Dentistry 3000

Vol 13, No 1 (2025)
ISSN 2167-8677 (online)
DOI 10.5195/d3000.2025.1071

Connection of Some Growth Parameters and Teething in Infants

Sulafa Khair Al-Deen Banoosh

College of Dentistry, University of Tikrit, Iraq

Abstract

Objective: Eruption of teeth can be defined as a normal physiological process of movement of the teeth through the alveolar bone and it takes its place in the oral cavity. The aim of this study was to find if there was any relation between growth parameters and eruption of teeth in infants. **Materials and Methods:** 77 infants and their families accepted to be in this study. 11 questions were asked to their parents related to the normal growth of the children. Oral examination was done by using dental probe and mirror. **Results:** In this study, there was a significant delay of teething in children that had a cesarean delivery in comparison to normal delivery (P< 0.001), and a significant delay in males compared to females (P< 0.001). **Conclusions:** The type of delivery is associated with differences in the eruption of teeth.

Open Access

Citation: Banoosh SKA. (2025) Connection of Some Growth Parametrs and Teething in Infants. Dentistry 3000. 1:a001 doi:10.5195/d3000.2025.1071
Received: October 11, 2025
Accepted: October 15, 2025
Published: November 10, 2025

Email: sulafa.khairy@yahoo.com

Introduction

Most parents view an infant's first tooth as one of several major developmental milestones, and an "old wives' tale" claims that its early eruption indicates high intelligence [1].

During the development of deciduous teething, a variety of genetic and environmental factors, including race, gender, systemic conditions, environmental conditions, socioeconomic level, maternal breastfeeding, infant nutritional status, and physical development, interact to affect the timing of dental eruption. None of these factors act independently [2,3].

The time of teeth eruption in a healthy infant may depend on growth factors and feeding habits [4].

According to certain research, the development of the primary teeth is predominantly influenced by the gestational age, the severity of the neonatal sickness, postnatal nutrition, and the degree of prematurity. According to other studies, low and normal birth weight are associated to the primary dentition's eruption pattern [5]. Nutritional aspects have an impact on tooth emergence and odontogenesis [6].

Lack of nutrients, such as a calcium deficit, can impact the cellular architecture of the organic matrix, including the maturation process of amelogenesis and calcification, as well as the morphology and pattern of teeth eruption [7], during the development of teeth.

The eruption of deciduous teeth can also be delayed by other disorders like intrauterine growth restriction, inadequate size for gestational age, and long-term parenteral feeding [9].

When preterm and low birth weight (LBW) combine, the delay makes the condition worse, especially in those who are in a key developmental stage when they are diagnosed with a systemic disease at birth [10,11].

The aim of this study was to assess the relationship between gestational age, birth weight, neonatal sickness, and the first deciduous tooth's eruption timing.

Materials and Methods

This was a cross-sectional study that focused on children aged between one and two years who were carefully selected by methodical arbitrary specimen from the children attending Ibn Rushd, Ibn Sina, and Al-Razy primary health care centers in Tikrit city. Any child with a serious illness that could affect the scoring presentation of children, or the eruption of the teeth was excluded from the study. The period of employment included March 2017 until the end of January 2018.

The study's inclusion criteria were met by 77 youngsters. As a screening tool for developmental delays, the third edition of the Age and Stages Questionnaire was employed [12]. These investigations focused on 10 main issues. To ascertain the tooth eruption, an oral examination was conducted in a well-lit area

using a dental mirror and probe. The statistical analysis was done using Microsoft excel 2013, with a p-value of 0.05 as showing significance.

Results

Table 1 shows summary statistics of teething and some factors related to infant life. Delayed teething was seen more among those born by cesarean section than normal delivery, and among males more than females.

Discussion

Tooth eruption is a series of metabolic events in alveolar bone defined by bone resorption and creation on opposite sides of the dental follicle. When it comes to the production of teeth, some vitamin and hormone deficits can have a negative impact on the formative cells and the matrix they create. Production of hypoplastic tissue could occur if the organic matrix content is reduced. The end consequence would be a hypoplastic matrix that is also hypomineralized [13].

In this study, we discovered that newborns whose mothers deliver them via cesarean section had significantly higher statistical tooth eruption delays than kids whose mothers' birth normally.

Finding the cause of these results is challenging because any changes during a cesarean section are only temporary (like general anesthesia and medications), and teeth usually don't erupt until at least six months after the baby is born. However, the authors believe that calcium or vitamin D deficiency may be one of the causes of cesarean delivery or lower their blood levels. Because vitamin D is essential for maintaining calcium homeostasis, the greater serum calcium level contributed to the mechanism of labor's onset [14].

The infant's development and the emergence of the baby's deciduous teeth may be impacted by this condition's potential to induce the same shortage in the body after delivery [7,8].

This fact needs to be demonstrated by analyzing the serum calcium levels in both the mother and the newborn following the delivery by marine infection.

Another conclusion in this study is that boys experience a statistically significant teething delay compared to girls. This finding is consistent with research done in 2001 on Korean newborns by Choi and Yang, who found that males experience tooth emergence earlier than females [15]. This result can be explained by the fact that males have thicker mandibular alveolar bones than females do [16], Previous data report on the subject were not clear [16-20].

No one pattern can adequately define sex variations in the pattern and time of emerging globally, according to Tanguay et al.'s hypothesis that ethnic characteristics may underlie sex differences in tooth development [21].

In addition, Tanguay et al. noted that, except for the first deciduous molar, males' teeth typically appeared one month earlier than girls' teeth. According to Holman and Jones, there is less support for the idea that sex differences in the eruption of deciduous teeth are mediated by ethnicity. However, they agreed with Demirijian and Levesque's theory of a developmental crossover in which females lead males for the posterior teeth and vice versa [22].

This trend starts in utero, when males acquire their teeth more quickly than females [23].

According to Holman et al., the pattern seems to correspond to a spatial gradient in tooth position that emerges early in dental development and corresponds to sex differences [24]. Even in several trials where sex differences were not determined to be statistically significant, this overall developmental crossover trend persisted [25].

Acknowledgments

All praise and appreciation to the Community Medicine Department of Tikrit University College of Medicine.

References

1. G. T. McIntyre1 and G. M. McIntyre, Teething troubles? British Dental Journal Volume 192 No. 5 March 9 2002.

2. Duarte MEQ, Andrade MA, Faria PC, Marques LS, Jorge MLR. Fatores associados à cronologia de erupção de dentes decíduos - revisão de literatura: erupção de dentes decíduos e fatores associados. Rev Uni Vale do Rio Verde. 2011; 9 (1): 139-51.

3. Lynch RJ. The primary and mixed dentition, post-eruptive enamel maturation and dental caries: a review. Int Dent J. 2013; 63 (Suppl. 2): 3-13.

4. Haddad AE, Correa MS. The relationship between the number of erupted primary teeth and the child's height and weight: a crosssectional study. J Pediatr Dent 2005;29:357–62.

5. Aktoren O, Tuna EB, Guven Y, Gokcay G. Birth weight and teeth eruption a retrospective study. Community Dent Health 2010;27:52–6.

6. Thomaz EB, Alves CM, Ribeiro CC, Batista RF, Simões VM, Cavalli R, Rasaiva MDAC, Cardoso VC, Bettiol H, Barbieri MA, da Silva AA. Perinatal outcomes and changes in the oral cavity: Brazilian cohorts of Ribeirão Pret

7. Fernandes Neto PG, Falcão MC. Cronologia de erupção dos primeiros dentes decíduos em crianças nascidas prematuras com peso inferior a 1500g. Rev Paul Pediatr. 2014; 32 (1): 17-23.

8. Peedikayil FC. Delayed tooth eruption. e-Journal of Dentistry. 2011; 1 (4): 81-6.

9. Fernandes Neto PG, Falcão MC. Cronologia de erupção dos primeiros dentes decíduos em crianças nascidas prematuras com peso inferior a 1500g. Rev Paul Pediatr. 2014; 32 (1): 17-23.

10. Al-Sayagh GD, Qasim AA, Al-Rawi BA. The effect of premature birth on the primary dentition. Al–Rafidain Dent J. 2008; 8 (1): 18-22.

11. Zaidi I, Tahyath MN, Singh S, Sinha A. Preterm birth: a primary etiological factor for delayed oral growth and development. Int J Clin Pediatric Dent. 2015; 8 (3): 215-9.

12. Ages and stages questionnaires 3rd ed. Brookes publishing co. 2009. Available at: http://www.brookespublishing.com/resource-center/screening-and assessment/ asq/asq-3.

13. Wise G. Cellular, molecular, and genetic determinants of tooth eruption. Crit Rev Oral Biol Med 2002;12(4):323–35.

14. Anne Merewood, Supriya D. Mehta, Tai C. Chen, Howard Bauchner, and Michael F. Holick, Association between Vitamin D Deficiency and Primary Cesarean Section, J Clin Endocrinol Metab. 2009 Mar; 94(3): 940–945.

15. N.K. Choi, K.H. Yang. A study on the eruption timing of primary teeth in Korean children ASDC J Dent Child, 68 (2001), pp. 244-249.

16. V. Sairam, Gareema Raju Potturi, B. Praveen, and G Vikas, Assessment of Effect of Age, Gender, and Dentoalveolar Changes on Mandibular Morphology: A Digital Panoramic Study, Contemp Clin Dent. 2018 Jan-Mar; 9(1): 49–54.

17. Afrin Mohamed Khalifa Reyad Atef El Gendy Mohamed Mahmoud Abd El-Mohsen Ahmad Alsayed Hammour Rasha Sabry Abd El Lateef Aly, Relationship between gestational age, birth weight and deciduous tooth eruption, Egyptian Pediatric Association Gazette, Volume 62, Issue 2, June 2014, Pages 41-45.

18. R.M. Viscardi, E.D. Romberg, R.G. Abrams. Delayed primary tooth eruption in premature infants: relationship to neonatal factors Pediatr Dent, 16 (1) (1994), pp. 23-28.

19. N. Sajjadian, H. Shajari, Jahadi Ramin, G. MichaelDental eruption and birth weight Iran Pediatr Neonatol, 51 (4) (2010), pp. 235-237.

20. EL-Mougi MT, Abu Shebika R, El Ahmady A, Hammour A, Mohammed SM. Teething, age of eruption, factors affecting and knowledge of mothers about it [M.Sc. Thesis]. Al Azhar Faculty of Medicine, 2011.

21. Tanguay R, Buschang PH, Demirjian A. Sexual dimorphism in the emergence of deciduous teeth: its relationship with growth components in height. American Journal of Physical Anthropology, 1986, 69(4):511–515.

22. Demirjian A, Levesque GY. Sexual differences in dental development and prediction of emergence. Journal of Dental Research, 1980, 59:1110–1122.

23. Burdi AR, Garn SM, Miller RL. Development advancement of the male in the first trimester. Journal of Dental Research, 1970, 49:889.

24. Holman DJ, Jones RE. Longitudinal analysis of deciduous tooth emergence: IV. Covariate effects in Japanese children .American Journal of Physical Anthropology, 2005, 126(3):352–358.

25. Saleemi M et al. Early child health in Lahore, Pakistan: XIII. Primary teeth emergence. Acta Paediatrica Supplement, 1994, 82(Suppl. 390):159–167.

Table 1. Effect of growth affecting factors on teething.

Domain		Teething		Chi-square	p-value
		Delayed	Normal		
Gestational age	normal	22	53	0.397	0.52
	low	1	1		
Birth weight	normal	16	43	0.912	0.33
	low	7	11		
Maturity	Preterm	1	1	0.397	0.52
	Full term	22	53		
Mode of delivery	normal delivery	11	44	8.952	0.002
	Cesarean section	12	10		
Sex	male	18	26	5.972	0.01
	female	5	28		
Feeding	Bottle	10	8	2.382	0.12
	Breast	44	15		
OFC	normal	45	16	1.857	0.17
	low	9	7		