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Chair and Department of Paedodontics Dentistry, Medical University of Lublin

MONIKA WILK, MARIA MIELNIK- BŁASZCZAK

A clinical assessment of eruption dynamics of first molar teeth and incisors in the maxilla and mandible in Lublin children based on centile analysis

In order to make an assessment of the course of ontogenesis for a particular child researchers use developmental assets. The following assets are used to determine a child's developmental age: bone age (skeletal maturity), tooth age (dental maturity), morphological age (figure maturity), and age of secondary sex characters (sexual maturity). The average value of the analysed traits determines a child's biological (developmental) age in years. The most frequently used methods of evaluating a child's ontogenesis include asset charts, centile charts, proportion indices, morphograms, and graphic methods of determining developmental rate and harmony developed by Wolański (3,4,7). Acceleration of development and secular variations call for chart modernization every 10–15 years, (3,9,10).

The aim of the present paper is to present current data concerning the eruption of first permanent teeth, i.e. first molar teeth and incisors in the maxilla and mandible of Lublin children based on centile analysis.

368 children aged 4–8 were examined in total, 167 girls and 201 boys. The study was carried out in the years 2002–2003 in selected Lublin's nursery schools and first forms of primary school.

The examined children were divided into four age groups, according to calendar age: group I of 71 youngest children, 27 girls and 44 boys, aged 4–5 (from 4 years of age to 4 years 11 months); group II of 103 children, 49 girls and 54 boys, 5–6 years old (from 5 years of age to 5 years 11 months); group III consisting of 127 children, 61 girls and 66 boys, aged 6–7 (from 6 years to 6 years 11 months); group IV of 67 oldest children, 30 girls and 37 boys, aged 7–8 (from 7 years of age to 7 years 11 months).

In the analysis of the eruption process the following were taken into account: Centile 5 (C 5) – the onset of teething, i.e. the age at which in 5% of the children particular permanent teeth have erupted; Centile 25 (C 25) – the age at which in 25% of children particular permanent teeth have erupted; Centile 50 (C 50) – the average eruption time, the median, i.e. the age at which in 50% of children particular permanent teeth have erupted; Centile 75 (C 75) – the age at which in 75% of children particular permanent teeth have erupted; Centile 95 (C 95) – the end of teething, i.e. the age at which 95% of children have particular permanent teeth erupted.

The obtained numerical data were introduced into the calculating sheet and analysed statistically. The results of the study are presented in Table 1 and in three figures in the form of graphs.

Table 1. Eruption times (in years and months) for permanent teeth, for the whole study group and according to gender

Centiles	Teeth	Eruption times for permanent teeth in years and months		
		in the total study group	in girls	in boys
C 5	Upper molars	5 8	6 0	5 6
	Lower molars	5 9	5 7	5 8
	Lower central incisors	5 5	5 4	5 5
	Lower lateral incisors	6 0	6 0	5 1
	Upper central incisors	6 0	6 0	6 0
	Upper lateral incisors	6 1	6 0	6 0
C 25	Upper molars	6 1	6 3	6 1
	Lower molars	6 1	6 1	6 1
	Lower central incisors	6 1	6 2	6 0
	Lower lateral incisors	6 4	6 4	6 4
	Upper central incisors	6 4	6 4	6 5
	Upper lateral incisors	6 8	6 8	6 6
C 50	Upper molars	6 8	6 7	6 8
	Lower molars	6 7	6 7	6 7
	Lower central incisors	6 5	6 3	6 6
	Lower lateral incisors	7 0	7 0	6 11
	Upper central incisors	6 11	6 9	6 10
	Upper lateral incisors	7 3	7 2	7 2
C 75	Upper molars	7 2	7 2	7 2
	Lower molars	7 2	7 2	7 2
	Lower central incisors	7 1	7 2	7 2
	Lower lateral incisors	7 3	7 5	7 3
	Upper central incisors	7 3	7 3	7 2
	Upper lateral incisors	7 5	7 5	7 7
C 95	Upper molars	7 7	7 7	7 7
	Lower molars	7 7	7 7	7 7
	Lower central incisors	7 6	7 7	7 6
	Lower lateral incisors	7 8	7 8	7 7
	Upper central incisors	7 7	7 7	7 8
	Upper lateral incisors	7 8	7 7	7 8

An analysis of the data included in Table 1 and in Figures 1, 2 and 3, concerning the ages at which permanent teeth erupt, shows that in girls the onset of teething occurs at the age of 5 years 4 months, and the first tooth to appear is the upper central incisor. The lower first molar begins to erupt at the age of 5 years 7 months, whereas the remaining teeth, i.e. the upper molar, the lower lateral incisor and upper incisors start erupting at age 6.

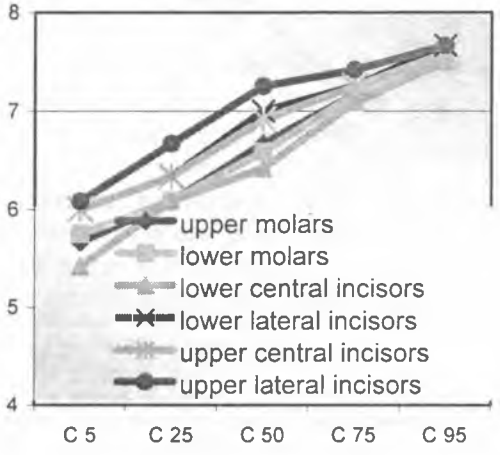

Fig. 1. The dynamics of permanent teeth eruption: the eruption of the first molars and incisor teeth in the maxilla and mandible in the whole study group of children

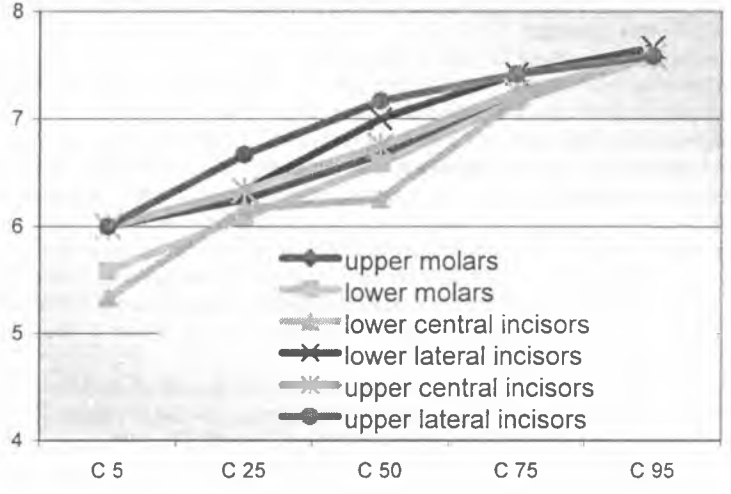

Fig. 2. The dynamics of permanent teeth eruption: the eruption of the first molars and incisor teeth in the maxilla and mandible in girls

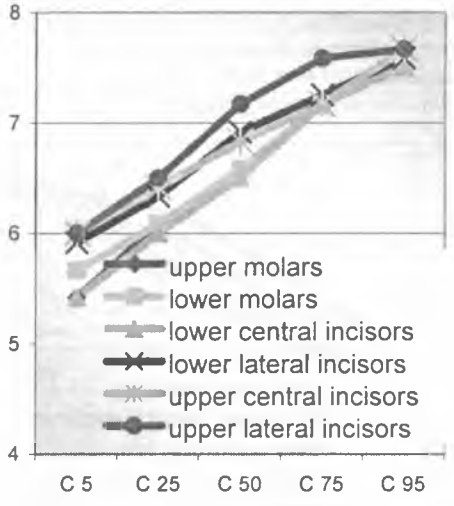

Fig. 3. The dynamics of permanent teeth eruption: the eruption of the first molars and incisors, maxillary and mandibular in boys

The median, i.e. the average eruption time, at which in 50% of the studied population a particular tooth has erupted, fall the earliest for the lower central incisor, i.e. at 6 years 3 months of age. It is 6 years 7 months for the upper and lower first molar. The average eruption time for the upper central incisor is 6 years 9 months, for the lower lateral incisor 7 years, and for the upper lateral incisor 7 years 2 months.

The conclusion of teething in girls occurred at the age of 7 years 7 months for both the first molars, the lower central incisor, and both the upper incisors, the central and the lateral, whereas it fell at 7 years 8 months for the lower lateral incisor.

The beginning of teething in boys falls on the age of 5 years 5 months, and the first tooth to erupt is the lower central incisor, followed by the upper first molar at the age of 5 years 6 months. The lower first molar erupts at the age of 5 years 8 months, and the lower lateral incisor at the age of 5 years 11 months. The upper incisors begin to appear at 6 years of age.

The median in boys is reached the earliest for the lower central incisor, i.e. at 6 years 6 months of age, followed by the lower first molars at 6 years 7 months and the upper ones at 6 years 8 months. The next teeth to reach the median are the upper central incisor at 6 years 10 months and the lower lateral incisor at 6 years 11 months. The upper lateral incisor is the last to reach the median, which occurs at 7 years 2 months.

The termination of teething in boys is the earlieest for the lower central incisor: 7 years 6 months, then for the first molars and the lower lateral incisor: 7 years 7 months. The upper incisors are the last to erupt in boys and this happens at the age of 7 years 8 months.

Both in girls and in boys the lower central incisor is the first tooth to appear (C 5) and the first to reach the median (50), compared to other groups of teeth.

On the basis of the performed examinations it was observed that: there is acceleration of eruption of certain tooth groups, incisors in particular; there is a tendency towards a change in the eruption model from the molar type to the incisor type; permanent teeth erupt earlier in girls than in boys, but the differences are not statistically significant; mandibular teeth erupt earlier than maxillary teeth, yet the differences are not significant statistically.

Summing up our observations we think it is advisable: 1) to introduce preventive measures earlier in the caries prophylaxis programmes and include nursery school children; 2) expecting mothers should be included in educational and prophylaxis pro-

grammes which would motivate them to undergo dental check-ups systematically and to observe the particular health-oriented behaviours.

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SUMMARY

The paper presents current data concerning eruption processes of the first permanent teeth, i.e. the first molar teeth and incisors in the maxilla and the mandible in Lublin children on the basis of centile analysis. 368 children (167 girls, 201 boys) aged 4–8 from selected Lublin nursery schools and first forms of primary school were examined in total. The analysis of eruption processes was performed on the basis of Centile 5, 25, 50, 75 and 95. The study revealed an acceleration of eruption within certain tooth groups, tendencies to change in the eruption model from molar type to incisor type, earlier eruption of permanent teeth in girls than in boys, and earlier eruption of mandibular teeth compared to maxillary teeth.

Ocena kliniczna dynamiki procesu wyrzynania pierwszych zębów trzonowych oraz siekaczy szczęki i żuchwy na podstawie analizy centyli u dzieci lubelskich

Przedstawiono aktualne dane dotyczące procesów wyrzynania się pierwszych zębów stałych, tj. pierwszych zębów trzonowców oraz siekaczy szczęki i żuchwy u dzieci lubelskich na podstawie analizy centyli. Ogółem przebadano 368 dzieci 4–8 letnich, w tym 167 dziewczynek i 201 chłopców z wybranych lubelskich przedszkoli i pierwszych klas podstawowych. W analizie procesów wyrzynania uwzględniono Centyl 5, 25, 50, 75 i 95. Stwierdzono akcelerację w wyrzynaniu się niektórych grup zębowych, obserwowano tendencje do zmiany modelu wyrzynania zębów z typu trzonowcowego na typ siekaczowy, obserwowano wcześniejsze wyrzynanie zębów stałych u dziewczynek niż u chłopców oraz wcześniejsze wyrzynanie zębów żuchwy niż szczęki.