The Angle Orthodontist

A magazine established by the co-workers of Edward H. Angle, in his memory. . . .

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Mesial Drift

ONE OF THE LOOSEST TERMS in the current orthodontic vocabulary is *mesial drift.* The tendency of teeth in the buccal segments of the dental arches to migrate anteriorly has long been observed. Until recently, however, attention has centered chiefly upon movement of individual teeth and the physiologic aspects of this phenomenon. In the past few years orthodontic thought, discussion and literature is replete with comment upon abnormal or pathologic migration of individual teeth and groups of teeth in this direction.

The normal forces which surround the dental units in the human dentition exert an influence during the growth and developmental years which carry the dental arches anteriorly with respect to landmarks established in the cranial base. A part of the progression appears to be in the bony bases which support the alveolar bone that holds the teeth. Some influence may be attributed to the soft tissues that exert pressure at the distal ends of the dental arches, and a measure may be supplied by the forces of mastication upon teeth with mesial axial inclination. It is possible that the erruptive force of mesially inclined distal teeth may contribute as well.

Under normal circumstances these forces operate during the growth period in the fulfillment of the facial pattern of the individual at the end of which the cessation of growth forces permit the establishment of a balance between the remaining dynamic physiologic influences. The operation of this mechanism has been discussed by recent publications of Strang, Brodie, Noyes, and others. From the standpoint of normal growth it is important

to remember that these forces do exist and that except in malocclusion the balance is attained.

When we consider malocclusion and attempt to determine abnormal or excessive mesial drift it is essential that the landmarks used in comparison be clearly stated. It is obviously impossible to diagnose mesial drift from a plaster cast which is not oriented to facial or cranial anatomical landmarks. The fact that lateral segments of the dental arches are mesial to the anterior segment or individual teeth may mean no more than that the individual teeth or arch segment used in comparison may be displaced, the lateral segments occupying their normal positions. If the plaster cast is oriented to a facial landmark, then the authenticity of this landmark must be established and full recognition given that the mesial drift is with respect to the particular facial anatomical structure and bears no basis of comparison to cranial base landmarks unless these in turn are ascertained.

Orientation of teeth to boney bases of maxilla, mandible or a perpendicular dropped from the Frankfort plane will permit the establishment of relation between the respective parts observed but gives no evidence of which of the parts are abnormal with the respect to the facial pattern. If the relationship includes cranial landmarks an added measure of reliability is attained, but in this instance also, evidence must be established that the cranial points have not been subjected to detrimental influences and are dependable foundation points upon which to base judgment.

In the analysis of an orthodontic problem it is important for the clinician to appreciate excessive mesial migration of the teeth in the lateral dental segments, yet it is equally important that he avoid a misconception of the position of these teeth because the basis of his comparison rather than the units compared is at fault. By far the most common error lies in comparing the posterior teeth to cuspids and incisors or to the premaxillary bone or the symphysis of the mandible. The literature is already cluttered with case reports designated as mesial drift in which the molar teeth are in normal anterio-posterior relation to cranial anatomy and often similarly situated with respect to the immediate supporting base bones, though the defective dimension of these bones fails to provide for normal arch length. This confusion has developed in spite of a very clear definition of the criteria by Downs in 1938.

In the case of mesial-drift as well as in all others the orthodontist must differentiate between analysis of the deformity and treatment planning. The former constitutes an appraisment of deviation from the patient's normal facial pattern; the latter is an objective program of what can be done about it. The measure of compromise in the treatment is dependent upon the exact nature of the deformity and developmental period in which it is encountered.

It is earnestly to be hoped that the loose and careless thinking upon the subject of mesial drift be corrected not alone because of the spreading confusion upon the pages of our literature that is rapidly becoming history but primarily in the interest of the patients who suffer through the consequent orthodontic practice.

H. J. N.