

WHO SAYS THAT CHILD NEEDS ORTHODONTIC TREATMENT? *

T.J. Freer.** B.D.Sc., Ph.D., D. Orth., F.D.S.

Who says that child needs orthodontic treatment? The question is prompted particularly by developments in the field of health care delivery both within privately and publically supported health schemes. Referring to the orthodontic treatment program in New York State, which was begun in 1945, Bushel and Ast (1953) stated that "since a large proportion of all children suffer from malocclusions of varying degrees of severity, it became essential to define 'handicapping malocclusion' and to establish a mechanism for determining the eligibility of cases for state aid". It may be observed that they found it impossible, as we still do, to define "handicapping malocclusion" in an objective manner and have been forced to rely entirely on the clinical opinions of orthodontists. You may ask what is wrong with such a system?

Bushel and Ast (1953) in very broad terms designated a handicapping malocclusion as one "resulting in disfigurement or speech defects which may present a serious obstacle to normal development, education and employment of the patient later in life". We know certain malocclusions such as those associated with cleft palate and lip may fall into this category, but a large number of malocclusions does not.

The orthodontist is hampered by a lack of clear evidence to support some of the theories on which diagnosis and treatment planning are based. This fact is exemplified in a recent publication by Hixon (1972). There is a substantial tendency in any clinical discipline to present dogma as fact. The constant prescription of treatment prevents us learning more about what patients desire. Obviously ethical requirements do not permit the observation of wilfully untreated patients. However, treatment is based on notoriously unresearched factors such as the supposed psychological effects of malocclusions on patients. Our personal responses to situations tend to cause us to overlook the question — what might have happened without treatment? Furthermore, presuming that not all cases reach a successful conclusion, how many of these cases would have been better off without treatment?

Looking in more detail at the major reasons for prescribing treatment they fall into three broad categories under the following headings. I do not intend here to deal with such additional factors as caries, speech, mastication and digestion.

1. Social - psychological handicap (appearance)
2. Periodontal disease
3. Temporo-mandibular functional disorders

Superimposed on each of these three factors we have a further influence and that is their interpretation by different orthodontists. This interpretation may be resolved into (a) intra-examiner variability and (b) inter-examiner variability. An evaluation of the need for orthodontic treatment is obviously tempered by constraints such as the availability of finance, personnel and facilities. Resources are not unbounded and it is these constraints which now force us to look once more to the philosophy and rationale of the prescription of orthodontic treatment.

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**Department of Dentistry,
University of Queensland,
Brisbane,
Australia.

Social-psychological handicap

The social-psychological background of orthodontic demand and treatment has remained almost totally unresearched. Most information in this field comes from case studies which nearly always demonstrate the beneficial effects of orthodontic treatment on the psychological condition of the patient but the information from such case studies has not been shown to be generally applicable and objective research data are rare. (Stricker, 1970).

There appears to be a general recognition that severe cosmetic defects may have severe psychological consequences. Much of the literature deals with problems associated with plastic surgery. There is also a general acceptance of the point that physical restoration does not necessarily remove the psychological stigma associated with the disability and there is a need to distinguish between those who will benefit from remedial treatment and those who will not.

The psychological difficulties of a person with malocclusion arise from inter-personal relationships which are affected by (a) the response of other persons to the disability and (b) the reactions of the individual himself to the malocclusion and its effects on others. Does malocclusion serve as a basis for social rejection? A fundamental question is "how important are dentognathic conditions to personality impressions when compared to all other cues to personality impressions?" (Secord and Backman, 1959). In other words, how important are or what is the saliency of dentognathic cues? From the small amount of work that has been done it would seem that they may not always be as important, in general, as we might sometimes imagine.

Rutzen (1973) in a study of treated and untreated cases concluded that his results did not unequivocally support the importance of orthodontic treatment in affecting later social and personal experiences. The infrequent use of malocclusion as a basis for social discrimination might be because the defect is not readily apparent or because people just don't care. However, the author does add that the absence of large differences between the treated and untreated groups may have been due to a compensation by the untreated group, in order to achieve levels of performance comparable to those of the treated group. Linn (1966) found that dental appearance does not have a strong saliency and even when people say that they think it is important they do not bother to seek treatment for obvious defects such as missing or discoloured anterior teeth. Secord and Backman (1959) evaluated the responses to 34 dento-facial characteristics and ranked those characteristics in order of importance. Characteristics directly related to malocclusion were ranked twenty-eighth and thirty-third. The most salient dental variable was whiteness of the teeth which was ranked sixteenth. These results again do not substantiate the unqualified importance of dental features in inter-personal relationships. Baldwin and Barnes (1965) concluded that "the primary impact of malocclusion is not with the response of others to facial irregularity and the research concentration on the self-response of the individual is very well placed".

The difference between lay and professional judgements on the need for orthodontic treatment was strikingly demonstrated by Goldstein (1969). He found that 90 per cent of the subjects examined needed treatment but only 28 per cent of those subjects themselves thought the appearance of their teeth could be improved. All subjects were finalists in the Miss Atlanta pageant and the lay judgement of their appearance, therefore, was more than favourable.

In general we know very little about when the layman considers a malocclusion to be in need of treatment. Socio-economic and cultural backgrounds and professional advice exert profound influences on the individual and his parents in motivating them to seek treatment. The concern which the patient feels may bear little or no relation to the true degree of physical abnormality. Horowitz et al (1971) have suggested that dentists should pay more attention to the concerns of patients and treatment priorities

should perhaps be based more on the concern of the patient when there are no apparent risks to health involved. Lindegard et al (1971) found that the attitudes of parents to orthodontic treatment needs are influenced by the general family background. The higher the socio-economic position of the family, the higher is the demand for orthodontic treatment. Families with alcoholic problems show a lower demand for orthodontic treatment. A personal experience of orthodontic treatment by parents seems to bring about a greater demand by parents for orthodontic treatment for their own children.

The discussion so far has not wholly supported the social importance of malocclusion but as Rutzen (1973) points out orthodontic rehabilitation is a haphazard process and there is usually no formal effort made to convince the recipient of the beneficial effects or to instruct him how to cope with the new social responses to his new appearance. Informal resocialization is carried out by parents and friends but there is no evidence to suggest that it has any marked effect. Interpreting, one might say that we are not offering a complete service to the patient in order to allow him to enjoy, to the full, the changes brought about and therefore he might not see those changes as being important.

Periodontal Disease

A number of investigations have found little evidence to support the contention that overbite, overjet, crossbites, crowding, rotations and absence of teeth are generally important in the primary etiology of periodontal disease (Moorrees et al, 1971). Excluding specific local conditions which cause direct periodontal damage there is evidence to suggest that patients with malocclusion are not necessarily more susceptible to periodontal disease than persons with normal occlusions (Jacobsen, 1973). What is the relationship between periodontal disease on the one hand and malocclusion and trauma from the occlusion on the other hand? "The prevailing view is that malalignment of teeth does not in itself enhance tissue degradation, but that it decreases the efficacy of mechanical tooth-cleansing". (Zachrisson and Alnaes, 1973).

Approximately eleven years ago (Russell, 1963) stated that "less than 10 per cent of the variance in group P.I. scores remains to be explained after the combined influence of age and mouth cleanliness has been estimated. A residual factor wholly independent of age or hygiene, therefore, can have little effect on periodontal disease". Powell (1970) stated that "no satisfactory experimental evidence exists to implicate occlusal trauma in the development of periodontal disease".

We are therefore placed in the position of having to choose between the view that malocclusion is not an important general factor in the aetiology of periodontal disease and the alternative that it is in the particular case we are dealing with — on the basis of a subjective clinical appraisal. It would be an extreme view to deny any relationship between malocclusion and the state of the periodontal tissues.

Apart from the pre-treatment assessment of the relationship between malocclusion and periodontal disease, we are currently facing some criticism from periodontists on the possible long-term periodontal effects of orthodontics treatment. It is possible to find evidence to support both sides of the argument. Zachrisson and Alnaes (1973) found no evidence to support the view that permanent damage to the healthy periodontium results from orthodontic treatment. However, Zachrisson (1974) did find significantly more alveolar bone loss in treated as opposed to untreated patients. He also sounded a note of warning on the presence of gingival inflammation during treatment which may augment alveolar crest resorption.

Sjolien and Zachrisson (1973) found that persons who had received orthodontic treatment had reduced bone support due to both bone loss and root resorption but in

general the loss is slight. However, the clinical significance of reducing bone support of the teeth in young persons has not been clarified.

In summary we may say that the connection between malocclusion in general and the primary aetiology of periodontal disease is not strongly supported. The relationship between orthodontic treatment and certain periodontal changes has been proven but whether or not these changes have any deleterious long term effect is open to interpretation at this time.

Temporo-Mandibular Functional Disorders

This also is a field which has not been researched in a systematic manner and individual case histories have tended to form the basis of much of the theoretical background to diagnosis and treatment planning. The practice of orthodontics has been based more on the morphological than the functional aspects of malocclusion. Posselt (1962) drew attention to the fact that "even gross occlusal deformities do not necessarily lead to functional disturbances but may be only potentially pathogenic".

Ramfjord (1973) reiterated that "good function and neuromuscular comfort may be compatible with a wide range of occlusal functional patterns and a wide variety of relationships between tooth and temporomandibular joint guidance" and further stated that "the requirements of an ideal occlusion should be applied only to individuals who have problems related to their occlusion or who need extensive restorative or prosthetic dentistry".

A number of authors have suggested that functional disturbances related to occlusion are very often related to bruxism, which has a nervous background, where occlusal interferences are sought out under psychic stress and heavy forces applied. The interferences themselves then create a reinforcing effect on the original disturbance to the neuromuscular system. Agerberg and Carlsson (1973) supported the conclusions of Berry (1969) that patients with temporo-mandibular symptoms had a high frequency of psychosomatic disease symptoms. Functional disorders have a heterogeneous background and no single factor has any dominating influence. Our tendency to view functional disorders from a purely functional viewpoint needs re-examination. Berry (1969) stated that "the aetiology of mandibular dysfunction remains unknown and also that what may be called the natural history of the condition is a relatively unexplored field".

As with periodontal disease there has been some criticism that orthodontic treatment may actually induce functional temporomandibular disorders particularly where an occlusion is poorly balanced at the completion of treatment and there is a wide discrepancy between centric occlusion and centric relation.

A major drawback to the objective evaluation of the functional adequacy of an occlusion is the lack of objective criteria on which to base that evaluation. Furthermore, are we justified in recommending orthodontic treatment for so called potentially pathogenic functional occlusal conditions when the available evidence would indicate that a more conservative approach, such as occlusal equilibration, could be expected to achieve a high degree of success in many cases.

Examiner Variability

Estimations of the need for orthodontic treatment in different populations vary widely. A comparison of the findings of various investigations shows quite clearly that there may be wide differences of opinion between the orthodontists and dentists of different countries if not within the same country. These differences arise, in part, from true differences in the samples studied and, in greater part, from a lack of any

real or fundamental basis from which to make assessments of the need for treatment. Considering developments in the field of sponsored orthodontic health care programs there has been relatively little research on the subject of consistency in making orthodontic diagnoses. Several simple studies have attacked the problem by asking a panel of orthodontists to rate a sample of casts on a severity scale such as 0-10 scale with 0 indicating no treatment need and 10 indicating a malocclusion of the highest priority for treatment.

There are several shortcomings in such an exercise not the least being that it gives the examiner a minimum of direction as to what is required of him and we could reasonably expect differences between examiners to arise on this basis. However, one might expect reasonable consistency for the same examiner making assessments of the same casts on two separate occasions. Where no strict objective criteria of evaluation exist the problem of assessing cases for treatment within sponsored orthodontic care programs assumes major proportions — particularly where limitations due to finance almost certainly will be imposed.

As Draker (1970) pointed out "a decision to accept or reject an orthodontic patient concerns only the patient and the operator whenever a privately achieved contract is negotiated between these two parties. The negotiation is altered crucially whenever orthodontic treatment is paid by a third party, however". The usual practice, due to financial limitations, is to exclude those cases where the severity of the condition is considered not to warrant a high treatment priority.

Draker (1970) asked seven orthodontists to examine 89 sets of casts. The examiners were asked to rate the occlusion of each set of casts as either physically handicapping or not physically handicapping. The results overall were not as bad as Draker (1970) suggested, however, there were obvious discrepancies between examiners. More importantly, of the two examiners who agreed to re-examine the same cases 24 hours later, one reversed his decisions in 18% of cases and the other in 14% of cases.

Freer, Grewe and Little (1973) asked 10 orthodontists to rate the same 98 sets of casts on two separate occasions, one month apart, using the 0-10 severity scale of Grainger (1967). The results of the ten examiners varied from good to bad. The differences between the first and second scores of one examiner varied by 3 or more points on a 10 point scale in 21 per cent of cases. Of interest also was the inconsistent pattern of variation for the 10 examiners. Some tended to score consistently higher at the second examination, some tended to score consistently lower at the second examination while others increased as many scores as they decreased. One would expect the latter performance if the criteria of assessment were being applied consistently. Where the second set of scores for one examiner is consistently higher or lower than the scores of the first examination, this implies an inconsistency in the application of the criteria of assessment.

Another interesting feature of the results was that orthodontic assessors find it easier to agree with each other in very severe cases. As the severity of the malocclusion decreases orthodontists find it harder to agree. Unfortunately these are just the cases where we are usually required to arbitrate on the need for treatment. Popovich and Thomson (1971) also alluded to a possible association between examiner variation and the severity of the malocclusion being assessed. They also found more variation in the low and medium severity scores than in the high severity scores.

Summary

The literature suggests that we should look again at some of the reasons for prescribing orthodontic treatment from a basis of fact rather than hearsay. It is not suggested that we should regard the present basis of orthodontic diagnosis and treatment planning as unsound but that we should look at the facts in the cold hard

light of probability — the probability that if treatment is not carried out, the patient will be any worse off.

The subject most in need of research would seem to be the social-psychological background to orthodontic treatment. This area has received scant attention and, in particular, little regard has been afforded the wishes of patients and parents as opposed to those of orthodontists.

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