

GUEST
EDITORIAL

The objective and subjective sides of malocclusions – more justification for orthodontics?

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Health as well as disease have an **objective** and a **subjective** side to them, and the concept of quality of life is helpful in integrating the subjective patient-based perspective.¹ There is a growing consensus that beyond **physical** aspects the **psychosocial impact** of malocclusions is of particular importance, because the oral-health-related quality of life comprises physical, social and psychological aspects – all of which are important outcome measures of orthodontic treatment.

In 2006, a well-conducted review was published by Zhang *et al.*² addressing the physical and psychosocial impacts of malocclusions and exploring the rationale for orthodontic treatment. With respect to the physical impacts of malocclusion, previous studies in general merely found weak correlations between temporomandibular disorders (TMD) and certain types of malocclusions,³ although some particular malocclusions, e.g. a unilateral crossbite, may be a cofactor for the development of TMD.⁴ Although an orthodontic treatment might be beneficial for carefully selected TMD patients, there is limited evidence that a future orthodontic treatment will prevent TMD problems. Moreover, in informative conversations with patients it is often highlighted that the correction of malocclusions is preventive for periodontal diseases.

The systematic review of Bollen⁵ showed that subjects with pronounced malocclusions had more severe periodontal diseases, but the review did not warrant a general recommendation for orthodontic treatment to prevent future periodontal problems, except for specific malocclusions. From the clinical standpoint, we are familiar with clinical situations in which an etiologic relation between a malocclusion and a periodontal problem can be clearly identified, e.g. in severe Class II div. 2 cases with gingival trauma. Beyond these particular situations the beneficial effect of orthodontics on the periodontal situation will have to be clarified in the future. In this context, Diedrich⁶ reviewed the interrelationship between anterior crowding and the periodontal situation, summing up that the correction of orthodontic

crowding simplified the periodontal therapy (scaling, root planing, curettage), and provided more favourable conditions for periodontal regeneration. Geiger⁷ conducted a number of studies at the periodontal/orthodontic interface concluding that there is an urgent need for additional quantitative studies to validate the beneficial effect of correcting malocclusions with respect to periodontal disease.

Beyond the periodontal issue, another question remains whether orthodontic treatment can be substantiated by the assumption that malocclusion negatively affects masticatory performance. Again a clear-cut answer is impossible. English *et al.*⁸ found that, compared with normal occlusion, individuals with Class III malocclusions reported the greatest masticatory difficulty, followed by Class II and Class I malocclusions. However, the relevance of malocclusions for chewing ability was dismissed as minor by Mohlin und Kuroi⁹ and in our daily routine work, we often see that masticatory problems are rather the exception in children with Class I and II malocclusions.

In sum, the literature focusing on the **physical** impact of malocclusion shows conflicting evidence, although a number of hints are available that under particular circumstances orthodontics is beneficial to the orofacial system. With reference to the patient-based perspective, two issues are of major interest in the orthodontic context: (1) Do malocclusions impair the oral-health-related quality of life? (2) Can orthodontic intervention improve the quality of life?

As far as the first question is concerned, on the basis of the existing literature this can be affirmed. In adolescents with malocclusions impairments were found predominantly on the emotional and social well-being level instead of the oral function.^{10–12} In other words, improved aesthetics matters more for young patients than improvements in oral function. The particular relevance of the psychosocial component clearly emerges in severe gnathofacial deformities: whereas milder deviations in tooth position may evoke ridiculing,

teasing or bullying, severe deformities will elicit strong emotional reactions such as pity, revulsion² or complete rejection. In extreme examples, e.g. facial clefts, stigmatizing deformities may lead to a total suspension of social interaction and social isolation. With respect to an improvement of the psychosocial status after orthodontic treatment, conflicting evidence exists and Shaw *et al.*¹³ who questioned psychological long-term benefits from orthodontic treatment clearly demonstrated that treatment effects should be analyzed on a longitudinal basis. This poses a scientific challenge for the future. A rather sound answer can at present be given for the patients with a combined orthodontic-surgical approach, in whom for instance the self-confidence improved after orthognathic surgery.²

So what, from the scientific and clinical point of view, should we do in the future for our profession? Orthodontics is an inherent part of preventive dentistry, and interceptive or preventive orthodontic treatment can be highly valuable when it comes to enabling a coordinated development of the jaws, favourably influencing deviating patterns of growth and functional problems such as forced bites, providing space for tooth eruption or retracting proclined upper incisors thus reducing the risk of a traumatic injury. With respect to a broad scientific justification for orthodontics, we should analyze both the objective and subjective sides as possible outcome measures of any orthodontic intervention.

Kiyak¹² summarized that evidence-based claims on the oral health benefits of orthodontic treatment, particularly its preventive effects, are not strong. This statement is a scientific challenge for our profession and the best we can do is to perform clinical trials which encompass patient-based outcome measures as well, as has been greatly shown by O'Brien and coworkers in their twin block studies.¹⁴

In the future, also with respect to an efficient use of limited resources, it will become crucial to demonstrate in which areas of oral health or oral health-related quality of life benefits can be derived from orthodontic treatment. The Journal of Orthodontics has published a number of sound publications on this subject during the last few years and this editorial should be viewed as an appeal to follow this direction. Also from the clinical viewpoint, a mere *orientation* on orthodontist-based indicators of malocclusion such as cephalometric or cast measurements which are of limited interest to the patient, provides nothing but a unidirectional view on a complex phenomenon. We should consider in each patient the impact of their malocclusion, and – beyond our normative assumptions on perfect dentofacial

morphology – we should assess the patients' perceptions concerning dental aesthetics and the subjectively perceived treatment needs, thus gaining insight into how malocclusion adversely affects various aspects of the quality of life in each individual.

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