Correlation of general and oral health-related quality of life in malocclusion patients treated with a combined orthodontic and maxillofacial surgical approach

Johannes Alexander Tamme \(^a\), Michael Rohnen \(^b\), Volker Gaßling \(^b\), Robert Ciesielski \(^a\), Helge Fischer-Brandies \(^a\), Jörg Wiltfang \(^b\), Bernd Koos \(^a, c, *\)

\(^a\) Department of Orthodontics, University Hospital of Schleswig-Holstein, Campus Kiel, Germany
\(^b\) Department of Oral and Maxillofacial Surgery, University Hospital of Schleswig-Holstein, Campus Kiel, Germany
\(^c\) Department of Orthodontics, University Hospital of Tübingen, Germany

ARTICLE INFO

Article history:
Paper received 13 July 2016
Accepted 14 August 2017
Available online xxx

Keywords:
Oral health-related quality of life
OHRQoL
Health-related quality of life
SF-36 questionnaire
OQL questionnaire

ABSTRACT

Purpose: The aim of the study was to collect information about the oral health-related quality of life (OHRQoL) after combined orthodontic and maxillofacial surgical treatment as well as its influence on health-related quality of life (HRQoL).

Materials and methods: The study includes data from a total of 130 subjects, 65 of whom (21 male, 44 female, mean age at baseline: 24 years, mean age at the time of surgery: 26 years) were compared with control subjects matched on the basis of gender and age. The set of questionnaires used consisted of a questionnaire advanced by the authors including 35 general and treatment-specific questions, and the German version of the validated “Orthognathic Quality of Life Questionnaire” (OQLQ) to analyze the specific OHRQoL, and the SF-36 to measure HRQoL.

Results: The main reason for treatment was most often a combination of esthetic and functional complaints. In most cases, the treatment results met the expectations of subjects well or very well, particularly in the areas of aesthetics and masticatory function. Postoperative numbness or paresthesia were present in 59% of patients, especially in the chin and lower lip areas. In all, 20% of subjects considered the temporary restriction of mouth opening as very bothersome. A decrease in HRQoL was noted as compared with the control group in the subscales of “role physical” \((p < 0.001)\), “general health” \((p = 0.023)\), and “role emotional” \((p = 0.007)\). No differences were found in the “physical functioning,” “bodily pain,” “vitality,” “social functioning,” and “mental health” subscales. The specific OHRQoL resulted in statistically significant limitations in the patient group for all areas examined. The “oral function” \((p < 0.001)\), “dentofacial aesthetics” \((p = 0.005)\), “social aspects” \((p = 0.002)\), and “awareness of dentofacial aesthetics” \((p = 0.004)\) values were significantly decreased.

Conclusions: Overall, patients expressed a high level of satisfaction and approval with regard to the combined orthodontic and maxillofacial surgical treatment. However, even after combined orthodontic and maxillofacial surgical treatment of malocclusion patients, it is possible to detect smaller limitations with regard to the specific OHRQoL, which may have a negative impact on HRQoL. Based on the results, a participatory decision-making process focusing on the individual therapy-related expectations, desires, and psychological factors of the patient concerning the improvements effected by the treatment appears to be advisable.

© 2017 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.
(Aaronson, 1988; Gherunpong et al., 2004). With health-related quality of life (HRQoL), the emphasis is on general health perceptions. The goal of a combined orthodontic and maxillofacial surgical treatment is to eliminate, or at least reduce, limitations of QoL and HRQoL due to malocclusion. Measuring these subjective perceptions is a complex undertaking and is best done using suitable questionnaires. In the present study, the German version of the Short Form 36 Health Survey (SF-36), developed by Ware and Sherbourne (1992), was used. This questionnaire is commonly used on an international scale (Al-Bitar et al., 2009; Nicodemo et al., 2008) and has been validated globally as an instrument for the measurement of subjective health across diseases, or HRQoL (Kirchberger, 2000). It allows HRQoL to be assessed in a brief, comprehensive, and psychometrically accurate manner (Aaronson et al., 1992). The SF-36 can be used for subjects of all ages as well as for any disease and treatment group.

Oral health-related quality of life (OHRQoL) refers to subjective perceptions concerning the stomatognathic system. The Orthognathic Quality of Life Questionnaire (OQLQ), a specific self-assessment questionnaire developed in 2000 by Cunningham et al. (2000a), was also used in this study to capture patients’ quality of life with regard to skeletal abnormalities in the mouth, jaw, and facial areas (specific OHRQoL) (Bock et al., 2009). The term “malocclusion” includes both dental and skeletal malocclusion and skeletal malocclusion expressed as malpositioning of the jaw. The present study focuses on skeletal abnormalities of the maxilla and mandible, which can, first and foremost, lead to the functional and esthetic impairment of a patient, especially when compared to the general population, and require combined orthodontic and maxillofacial surgical treatment (Kolenda et al., 2016). The etiopathogenesis of these anomalies is multifactorial (Egermark et al., 2000). The bony abnormalities may result in irregular occlusion, among other things, with masticatory and phonetic changes, abnormal stress on the jaw, and possible stress on the stomatognathic system as a result of muscular compensatory movements (Pak and Kater, 2009). Numerous studies (Cunningham et al., 1996; Heldt et al., 1982; Jensen, 1978; Nagamine et al., 1986; Pahkala and Kellokoski, 2007; Schmidt et al., 2013; Wackens, 2002) have shown these physical and esthetic limitations to be associated with psychological and psychosocial consequences for patients, such as a lower self-assessment in terms of their own appearance, especially that of the face (Cunningham et al., 2000c).

The treatment of malocclusion patients therefore includes both physical and psychosocial aspects and accordingly requires careful education, implementation, and follow-up as part of the therapy.

The aim of this study was to determine the extent to which comprehensive treatment has a beneficial effect on a particular patient’s quality of life and whether it is possible to derive approaches for optimized patient-centered pre- and postoperative care from the findings.

2. Materials and methods

The study comprised data from a total of 130 subjects. Of these, 65 patients (21 male, 44 female, mean age at baseline: 24 years, mean age at time of surgery: 26 years) who underwent both reconstructive surgery of the jaw (mono- or bimaxillary) to treat sagittal, horizontal, or transverse anomalies as well as orthodontic treatment in the form of a multiband appliance fitted to the maxilla and/or mandible at the University Hospital of Schleswig–Holstein, Kiel Campus, between 1998 and 2009, were compared with an equally large control group.

After treatment, patient health-related quality of life (HRQoL) and oral health-related quality of life (OHRQoL) were evaluated by sending a set of questionnaires to the patients (with a one-off follow-up in 2012). The set of questionnaires used consisted of validated and internationally recognized questionnaires (SF-36, OQLQ) as well as a more specific questionnaire further developed by the authors. For the purposes of comparison, the control group, consisting of healthy subjects from the Kiel catchment area, was matched to the study group on the basis of gender and age.

A specially designed and validated general questionnaire in accordance with Wesseling (2004) was modified and supplemented (Fig. 1). The goal was to provide an overview of the general living conditions (such as gender, marital status, and vocational qualifications) of the respective patient using 35 questions, and to collect specific data about familial predisposition for malpositions of the jaw, the age of the patient at the time of the operation, and subjective impressions of the patient with respect to the treatment received. The set of questions concerning patient satisfaction utilized visual analog scales (ranging from “very good” to “poor”; 50 mm in length).

The German version of the validated SF-36 consists of 36 items that can be assigned to different subject areas. Based on the dimensions of subjective well-being, these are divided into the following subscales: “physical functioning,” “role physical,” “bodily pain,” “general health,” “vitality,” “social functioning,” “role emotional,” and “mental health.”

The respondent must tick the appropriate answer for each item, with possible answers ranging from yes-no questions to six-point response scales. After evaluation, the maximum value that can be achieved per sub scale is 100, which would indicate optimum HRQoL.

Since the OQL questionnaire was available only in English at the beginning of the study, it was first translated into German in compliance with international guidelines (Beaton et al., 2000). The questionnaire comprises 22 questions, each with five possible answers (ranging from “not applicable” to “bothers you a lot”). After summation of the values ticked, high numbers indicate poor oral health-related quality of life (Al-Bitar et al., 2009). The questions were summarized into the following categories: “oral function,” “dentofacial aesthetics,” “social aspects,” and “awareness of dentofacial aesthetics.” Each category was then examined individually (Cunningham et al., 2000b). Subsequently, all data collected were digitized in tabular form, processed anonymously, and classified by gender and three age groups (up to 20, up to 30, over 30 years).

Statistical evaluation of the values measured was performed using SPSS Statistics™ 21.0 (IBM Corp., Armonk, NY, USA) and resulted in absolute and relative percentages. The Kolmogorov–Smirnov test was used to test the data for normal distribution and to determine relevant statistical indicators such as mean and standard deviation in the context of descriptive statistics. The Levene test for equality of variances with a significance level of 5% was used under the null hypothesis of “equality of group variances” to determine significant differences between the response values of the patient group and those of the control group. The association was determined using the Pearson correlation coefficients to detect possible correlations in response behavior within and between questionnaires. The Kruskal–Wallis H test was used to distinguish between possible differences regarding the surgical type of operation (maxillary only, mandibular only, or bimaxillary surgery).

The study was submitted to the ethics committee of Kiel University for deliberation under file number D 446/11. The ethics committee did not have any objections.

3. Results

For 38.5% of patients, several of the reasons given were crucial factors in the decision to undergo treatment. Most commonly, a combination of esthetic and various functional reasons, such as
دریافت فوری

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات