

Magnitude of Dental Delay in Trisomy G

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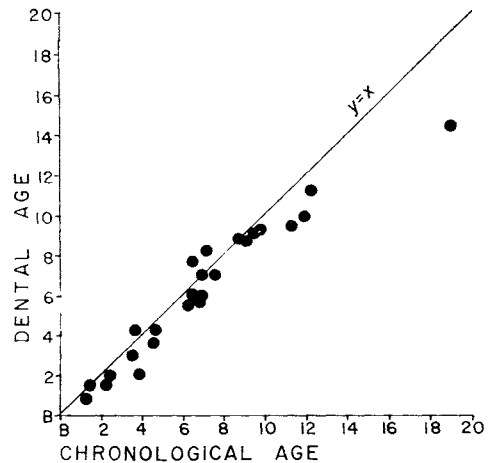
Previous reports have suggested delayed dental development in Down's syndrome (mongolism), but without quantification and without exclusion of subjects with cretinism, with a normal chromosomal complement, or with translocations and mosaics of various sorts.

Accordingly, the tooth formation of 25 subjects with Down's syndrome, verified as trisomy G by karyotyping and excluding subjects with cretinism, was studied radiographically. Standards for tooth formation (crown calcification, root elongation, and alveolar eruption) were those previously described (S. M. GARN, A. B. LEWIS, and D. L. POLACHEK, *Science*, **128**:1510, 1958; S. M. GARN, A. B. LEWIS, and D. L. POLACHEK, *J Dent Res* **38**:135-148, 1959; S. M. GARN, A. B. LEWIS, and R. M. BLIZZARD, *J Dent Res* **44**:243-258, 1965). Dental age assessments were compared to exact chronological ages, calculated from actual birth dates.

As shown in the Illustration, trisomy G is associated with delayed calcification, root development, and alveolar eruption (seen in oblique- and lateral-jaw views). Of the 25 subjects studied, 19 had delayed tooth formation, 3 had formation equal in dental and chronological age, and 3 had slightly advanced formation for age and sex. Against the chance hypothesis the distribution yielded a chi-square value of 11.6 for the 19:3 distribution as against the 11:11 hypothesis. The average delay was 0.7 years, a difference significant at

the 1% level or better ($t = 3.9$); the percentage delay in dental development was 13%, overall. There was no evidence of a sex difference in the relative magnitude of dental delay.

The 13% dental delay in trisomy G was less than the 20% delay in untreated subjects with cretinism and the 33% delay in subjects with hypopituitarism (S. M. GARN, A. B. LEWIS, and R. M. BLIZZARD, *J Dent Res* **44**:243-258, 1965). The magnitude of dental delay in these subjects was far less than the delay in appearance of hand-wrist ossification centers in a larger sample from the same institutional population. Trisomy of a G group chromosome, probably no. 21 delays tooth formation, but to a lesser extent than cretinism and hypopituitarism, and to a lesser extent than postnatal ossification.



Delay in permanent tooth calcification, root formation, and elongation in 25 subjects with trisomy G.

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Additional information available on request to authors.

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Radiographs were taken by Joseph Plesuchenko; computational assistance was given by William R. D'Angelo; and the karyotyping was done by Judy A. Stack.