

The YEAR BOOK of

Dentistry

1982

Editors

MERLE

HAZEN,

MOYERS,

REDIG, ROBINSON, SILVERMAN,



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DENTISTRY



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Printed in U.S.A.

Library of Congress Catalog Card Number: 37-8950

International Standard Book Number: 0-8151-4098-3

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CHICAGO • LONDON

NEW THIS YEAR

CUMULATIVE SUBJECT INDEX: 1978-1982

Most YEAR BOOK readers subscribe to the YEAR BOOK throughout their careers, and recent surveys and numerous unsolicited comments indicate that YEAR BOOK readers frequently refer back as much as 4 years to earlier editions. The objective may be to locate a particular article that is only vaguely remembered, to research a very specific subject not included in the most recent edition, or to research a subject in greater depth or for cross-references. Leafing through the indices of three or four individual volumes can be cumbersome and time-consuming.

To assist you in using your YEAR BOOKS as a cumulative reference source, we have combined the 1982 edition subject index with the subject indices of the four previous editions, creating a new, 5-year Cumulative Subject Index. Thus, this year's Cumulative Subject Index gives volume (year) and page references to the 1978 through 1982 YEAR BOOKS. The 5-year interval will be retained in subsequent editions by deleting the earliest year's references and adding the newest year's references (i.e., the Cumulative Subject Index for the 1983 edition will give references to the 1979 through 1983 YEAR BOOKS). Please see the first page of the Cumulative Subject Index for instructions on its use.

We hope you will find the new Cumulative Subject Index useful and efficient, and we welcome your comments and any suggestions for further improvements. Please direct your comments to:

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Journals Represented

Acta Odontologica Scandinavica
American Journal of Orthodontics
American Journal of Surgery
Anesthesia Progress
Angle Orthodontics
Annals of Plastic Surgery
Archives of Dermatology
ASDC Journal of Dentistry for Children
Athletic Training
Australian Dental Journal
Australian Orthodontic Journal
British Dental Journal
British Journal of Orthodontics
Canadian Dental Association Journal
Cancer
Caries Research
Clinical Pharmacology and Therapeutics
Communications in Psychopharmacology
European Journal of Orthodontics
Family and Community Health
International Journal of Oral Surgery
Journal of the American College of Dentists
Journal of the American Dental Association
Journal of the American Medical Association
Journal of the Dental Association of South Africa
Journal of Dental Research
Journal of Dentistry
Journal of Oral Pathology
Journal of Oral Rehabilitation
Journal of Oral Surgery
Journal of Periodontology
Journal of Prosthetic Dentistry
Northwestern Dentistry
Oral Surgery, Oral Medicine, Oral Pathology
Pediatrics
Pharmacology and Therapeutics in Dentistry
Plastic and Reconstructive Surgery
Postgraduate Medicine

Proceedings of the Finnish Dental Society

Quintessence International

**ROEFO: Fortschritte auf dem Gebiete der Roentgenstrahlen und
der Nuklearmedizin**

Scandinavian Journal of Dental Research

Swedish Dental Journal

1. Dental and Occlusal Development

1-1 **The Mandibular Third Molar: Its Predictive Status and Role in Lower Incisor Crowding** are discussed by Tom M. Graber and Thomas F. Kaineg. Too often, both premolar and third molar teeth are removed in conjunction with orthodontic therapy. Friedman has indicated that the belief that third molars cause crowding is a myth and that these teeth need not be removed routinely to prevent future pathologic features such as cyst formation. It also is a myth that developing third molars should be removed to preserve alveolar bone integrity distal to the second molars. Most orthodontists consider morphogenetic patterns to be the greatest single cause of malocclusion. Perhaps crowding is a multifactorial state in this context, but the net result is an anterior arch length problem that is related closely to other factors. The authors believe that the third molar region serves as a "safety valve" for the terminal stages of mandibular horizontal growth.

The calcification rate of erupted mandibular third molars is more advanced than for impacted third molars; root priority may be a factor. The impaction rate may exhibit sexual dimorphism, being greater in female subjects. The increased space gained from extraction of mandibular first premolars does not lead to significantly more eruption of third molars. Removal of one fourth of the entire dentition is likely to be harmful. Possible adverse effects include a decreased lower face height, midface dentitional setback, a deepening overbite, and a greater likelihood of lower incisor imbrication. In addition, bruxism and temporomandibular joint problems are greater with 8 teeth removed. When confronted with inexorable aging of the dentition, everything possible should be done to prevent any iatrogenic or retrogressive effects.

► [For the reader interested in pursuing this interesting topic further, Kaineg's thesis for the Department of Orthodontics, University of Chicago, 1975, provides useful further information. The intensity of the argument about the role of mandibular third molars in lower incisor crowding continues to rage. The National Institutes of Health conducted an important state of the art conference of this topic recently, bringing together the best authorities available. The conclusion was that there is, as yet, no definitive evidence relating mandibular third molars to incisal crowding, nor is there, as yet, an infallible way of predicting whether or not, in a single case, third molars do play any role. It is my opinion that the best research evidence available today does not prove that third molars play a significant role in mandibular crowding. On the other hand, there is evidence that continued mandibular growth, particularly in men, and occlusal interferences with a forward slide are both significant factors in mandibular crowding. Many a clinician who routinely orders extraction of third molars during or at the end of orthodontic therapy would be well advised to do meticulous occlusal equilibration, for it is more apt to have provable results.—R.E.M.] ◀

- 1-2 **Tooth Ankylosis in Man and the Oxytalan Fiber Meshwork.** The long-term effects of ankylosis on the oxytalan fiber system in humans are unclear. Milton R. Sims (Univ. of Adelaide) examined the oxytalan meshwork and the changes associated with ankylosis of the permanent molars of an adolescent boy during an 8-year period. At age 6 years, ankylosis was evident in the deciduous molars of the left maxillary and mandibular quadrants and the right mandibular region. The first permanent molars on the left also were involved. All deciduous molars were removed 3 years later. At age 14 there was marked ankylosis of the first permanent molars and other adjacent teeth. The 4 first and second permanent molars were removed at this time for light microscopic examination.

The tooth roots appeared enlarged, with blunt, rounded apices, and the interradicular regions were reduced in size by hypercementosis. Numerous sites of ankylosis involving dentin resorption and repair were noted between the cervical and apical limits of the roots, especially in the interradicular regions. The original layer of acellular cementum enveloping the dentin was covered by multiple layers of calcified tissue containing numerous cells. Most oxytalan fibers in the superficial pockets of connective tissue were irregularly dispersed, but some showed an occlusoapical alignment conforming to the pockets (Fig 1-1). The layers

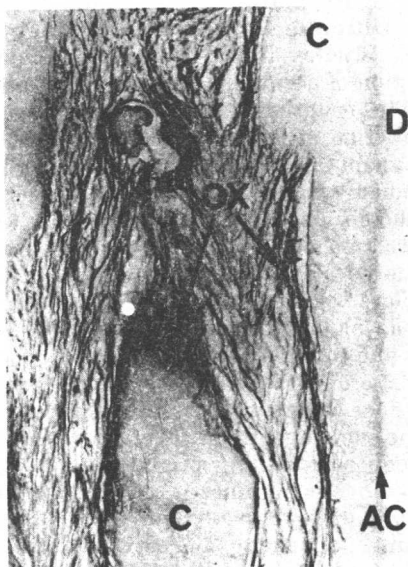


Fig 1-1.—Deep connective tissue pocket containing a predominantly occlusoapical orientation of the oxytalan fiber system. AC, acellular cementum; C, cellular cementum deposit; D, dentin; OX, oxytalan fibers. Mandibular right first molar (oxone, aldehyde fuchsin, light green; $\times 225$). (Courtesy of Sims, M. R.: *Aust. Orthod. J.* 6:147-154, October 1980.)

of cellular cementum contained numerous remnants of oxytalan-staining fibers, many of which were occlusoapically oriented. Oxytalan fibers were frequent within the cervical area of crestal hypercementosis. Oxytalan fibers extended from the cervical cementum margin into the periodontal tissues. Oxytalan fibers inserted into both acellular and cellular cementum.

The oxytalan fiber system exhibited a variable reduction in density and a general lack of orientation in this case of ankylosis, but nevertheless remained an extensive structure within the periodontium. The oxytalan fiber system apparently does not depend on natural tooth movement for its existence. Knowledge is needed of the effects of orthodontic tooth repositioning on relationships between the tooth, oxytalan meshwork, and microvascular system.

- 1-3 **Influence of Premature Extractions of Primary Molars on the Ultimate Root Length of Their Permanent Successors.** Studies in monkeys have shown that the early extraction of deciduous molars in the late mixed dentition expedites eruption of the premolars. The effect of premature extraction of primary molars on root development in the permanent successors is unclear. Ilana Brin and Edith Koyoumdijsky-Kaye (Hebrew Univ.-Hadassah School of Dental Medicine, Jerusalem) examined the effect of premature extraction of primary teeth on the ultimate root length of the permanent successors in 60 children whose primary molars were extracted at ages 3-9½ years. Completed root development was assessed in 44 lower premolars in boys and 52 in girls.

The highest crown-root ratio was in girls with premature extractions done before age 8 years. The lowest ratio was in boys of the same age group. The difference in crown-root ratios between boys having premature extractions before and after age 8 was significant, as was the difference between boys and girls younger than age 8 years.

These findings appear to suggest that premature extraction of primary teeth can, under certain circumstances, influence the development of their permanent successors through reducing ultimate root length. The degree of root shortening differs in the sexes and depends on the age at which premature extraction is performed. Girls are more affected than boys, especially when premature extractions are done before age 8 years. Further study is needed, comparing the successors of prematurely extracted teeth with their unaffected antimers in terms of root length.

2. Craniofacial Growth and Morphology

- 2-1 **A Family Study of Craniofacial Dimensions in the Burlington Growth Center Sample.** Shelley R. Saunders, Frank Popovich, and Gordon W. Thompson (Univ. of Toronto) undertook a preliminary analysis of data on craniofacial dimensions from a large sample of parents and their physically near-mature offspring and between these offspring as siblings. Lateral cephalometric x-ray films were obtained from 147 families in the Burlington Growth Center sample, initially representing about 85% of all children in Burlington. The population is predominantly white and Anglo-Saxon. Serial cephalograms are obtained in children up to age 21 years. Totals of 270 parents and 280 offspring were included in the study. Boys had records made to at least a skeletal age of 16 years and girls, to at least age 14.

A high degree of significant correlation was found between first-degree relatives, compatible with a polygenic theory of inheritance. There was no evidence of added effects of autosomal dominance and sex linkage. The use of multiple measurements from both parents gave the best results in predicting the craniofacial dimensions of the children. Mid-parent values correlated better with offspring values than did data from either parent alone. Brother-sister, brother-brother, and sister-sister intraclass correlations all were generally high. The brother-sister combination showed the highest number of significant correlations.

This study showed a high level of significant correlations between parents and offspring and between siblings in craniofacial dimensions. Use of both the father's and mother's measurements enhanced predictability of the offspring's measurements. Use of a few selected cephalometric measurements from parents and siblings of a patient may

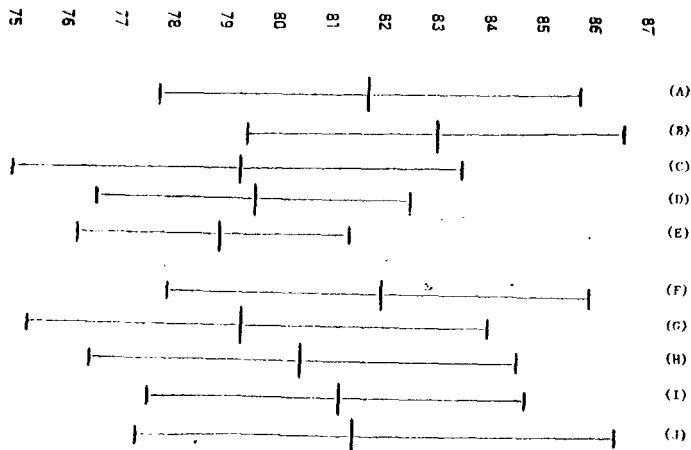
aid in the prediction of facial growth characteristics in clinical practice.

► [Recently, Houston and Brown concluded (*Eur. J. Orthod.* 2:13-18, 1980) that although many craniofacial dimensions have an inherited component and family members resemble one another, that resemblance has little practical use in predicting facial growth or in other clinical application. It would be interesting to know what Houston and Brown feel after reading this excellent article from the Burlington Growth Center. It was not available at the time of their research.—R.E.M.] ◀

2-2 Racial Differences in Dimensional Traits of the Human Face. Elisha R. Richardson (Nashville) examined quantifiable somatic facial traits in American blacks with acceptable occlusion. Analyses were based on lateral cephalograms from 40 blacks of both sexes, aged 13-16 years. Measurements were compared with available data on other ethnic groups, studied by region.

Facial angle was similar in American blacks from the north, whites from the north, and Japanese, and also in American blacks and whites from the south, but differences

Fig 2-1.—The mean sella-nasion-pogonion angle and 1 SD of several ethnic groups, as follows: A, Australian Aborigines-Brown; B, Australian Aborigines-Craven; C, American Black-Drummond; D, American Black-Meharry Group; E, American White-Taylor and Hitchcock; F, Bantus Africa-Craven; G, Chinese Australia-Wei; H, Chinese Cantonese-Gordon; I, Hawaiian-Choy; and J, Swedish-Björk. (Courtesy of Richardson, E. R.: *Angle Orthod.* 50:301-311, October 1980.)



between northern and southern whites were significant. Most groups differed significantly in mandibular plane angle. Figure 2-1 indicates that mean sella-nasion-pogonion angles of southern blacks and southern whites did not differ significantly. Sella-nasion-point B angles did not differ significantly in southern blacks and whites, but sella-nasion-point A angles differed significantly in these groups.

Quantifiable differences in the somatic craniofacial region in ethnic groups living for several generations in the same or similar geographic areas are small. The findings support a geographic effect on the most commonly used angular measurements of the somatic facial profile in the major racial groups. Cephalofacial morphology is affected by such factors as genetics, function, and ambient temperature. Differences between means within ethnic or racial groups often are greater than the differences in means among such groups. The differences in means for somatic facial skeletal traits among or between ethnic groups usually are very small, with a great degree of overlap. Facial parameters closer to the alveolar and dental areas exhibit the greatest differences among ethnic and racial groups.

- 2-3 **Primate Experiments on Oral Respiration.** Oral respiration associated with obstruction of the nasal airway is a common finding in patients seeking orthodontic treatment. Egil P. Harvold, Britta S. Tomer, Karin Vargervik, and George Chierici (Univ. of California, San Francisco) performed studies in rhesus monkeys aged 2-6 years to examine the relation between dental malocclusions and mouth-breathing. Mouth-breathing was induced by obstructing the nasal passages with silicon nose plugs. Records were obtained every 3 months during the study and every 6 months after the nasal passages were reopened.

Experimental animals kept their mouths open after obstruction of the nasal airway. After a month, oral respiration took place in a relaxed manner. A notch tended to develop in the upper lip, disappearing after nasal breathing was resumed. The dorsal section of the tongue became thinner in mouth-breathers, usually creating an open passage to the pharynx. In several animals, a median groove tended to develop in the tongue. The mandibular dental arch was

narrowed, and maxillary arch length was reduced, causing an incisor cross-bite. The findings in mouth-breathers included mesiocclusion, maxillary protrusion with distocclusion, open bite, and dual bite. The jaws of mouth-breathers were slightly larger than those of control animals. Electromyography showed recruitment of the genioglossus and intrinsic tongue muscles for tongue protrusion in mouth breathers during the 18 months of oral respiration. The geniohyoid and digastric muscles were recruited to lower the mandible, and the anterior part of the temporal muscles and lateral pterygoid muscles were used to advance the mandible. The mouth-breathers exhibited increased tonic activity in the tongue, the upper and lower lips, and the medial and lateral pterygoid muscle.

It is not likely that oral respiration can be correlated with a particular type of dental malocclusion, but increased tonic activity in some muscles and a specific change in jaw positioning may lead to bone remodeling, which should be predictable. The diagnosis and treatment of clinical abnormalities require a means of identifying and assessing orofacial muscle recruitment.

► [There is intense interest and an increasingly good literature on the effects of mouth breathing on the dentitions and growing craniofacial skeleton of human beings and other primates. The following study by Vig et al. reached different conclusions than these of Harvold et al.—R.E.M.] ◀

- 2-4 **Quantitative Evaluation of Nasal Airflow in Relation to Facial Morphology.** Mouth breathing long has been considered a significant factor in the cause of malocclusion, and this view currently is becoming more popular in the United States. Peter S. Vig, David M. Sarver, David J. Hall, and Donald W. Warren (Univ. of North Carolina, Chapel Hill) obtained quantitative data on nasal airflow in 28 persons, aged 15-43 years, with various facial morphological types. Nine had lip incompetence; 9 had a long vertical face height with lower face height accounting for more than 55% of total face height; and 10 had normal lip competence and normal facial height and proportions. Nasal resistance was calculated from pressure and airflow as measured using catheters.

Nasal resistance was highest in the long-face group and lowest in the normal group. No significant group differ-

(2-4) Am. J. Orthod. 79:263-272, March 1981.