

LITERATURE ABSTRACTS

BLACK, O. P.—Root resorption in human permanent teeth : A roentgenographic study. (M.D.Sc. Thesis).

The thesis is concerned with peripheral (as opposed to internal) resorption of teeth. The resorption is also stipulated to occur in the absence of directly implicated casual factors and hence is "ideopathic."

A definitive investigation of ideopathic root resorption is a necessary preliminary to any study of similar resorption which may be associated with orthodontic treatment. Up to the time of writing no reports of such investigations had been found which on further examination provided a satisfactory radiographic means for a quantitative scoring of root resorption.

In vitro specimens of mandibular alveolar bone containing incisor, canine and premolar teeth were treated to simulate natural root and bone changes associated with resorption. Special radiographic standardisations were devised to study these specimens. A similar limited in vivo study of freshly extracted teeth was also carried out. Various radiographic artefacts relating to varying thicknesses and radio-opacities of the hard tissues, to varying angulations of central X-Ray pathways, and to X-Ray film emulsion peculiarities, were examined. Such factors deserve accounting for in any radiographic examination of root surface, periodontal space and lamina dura of alveolar bone.

The serial, longitudinal nature, and standardisation of radiographic methods are essential to the investigation of root resorption.

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SANDILANDS, J. M.—Variations in tooth size and a method for the measurement of tooth diameter. (M.D.Sc. Thesis).

Mesio-distal crown diameters were obtained from stone casts of the permanent dentitions of 87 New South Wales children (44 males, 43 females). All measurements were made with the same specially prepared sliding

calipers with sharply pointed beaks and a Vernier scale reading to the nearest 0.1 mm. 24 teeth were measured on each cast, where possible.

The purpose of the study was to determine the mesio-distal diameters of certain permanent teeth using a standardised measuring technique. Previous figures published have been representative of population groups other than Australian.

Statistical comparison of first and second measurements made on the same series of casts showed that the differences were not significant for any tooth group.

Mean values of crown diameters were always larger for males than females. The greatest sex difference was shown by mandibular canines and the smallest difference by maxillary second premolars.

Differences between mean values for corresponding teeth on the left and right sides were without statistical significance except for the maxillary second premolar which was highly significant at $p < 0.001$ level. No rule governing the dominance of one side over the other could be seen.

The present results showed that the relative variability in size of the separate teeth within the morphological tooth groups followed a similar pattern as described by Butler (1939) and Dahlberg (1945).

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KINSELLA, P.—Impacted teeth associated with root resorption of adjacent teeth in the permanent dentition. (M.D.Sc. Thesis).

Such resorption, considered from a histopathological viewpoint, is termed "accommodating resorption" to distinguish it from "burrowing resorption." The latter is a continuing process being the consequence of a local inflammation of periodontal tissues associated with impaction. The former process is identified with direct tissue response to pressures of impaction and ceases on removal of the pressures.

"Accommodating resorption" is found relatively rarely in the course of radiographic examination. But in those regions of the dental arch where impactions are most common, histologically-detected resorption attributable to impactions may be regarded as the rule.

Impaction is associated with the process of eruption which goes on during root formation of the impacted tooth. However, there is no reason to believe that the trilogy of eruption, impaction and resorption ceases after completion of root formation. Rather, resorption may or may not cease depending on the particular pressures of the tooth environment which continue to operate.

When "accommodating resorption" is radiographically visible, the "clinical usefulness" of the resorbed tooth must be assessed. Also, it must be born in mind that inadequacy of orthodontic diagnosis and orthodontic control may themselves lead to impactions of the type under consideration.

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KLINE, P. W. —Dental Anomalies of form and structure. (M.D.Sc. Thesis)

The normal development of the deciduous and permanent teeth was reviewed, together with the identification of anomalies of form and eruption precipitated by disturbances at particular stages during their development.

In this study, dental anomalies of form (size and shape), congenital anomalies of tooth number, and malpositions (ectopic, impacted) were identified by radiographic examination in the permanent and mixed dentitions of 531 children (225 males and 306 females). This sample population was composed of approximately equal numbers of orthodontic patients and others. Thus there was a bias in selecting patients and no analysis of statistical significance of the data was attempted. Nevertheless, it seems worthwhile to record some results of likely significance. Sex differences appeared with occurrence of impacted canines (females 4.09%, males 1.77%) and atypical multi-rooted teeth (females 1.31%, males 6.73%). Other results included supernumerary teeth, 2.25% (more among the orthodontic patients) almost all being upper mesiodens; congenitally missing teeth, 5.46% of total patients (chiefly upper lateral incisors, then lower second premolars, and also lower central incisors); microdontia, 2.63%; geminations, 0.18%; dilacerations 9.22%; ectopic tooth germs 12%; dental ankylosis 0.37%.

Radiographs alone may not give a complete or accurate assessment of such anomalies. A test comparison (100 children) of radiographic identification of these anomalies to other clinical data showed that mild enamel hypoplasia and fitting of the labial surface may not be evidenced; also abnormal sized teeth may not be recognised. This led to the conclusion that incidence figures would be underestimates for both types of examination.

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PAUL, S.—Dental Anomalies associated with cleft lip and/or palate. (M.D.Sc. Thesis).

One hundred and ninety children afflicted with cleft lip and/or cleft palate conditions were studied for seven abnormal dental traits: missing teeth, supernumerary teeth, fissural teeth, peg teeth, abnormal crown forms, abnormal root forms and hypoplasia. The distribution of these anomalies was noted. There appeared to be no correlation between type of cleft and presence or absence of dental anomalies. All anomalies except supernumerary, fissural and peg teeth were found in both maxillary and mandibular dental arches.

It can be concluded that neither the cleft itself nor the type of cleft is an aetiological factor in the occurrence of morphological abnormalities in the individual teeth. It appears that the development of the dentition along with that of the other organs and structures of the body may be affected by the same aetiological factor or factors that are responsible for the cleft lip and/or cleft palate.

A further aetiological agent in the form of surgical trauma as a direct cause, or an indirect action via vascular disturbances to the developing tooth germs, has been put forward.

This pilot study confirmed the existence of a dental problem in the treatment of children afflicted with the cleft deformity. This problem was found to involve not only the maxillary but also the mandibular teeth.

The extent of occurrence of the various dental anomalies demonstrated in the study was such as to indicate the need for their serious consideration in the dental and orthodontic management of children affected by oral and facial clefts.

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