



Maternal and Neonatal Factors Associated with the Emergence of The First Temporary Tooth

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Abstract

Introduction: The order and chronology of the temporary dental eruption is an expression of the child's growth and influences its subsequent dental development and is subject to influences of intrinsic and extrinsic factors that can cause an advance or delay in the appearance of one or more teeth or throughout the dentition.

Objective: to determine the influence of maternal and neonatal factors associated with the emergence of the first temporary tooth.

Material and Method: A descriptive observational study was designed in 104 children of both sexes between 0 and 36 months of age, belonging to the Ana Betancourt polyclinic of the Playa Municipality, Havana, Cuba. The study period ranged from September 2019 to March 2020. The variables were studied: age, sex, alterations in pregnancy, and birth weight. The results were presented in statistical tables with absolute and relative frequencies.

Results: Children with low birth weight had a delay in the eruption of the first temporary tooth in 36.8%, as did the children of mothers with alterations during pregnancy in 52%. Conclusion: Delay in the eruption of primary teeth was observed in children with low birth weight and the children of mothers who presented alterations during pregnancy.

Keywords: Temporary dentition; birth weight; eruption; tooth eruption

Introduction

Teething is part of the phenomenon of human growth and development, which is an important parameter in assessing progress and quality of life in the community. The appearance of teeth, the beginning of ambulation, the first words, are events celebrated in the family environment as signs of the adequacy of the adaptations of the child's development to what is expected, to the constant norm in the evolution of the human being. Therefore, the teething process represents a step in their biological maturation. This is a phenomenon of medical and social interest [1-3]. The primary, temporal, or deciduous dentition comprises 20 teeth, 10 in the maxillary arch and 10 in the mandibular. Its importance lies in its functions such as: chewing, swallowing, learning phonemes, as well as tooth replacement, since temporary teeth serve as a guide for the eruption of their permanent successors and with them the appearance of additional teeth: molars distal to the second primary molar. Thus, one goes from a 20-tooth dentition to a 32-tooth one, thereby increasing the individual's chewing capacity. Among the fundamental characteristics to study it are the order

and chronology of the outbreak of the primary dentition [4]. Tooth eruption is associated with the estimation of skeletal development and constitutes a physiological process that participates directly in the development of the stomatognathic apparatus, since it includes: the development of teeth in intrauterine life (it begins with the formation and calcification of the dental germ until the end of its physiological cycle), the displacement movements which are coordinated with the growth and development of the jaws; and finally possible alterations in the arches [4-6]. The state of the dental eruption should be considered as a parameter to consider in the comprehensive evaluation of growth and somatic development. The chronology of the eruption of the primary teeth is subject to influences of intrinsic and extrinsic factors that can cause an advance or delay in the emergence of one or more teeth or in the entire dentition. Among these factors we can mention the nutritional status, sex, race, genetic inheritance, environment, and socioeconomic level [7-9]. The importance of the temporary dentition for the future of the permanent one has been

demonstrated, so it is necessary to direct attention to the various risk factors that affect the time of appearance of the teeth, to be able to act from the early stages of the pregnant woman. Therefore, it is proposed to carry out a study to determine the influence of maternal and neonatal factors associated with the outbreak of the first temporary tooth.

Materials and Methods

An observational, descriptive, cross-sectional study was carried out in children belonging to the Ana Betancourt polyclinic in the Playa Municipality, Havana, Cuba. The study period spanned between September 2019 and March 2020. The universe of study was made up of 104 minors between 0-36 months of age of both sexes who belong to the family medical offices of the health area of said clinic. The children were visited and checked in the childcare consultations and in the day, care centers they attended after the signing of the Informed Consent by the parents or guardians. In the coordinated schedules, all the subjects were examined only once by a single examiner where the presence or absence of the tooth in the oral cavity was observed under good natural or artificial lighting, with the help of a sterile tongue depressor, through inspection. The clinical examination was started in the upper right quadrant of the oral cavity and continued in a clockwise direction until all quadrants were covered. The data were collected in a form created for this purpose, and the following variables were analyzed:

- Age:** Continuous Quantitative. According to completed months (0 to 36 months). Absolute and relative frequency was determined.
- Sex:** Qualitative nominal dichotomous. Male or female. According to biological sex. Percentage was determined.
- Alterations in pregnancy:** Qualitative Nominal dichotomous. A maternal illness is collected in the questionnaire during the gestation period. Percentage was determined.
- Birth weight:** Discrete quantitative -Normal weight (2500gr - 3500gr) -Low weight (<2500gr) -Very low weight (<1500gr) -Overweight (> 3500gr). According to WHO categories. Percentage was determined.
- Age of sprouting of the first tooth (months), Quantitative discrete:** Less than 6 months old, between 6 and 12 months

and older than 12 months. According to the time (date in months that the temporary tooth began its clinical appearance in the oral cavity. Percentage was determined.

The data were processed on a Pentium IV computer, through the statistical processor SPSS version 21.0 for Windows. Frequency distributions were made to all the variables under study and the results are presented in tables with absolute and relative frequencies. This study was carried out with the prior approval of the Scientific Council of the "Raúl González Sánchez" Faculty of Stomatology, who is in charge of reviewing the quality and correct compliance with the ethical procedures of each investigation. With the help of the management team of the different childcare centers and medical clinics of the polyclinic, the purpose of this study and ethical considerations were explained to the parents / guardians through the Informed Consent Act. The children were always accompanied by an adult who knew and approved all the procedures.

Results

During the period studied, a total of 104 children were examined. Regarding sex, girls predominated (56 for 53.8%). According to age group, newborns between 0 and 12 months stood out with 43 (41.3%), followed by the 25-36-month group with 35 children for 33.6%. Table 1 shows the distribution of the ages of appearance of the first temporary tooth according to the history of alteration during pregnancy in the interviewed mothers. Those without a pathological history during pregnancy predominated, 79 women (75.9%). Diseases such as high blood pressure, diabetes mellitus, and hypothyroidism were found in the remaining 25 mothers (24.1%). In 12 of them the history of delayed intrauterine growth was collected. It is of interest that when observing the ages of first tooth outbreak, it is found that those who were delayed (greater than 12 months) reported having had alterations during pregnancy (13 mothers for 52% of all patients in this group). Table 2 shows the distribution of the ages of appearance of the first temporary tooth according to weight at birth. In this it can be observed that in general the age between 6 and 12 months prevailed for the outbreak of the first tooth regardless of the weight at birth (86 children for 82.7%). However, it is important to note that children with low birth weight had a delay in the eruption of the first primary tooth in 36.8% (7 children). In those children with a history of overweight there was no delay in the appearance of the first temporary tooth.

Table 1: Distribution of the ages of appearance of the first temporary tooth according to the history of alteration during pregnancy. Ana Betancourt Polyclinic. Municipality Playa. 2019- 2020.

Alterations during Pregnancy	Age of First Tooth Eruption (Months)			Total No (%)
	< 6 No. (%)	6 - 12 No. (%)	> 12 No. (%)	
Yes	1 (4,0 %)	11 (44,0%)	13 (52,0 %)	25 (24,1%)
No	7 (8,8%)	68 (86,1%)	4 (5,1%)	79 (75,9%)
Total	8 (7,7%)	79 (75,9%)	17 (16,4%)	104 (100%)

Note: percentages calculated based on the rows.

Table 2: Distribution of the ages of appearance of the first temporary tooth according to weight at birth. Ana Betancourt Polyclinic. Municipality Playa. 2019-2020.

Birth Weight	Age of First Tooth Eruption (Months)			Total No (%)
	< 6 No. (%)	6 - 12 No. (%)	> 12 No. (%)	
Under weight	2 (10,5 %)	10 (52,6)	7 (36,8 %)	19 (18,3)
Normal	5 (6,6)	68 (89,5)	3 (3,9)	76 (73,1)
Overweight	1 (11,1)	8 (88,9)	-	9 (8,6)
Total	8 (7,7)	86 (82,7)	10 (9,6)	104 (100)

Discussion

Each population and each individual have differences in relation to the variations of growth and development, which are given by genetic, environmental, and socio-political factors and tooth eruption is a phenomenon of this process that does not escape from it. Having a more precise knowledge of the average age of eruption of each dental organ is useful to establish criteria for diagnosis, prevention, and treatment [10,11]. Nowadays different studies and authors coincide with a series of maternal risk factors for intrauterine development such as: nutritional evaluation at the beginning of pregnancy, weight gain and diseases associated with pregnancy, other postnatal associated with the child such as: birth weight, nutritional evaluation of height / weight, which can influence the sequence and time of eruption. Likewise, they report positive associations between dental development, the general growth of the body and the maturation of the skeleton, but in all instances, the correlations indicate that this process is relatively independent of the conditions that affect somatic growth [11-13]. The mothers interviewed did not have a personal history in more than a third of the study population, but the children with delayed primary dentition did have references that their mothers suffered or had a history of illnesses during pregnancy.

A study carried out by Ordoñez and Aguilar 12 in Peru on alterations in the chronology and sequence of eruption of primary teeth associated with factors that influenced up to the twentieth week of gestation in patients attending the Pachacútec Maternal and Child Health Center found that the association between the Infectious diseases and alterations in the sequence were shown in 88.1%, especially in those pregnant women who suffered urinary tract infection, a result that does not agree with the present investigation. These authors found lower percentages in diseases such as arterial hypertension (4.1%), mental health (3.3%), nutritional diseases (9.8%), with respect to chronology. In the case of the sequence, 2.4% was found for arterial hypertension; for mental health, 2.4%, and for nutritional diseases, 7.1%. Another cross-sectional, prospective and comparative study [14] carried out at Hospital Belén de Trujillo in Peru, with the objective of determining the influence of gestational age and birth weight on deciduous tooth eruption in children aged 5 months to 36 months. , evaluated the eruption of all the deciduous teeth of 120 children of 13.8 +/- 9.1 months of age, 65 male and 55 female. The authors found that when evaluating the influence of gestational age on

deciduous tooth eruption in these children there was a statistically significant influence. Podadera Valdés ZR et al. [15], in a study on risk factors that influence the delay in the outbreak of primary dentition, in their results they indicated that in maternal diseases associated with pregnancy, the relationship between this variable and the delay in pregnancy was significant. dental bud, results that coincide with those of other authors cited by them. Children whose mothers had inadequate weight gain during pregnancy were approximately seven times more likely to delay tooth eruption than those whose mothers had adequate weight gain.

In 2018, Cobas Pérez et al. [11], carried out an analytical study, with the aim of determining the maternal and neonatal risk factors associated with the delay of temporary tooth eruption in children from day care centers, showing that the nutritional status of the mothers constituted 52% of the cases with alterations of the dental bud, being responsible for 79.8%, if an adequate nutritional state were achieved, this risk factor would be reduced by 41.5%. 54.0% of the children with mothers who maintained an inadequate weight gain had a delay in the dental flare, according to the OR value it was 4.6 times more likely that the children of mothers with inadequate weight present alteration, thus being a factor risk of 78.7% of cases. In addition, 44% of the cases were children of mothers who had diseases, constituting a risk factor. According to the OR value, it is 2.3 times more likely that the child of a mother who suffered some disease during her pregnancy, presents a delay in tooth eruption compared to those whose mothers were healthy. On the other hand, the maternal disease associated with pregnancy that most prevailed in the population of this study was anemia, followed by diabetes. These clinical entities are associated with the nutritional status of the mother and the fetus. The insufficiency of hemoglobin brings about cellular hypoxia, while the increase in insulin causes hypocalcemia, among other alterations. Logan [16], from the initial studies of the chronology of primary dentition, has made a relationship between weight and height, which shows that nutritional states influence calcification and tooth eruption. He also reiterates that there are other genetic factors that can be influenced by mechanical disorders that can alter the genetic plan of eruption, as well as another factor such as the quality of the mothers' nutrition which could lead to low weight at birth, which would have an impact on calcification and tooth eruption. The state of body weight at birth may have an influence on alterations in the order and delay in the eruption chronology during the primary dentition stage, as well

as an early mixed dentition with a high incidence of malocclusions. Most of the reviewed studies found an association between low birth weight and delayed teething. In recent years, it has become increasingly apparent that nutrition plays as important a role in the development and maintenance of tissues in the oral cavity as it does anywhere else in the body. These tissues are influenced by alterations in both the prenatal and postnatal development period, so that birth weight is one of the factors that influences the delay in tooth eruption [17].

In the study carried out by Cobas Pérez et al. [11], it was found that the low birth weight of the child constitutes a risk factor in the studied population, being present in 52% of the cases with anomaly of the eruption of the dental bud, according to the OR value is 6.1 times more likely to find it than in those born with an adequate weight, thus being a risk factor in 83.3% of cases. Study on the temporary eruption according to the nutritional status, the results show that an earlier dental eruption was presented in those children who presented greater weight at birth [17,18]. Burgueños Torres [19], determined that children whose mothers had received a higher caloric intake, have a higher average of teeth. These findings directly relate nutritional status to tooth appearance, so that those subjects with a poorer nutritional contribution are predisposed to have a more delayed dentition. Cobas Pérez et al. [11], refer that the fact that the child has had low birth weight determines times more the possibility of presenting dental alterations than in those who were not born with low weight, so that there is a causal association. In children with a lower birth weight, in general, they are more likely to have a shorter gestation, so they would also be younger than those with a higher birth weight, which is why it would take longer to present the same number of teeth than those children who were born at the same time, will have a greater weight.

Conclusion

In the children studied, the female sex predominated and those under 12 months of age, delayed tooth eruption was observed in children with low birth weight as well as in the children of mothers who presented alterations during pregnancy.

References

- Vargas Dadalto EC, Wetler Marcona C, Martins Gómez AP (2018) Erupção do primeiro dente em recém-nascidos pré-termo: Acompanhando 12 meses. *Rev. odontol. UNESP* 47(3).
- Zadzinska E, Sitek A, Rosset I (2016) Relationship between pre-natal factors, the perinatal environment, motor development in the first year of life and the timing of first deciduous tooth emergence. *Annals of Human Biology* 43(1): 25-33.
- Burgueño L, Mourelle-Martínez MR, Nova García JM (2015) A study on the chronology and sequence of eruption of primary teeth in Spanish children. *Eur J Paediatr Dent* 16(4): 301-304.
- De Souza N, Manju R, Hegde AM (2018) Development and evaluation of new clinic to the methods of age estimation in children based on the eruption status of primary teeth. *J Indian Soc Pedod Prev Dent* 36: 185-190.
- Ayala Pérez Y, Carralero Zaldívar LC, Leyva Ayala BR (2018) The dental eruption and its influencing factors. *CCM* 22(4): 681-694.
- García Cabrera M, San Miguel Pentón A, Álvarez García I (2016) Chronology and order of outbreak of the permanent dentition. *Acta Med Cent* 10(2).
- Neto Pedro Garcia, Falcão Mário Cícero (2014) Eruption chronology of the first deciduous teeth in children born prematurely with birth weight less than 1500g. *Rev Paul Pediatr* 32(1): 17-23.
- Mora Pérez C, López Fernández R, Apolinaire Pennini JJ (2009) Brot and dentari or and be or nutritional and n child s d e 5 to 13 years. *Medi Sur* 7(1).
- Pavičič I, Dumančić J, Badel T, Vodanović M (2016) Timing of emergence of the first primary tooth in preterm and full-term infants. *Annals of Anatomy- Anatomischer Anzeiger* 203: 19-23.
- Vahdat G, Zarabadipour M, Fallahzadeh F, Khani R (2019) Factors influencing eruption time of first deciduous tooth. *Journal of Oral Research* 8(4): 305-309.
- Cobas N, Navarro J, Pardo MI, Turcas MI, Rosa C (2018) Maternal and neonatal risk factors associated with delayed primary dentition. *MEDISAN* 22(2): 192-199.
- Ordoñez LA, Aguilar DP (2019) Changes in the timing and sequence of tooth eruption primary associated factors that influenced to vigesima week of gestation patients to cuden to the Maternal and Child Health Center Pachacutec Peru-Korea (Callao, 2017). *Rev Cient Odontol (Lima)* 7(2): 11-22.
- Morgado Seraffín D, García Herrera A (2011) Chronology and variability of dental eruption. *MEDICIEGO* 17 (Suppl 2).
- Pisconte León EG (2017) Influence of the age gestational and the weight to the birth of the eruption. *Journal of Applied Oral Science* 14(4).
- Podadera Valdés ZR, Arteaga Díaz A, Tamargo Barbeito TO, Llanes Serantes M (2004) Risk factors that influence the delay in the outbreak of primary dentition. *Policlínico Turcios Lima Rev Cubana Estomatol* 41(1):
- Logan, WHG, Kronfeld R (1933) Development of human jaws and surrounding structures from birth to the age of fifteen years. *J Am Dent Assoc* 20: 379-427.
- Mohammad Khaled Ghabani (2017) The influence of weight and height on the eruption of the primary dentition. Valencia. Doctoral Thesis.
- Pacheco Romero J (2014) Nutrition in pregnancy and lactation. *Rev Peru Gynecol obstet* 60(2): 141-146.
- Burgueños Torres L (2014) Study of the eruption of primary teeth in a sample of children from the Community of Madrid. Doctoral Thesis.



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