

Incidence of Natal Teeth in Sarlahi District of Nepal

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ABSTRACT

Background: The presence of natal or neonatal teeth, which have been associated with environmental factors and hereditary syndromes, can have an impact on the psychosocial growth of children.

Methods: We aimed to estimate the incidence of natal tooth in Sarlahi district of Nepal. Live births from Sarlahi district in Nepal were assessed for natal teeth and other related factors.

Results: Among 28,695 live births between 2010 and 2017, we observed 7 cases of natal teeth accounting for an incidence rate of 2.44 per 10,000 (95% CI: 0.98 – 5.03). Out of 7 neonates with natal tooth, 4 were female and 3 were low birth weight (<2500 grams). None were preterm or had any associated cleft lip or palate.

Conclusions: Incidence of natal tooth in Nepal is rare. It is important for health care providers to know about the possibility of occurrence of natal tooth and its management.

Keywords: Incidence of natal tooth; natal tooth; neonatal tooth; Nepal.

INTRODUCTION

Eruption of the tooth is defined as the driving of the tooth to the occlusal level from its developmental site through the alveolar process.¹ The first deciduous tooth normally erupts around six months of age,² and is considered a developmental milestone for the child.³ A normal tooth or a supernumerary tooth, however, can erupt in a child's mouth precociously. Any such tooth present at birth is referred to as a "natal tooth", while a tooth not present at birth but erupting within the first 28 days after birth is called a "neonatal tooth".⁴ The synonyms used for natal/neonatal teeth are predeciduous teeth, dentition precox, fetal teeth and congenital teeth.⁵

We took advantage of a large ongoing study in rural Sarlahi District of Nepal between 2010 and 2017. Within the existing infrastructure, we aimed to provide an estimate of the incidence of natal teeth.

METHODS

The study was conducted in Sarlahi district of Nepal at the Nepal Nutrition Intervention Project-Sarlahi (NNIPS). We leveraged the infrastructure and data collection processes of a large ongoing community-based-cluster-randomized trial examining the impact of topical applications to the skin of newborns of sunflower seed

oil (compared to traditional use of mustard seed oil) on morbidity and mortality through 28 days. This trial, the Nepal Oil Massage Study (NOMS, NCT01177111), identified all pregnant women in the community and enrolled all babies born alive between November 1st, 2010 and January 31st, 2017. At the time of incident pregnancy identification, women provided informed consent for follow up; field workers conducted home visits monthly throughout pregnancy, as soon as possible after delivery (day 1), and for follow up assessments of the baby on days 3, 7, 10, 14, 21, and 28. Relevant to this current analysis of natal teeth, on the day 1 visit, workers completed a comprehensive assessment of the newborn baby, including 1) questions directed to the recently delivered woman and her family members about the circumstances of labor and delivery, health of mother and baby, and immediate care provided to the newborn and 2) a physical examination of the newborn. The oral cavity was inspected to note the presence of natal tooth and cleft lip and palate.

Field workers collected data on paper forms that were transported at regular intervals to our data centers in Sarlahi and Kathmandu, where forms were entered into a secure SQL database and merged files constructed for analysis. Among all babies in the parent trial, we counted the number of live births with natal teeth,

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described their basic characteristics (sex, birth weight), and estimated the proportion expressed per 10,000 along with a binomial exact confidence interval.

The Institutional Review Board of the Institute of Medicine, Tribhuvan University (Kathmandu, Nepal) and the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (Baltimore, MD) approved the study.

RESULTS

Between November 1st, 2010 and January 31st, 2017, a total of 28,695 live births were enrolled and examined. Among these, natal tooth was observed in a total of 7 neonates, accounting for an incidence rate of 2.44 per 10,000 (95% CI: 0.98 - 5.03); or equivalently, 1 in every 4099 (95% CI: 1,990 - 10,195). Out of 14,840 male neonates, 3 had natal tooth whereas out of 13,854 female neonates 4 had natal tooth (sex was missing for one baby). This accounted for rate of natal tooth in males and females of 2.02/10,000 and 2.89/10,000 respectively.

None of the neonates with natal teeth were pre-term; however, 3 out of 7 were of low birth weight. Out of 7,988 neonates with low birth weight, 3 had natal tooth accounting for the rate of 3.76/10,000 (0.8 - 10.97); the corresponding rate for normal weight babies was 1.99/10,000 (0.5 - 5.11) (weight measurement was missing for 648 (2.3%) infants). Given the very low frequency of natal teeth in this population, we could not make any conclusion about any possible true differences in the likelihood of natal teeth across these characteristics. None of the neonates with natal tooth had cleft lip or cleft palate.

DISCUSSION

The presence of natal or neonatal teeth can have an impact on the psychosocial growth of a child and invoke strong emotions or anxiety among parents.⁶ In some settings, the presence at birth of natal teeth or the emergence of neonatal teeth in the early days after birth has been associated with superstition. While infants with teeth at birth are favored in Western Europe and Malaysia, strong stigma has been documented in diverse settings including Poland, India, China, and Africa, where they are believed to be monsters or evil children.⁴

Eruption of natal and neonatal teeth have been associated with hereditary or environmental factors and syndromes,⁴ and various systemic conditions, including Chondroectodermal Dysplasia, Rubinstein-Taybi syndrome, Ectodermal Dysplasia, Walker-Warburg

syndrome and Hallermann-Streiff syndrome.⁷ Superficial position of the germ has also been associated with precocious eruption of these teeth.³

Prevalence of natal or neonatal teeth have been reported by various authors in the range of 1:1000 to 1:30,000 live births.⁸ We obtained an incidence rate of 1:4,099, for natal teeth only, placing our estimate within a similar range. Allwright in 1958⁹ reported a similar incidence of natal teeth to be 1:3400 and stressed that, like our study, full estimation of the incidence of neonatal teeth (i.e. through 28 days) was not possible due to lack of active follow up after birth. George *et al.* in 2008¹⁰ estimated a prevalence of 1:346 for natal teeth among live births at a hospital in Mangalore, India. Similarly, Liu and Huang in 2004¹¹ estimated the prevalence of 1:140 for natal and neonatal teeth. This study was carried out in a hospital in Taipei, Taiwan. One possible reason for the higher prevalence observed in these studies is that given the hospital setting, observation and recognition of the teeth may have been more sensitive due to the presence of specialist assessors. In our setting in rural Nepal, our field-workers received a basic training on recognition of natal teeth and did not do repeat assessments through the first month of life.

In our study, we found none of the neonates with natal tooth had cleft lip or palate. This is in contrast to the findings of de Almeida and Gomide (1996),¹² Iwamoto *et al.* (2009),¹³ and Kadam *et al.* (2013),⁵ who reported a higher prevalence of natal/neonatal tooth in cleft lip and palate (CLP) patients. Yilmaz *et al.* in 2016¹⁴ in their study also concluded that the presence of natal/neonatal teeth in infants with CLP was not rare.

Our findings of similar rates between boys and girls was in concordance with that of Basavanthappa *et al.*⁶ and Kates *et al.*¹⁵ who reported no significant differences in incidence of natal/neonatal teeth according to sexes. However, females have been reported to have a higher incidence of natal/neonatal teeth by multiple authors.^{15,16}

One of the limitations of this study was that the observers did not record location of natal teeth. Anterior mandible is the most common site for natal/neonatal teeth, followed by maxillary anterior.^{8,17} Higher prevalence for mandibular incisors can be attributed to the fact that mandibular incisors are the first teeth to erupt in the oral cavity.¹⁸ Yilmaz *et al.*,¹⁴ looked for the distribution of natal/neonatal teeth in cleft lip and palate patients. They found that all natal/neonatal teeth were located adjacent to the cleft region in the maxilla. The other limitation was that only natal teeth were recorded,

and neonatal teeth were not recorded. The ratio of natal to neonatal teeth is approximately 3:1.¹⁷ Based on this assumption, if neonatal teeth would have been considered we would have observed at least 2 cases of neonatal teeth.

Eruption of natal or neonatal tooth can be associated with complications like trauma to the mother's nipple during feeding, or sublingual laceration, risk of aspiration, and problems with retention of pre-surgical orthodontic appliances used in patients with cleft lip/palate.⁵ Thus, it requires attention and immediate management. Riga-Fede disease or syndrome is one of the major complications caused by natal/neonatal teeth. It is characterized by the traumatic ulceration on the under surface of the tongue, attributed to the friction caused by the tooth, during forward and backward tongue movement.⁵ Management of this natal/neonatal teeth includes grinding of the teeth,¹⁹ breastfeeding splint with composite resin, or extraction.⁸ Bodenhoff recommended to avoid extraction of natal/neonatal teeth up to the 10th day of life due to the risk of hemorrhage.¹⁷ Rusmah proposed administration of Vitamin K, for extraction before the 10th day of life.²⁰ The management of natal or neonatal teeth is directed towards preserving the tooth in the oral cavity without any complications to the child or the mother.⁴

CONCLUSIONS

To summarize, incidence of natal tooth is rare among newborns in rural southeastern Nepal, but in line with other published estimates. Future qualitative investigations can complement these quantitative findings, to better understand the perceptions of mothers and/or other caregivers, as well as dental health professionals, and to improve awareness of appropriate management of neonatal teeth.

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