structure and development with poor prognosis. The eruption time is not as important as their degree of maturity hence a mature natal tooth has better prognosis than an immature tooth as does a tooth stable beyond four months. If the mobility exceeds 2 mm natal teeth necessitate an extraction [24-26]. If the tooth mobility is not marked or leads to feeding problems it should be conserved and maintained in a healthy condition [27]. Close monitoring is indicated to ensure that the tooth remains stable.

Classification of natal teeth is literature based into four clinical categories [26,28]:

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

Histologically thin enamel with varying degrees of mineralization and/or hypoplastic to total absence of enamel is present. Alteration in amelogenesis due to premature tooth eruption results in metaplastic alteration of the normal columnar epithelium to stratified squamous epithelium [29,30]. Dentine is normal except some irregular dentinal tubules in the cervical third. Osteodentin formed via stimulation by tooth movement may cause a gradual decrease in the number of dentinal tubules from the crown to the cervical region and degeneration of Hertwigs sheath which prevents root development and stabilization [23]. Increased mobility causes lack of cementum development. The pulp shows normal development however pulp cavity and the radicular canals are wider [24]. Weil's zone and cell-rich zone are missing [28]. Posterior natal tooth should be investigated for other systemic conditions, syndromes or anomalies [31]. The literature reflects the association of natal teeth with reactive fibrous hyperplasia [28] congenital hydrocephalus associated with congenital glaucoma Walker Warburg syndrome, [32] bilateral mandibular hamartomas, [32] pyogenic granuloma, [33] peripheral ossifying fibroma, eruption cyst, [8] gingival fibrous hamartoma [34]. It is also important to consider other lesions like cysts and developmental disturbances in neonates hence a complete oral examination is recommended in newborns, in order to establish the differential diagnosis.

Clinical and radiographic diagnosis of natal and neonatal determines whether the teeth belong to the normal dentition or are supernumerary to avoid indiscriminate extractions [35]. Natal correspond to normal primary dentition in 95% of cases whereas 5% are supernumerary [6]. They are located in the lower incisor region usually [36]. Multiple natal teeth are extremely rare however some report involvement of natal molars and canines in the literature [30,37]. Other oral lesions similar to them include cysts of the dental lamina and Bohn nodules. A correct diagnosis for the maintenance of natal and neonatal teeth of the normal dentition prevents premature primary tooth loss, which may cause space loss and collapse of the developing mandibular arch with a resultant malocclusion in the permanent dentition [26].

The treatment plan in the presence of natal and neonatal teeth may contribute a doubt in deciding retention versus extraction. Various factors like degree of mobility, inconvenient suckling, interference with breast feeding and possibility of traumatic injury ascertain whether the tooth is part of the normal dentition or is supernumerary [38]. When well implanted, they should be left in the arch. Their removal should be indicated only if they interfere with feeding, are highly mobile with a risk of dislocation and consequent aspiration or if they have a potential for traumatic injury to the baby’s tongue and/or to the maternal breast, soft tissue growth and caries [39-41].

Riga-Fede disease is caused by the mobile natal or neo-natal tooth rubbing the ventral surface of the tongue during feeding, leading to ulcerative lesion [42]. Inability to diagnose and treat may result in dehydration and inadequate infant nutritional intake [43]. Treatment should be conservative and create round, smooth incisal margins to prevent wounding of the maternal breast during breast-feeding. If conservative treatment does not correct the condition, extraction is the treatment of choice [44].
Potential for hemorrhage is an important consideration when deciding to extract a natal or neonatal tooth. Extraction is contraindicated in newborns due to risk of hemorrhage [35]. However unless the child is at least 10 days old consultation with the pediatrician regarding adequate hemostasis may be indicated prior to tooth extraction to assess the need for vitamin K administration. The general health and wellbeing of the baby should be evaluated as well as and care must be taken to avoid unnecessary gingival trauma, damage to permanent tooth buds, prevent residual remnants of the dental papillae from proliferating and allay aspiration risk during a tooth extraction. The airway is protected with gauze since teeth may easily drop or dislodge, spencer welis forep provides a firm grip for removal. Alternatively a finger may also be used for extraction. A periodic follow-up by a pediatric dentist to ensure preventive oral health care is very essential [33].

This waiting period prior to a tooth extraction is for the intestinal commensal flora to become established and start vitamin K production essential for the producing prothrombin in the liver [35,39]. If it is not possible to wait for 10 days then evaluate the need for administration of vitamin K with a pediatrician. If vitamin K is not medicated immediately after birth in the newborn then vitamin k (0.5-1.0 mg) is administered intramuscularly to prevent hemorrhagic disease of the newborn as part of immediate medical care [45]. Literature has reported cases of spontaneous tooth exfoliation as well [46]. Teeth stable past four months have a good prognosis even if they are not pleasing esthetically due to discoloration [47].

Other factors to consider are the genetic blue print which indicate the rate at which a baby's teeth come through [48]. Hereditary transmission of a dominant autosomal gene is another important factor to be considered [28,49]. Bodenhoff and Gorlin show that 15% of children with natal and neonatal teeth had a history of the same presenting condition in either their parents, siblings or close relatives [24]. Endocrine disturbances are thought to be due to excessive secretion of the pituitary, thyroid or gonads. Osteoblastic activity within the area of the tooth germ may be contributory [24,49]. Infections such as Congenital syphilis could to a varying degree accelerate or decelerate early eruption including nutritional deficiency such as hypovitaminosis [49]. Fever, exanthema during pregnancy tend to accelerate eruption as they do in various other processes. Superficial position of tooth germ alongside [49] environmental factors such as Polychlorinated biphenyls (PCB) and dibenzofurans seem to increase the incidence of natal teeth [50].

CONCLUSION

Professional care for oral health maintenance and risk assessment is an integral part of contemporary preventive care for infants, children, adolescents, and persons with special health care needs. A paediatric dentist should be able to prudently identify full term and preterm infants with prematurely erupted teeth with underlying systemic consideration; be able to appropriately assess, examine, diagnose, treat and manage a preterm baby with heritable dental developmental anomalies with due hematological considerations and parental counseling for the holistic wellbeing of a child. For future reference studies should be planned to enable the understanding of etiology, anatomical considerations and type of dentition of natal teeth.

ERUDITION

• Natal and neonatal teeth are a rare manifestation in the oral cavity of a neonate.
• Differentiation between natal and primary teeth matters for subsequent management.
• The treatment decision on retention versus extraction of a natal and/or neonatal tooth is based on clinical presentation, evidence based practice and parental consent.
• Radiographic examination where possible augments differential diagnosis between supernumerary primary teeth and teeth of the normal dentition.
• Potential for hemorrhage due to hypoprothrombinemia is an important consideration when deciding to extract a natal or neonatal tooth
• Teeth from primary dentition should be maintained in a healthy oral cavity.

REFERENCES


