Short Communication

The Relationship Between Missing Occlusal Units and Oral Health–Related Quality of Life in Patients with Shortened Dental Arches

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This study aimed to investigate the relationship between missing occlusal units and oral health–related quality of life (OHRQoL) in subjects with shortened dental arches (SDAs). Subjects with SDAs (N = 115) were recruited consecutively from 6 university-based prosthodontic clinics. OHRQoL was measured using the Japanese version of the Oral Health Impact Profile (OHIP-J). An increase of 1 missing occlusal unit was associated with an increase of 2.1 OHIP-J units (95% CI: 0.6–3.5, P = .02) in a linear regression analysis. Missing occlusal units are related to OHRQoL impairment in subjects with SDAs. *Int J Prosthodont 2008;21:72–74*.

The term shortened dental arch (SDA) was first used in 1981 by Käyser¹ to describe dentition with a loss of posterior teeth. After several clinical studies, Käyser concluded that there is sufficient adaptive capacity in patients with SDA when at least 4 occlusal units (OUs) are present (1 unit corresponds to a pair of occluding premolars, whereas a pair of occluding molars corresponds to 2 units).

Recently, the impact of oral disorders and interventions on patients' perceived oral health state and oral health-related quality of life (OHRQoL) has been increasingly recognized as an important component of

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Correspondence to: Dr Kazuyoshi Baba, Department of Prosthodontics, Showa University, 2-1-1 Kitasenzoku, Ohta-ku, Tokyo, 145-8515 Japan. E-mail: kazu@senzoku.showa-u.ac.jp health.² Because the effects of tooth loss on OHRQoL in SDA patients are unclear, this case series investigated the association between missing OUs and OHRQoL in subjects with SDA.

Materials and Methods

This study was designed as a multicenter crosssectional study. Six prosthodontic departments from Japanese dental schools participated. The study protocol was approved by the Ethics Committee of Tokyo Medical and Dental University. Over a period of 1 month, a total of 6,307 patients visited any 1 of the 6 clinics. Among those patients, 121 were identified as SDA subjects (Table 1). After a thorough explanation of this study, 115 subjects agreed to participate and provided written informed consent (Table 2).

To evaluate OHRQoL, the Japanese version of the Oral Health Impact Profile, OHIP-J,³ was administered to each subject. Examiners recorded the number and location of missing teeth (Table 3), and the number of missing OUs was calculated using this information. The null hypothesis was that there is no linear association between missing OUs and OHIP-J summary scores.

Visual inspection of a locally weighted scatter plot smoothing (LOWESS) curve revealed that the relationship was approximately linear (Fig 1). To assess the association between missing OUs and OHIP-J summary scores, an ordinary least squares regression was performed, taking into account the cluster sampling study design. Age was considered as a confounder for the association and was included in a second analysis.

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Inclusion criteria

Aged between 18 and 80 years

Kennedy Class I or II partially edentulous areas posterior to canines with no modification spaces

Kennedy Class I or II partially edentulous areas untreated for at least 1 month

Intact anterior dental arch restorable with fixed partial dentures or fixed dental implants

Exclusion criteria

Acute dental and periodontal diseases

Current usage of removable partial dentures

Posterior teeth treated using an implant or fixed partial denture pontic

Table 2Demographics of the SDA Subjects (N = 115)

Male (%)	34 (29)
Mean age \pm SD (y)	58.5 (10.0)
Age range (y)	26-79



Fig 1 OHIP-J summary scores and missing occlusal units with locally weighted scatter plot smoothing (LOWESS) curve.

Location	Maxilla	Mandible	Both arches	Total	
Right					
Subjects	11	17	2	30	
Missing teeth (SD)	1.8 (1.17)	1.9 (0.97)	2.5 (0.71)	1.9 (1.01)	
Left					
Subjects	15	19	3	37	
Missing teeth (SD)	1.4 (0.51)	1.9 (0.88)	2.3 (0.58)	1.7 (0.77)	
Bilateral					
Subjects	7	12	29	48	
Missing teeth (SD)	2.1 (0.38)	4.1 (1.51)	5.9 (2.29)	4.9 (2.36)	
Total					
Subjects	33	48	34	115	
Missing teeth (SD)	1.7 (0.81)	2.5 (1.43)	5.4 (2.46)	3.1 (2.24)	

Table 4aRegression Analyses Between MissingOcclusal Units (OU) and OHIP-J Summary Score

	Coefficient	t	Р	95% CI
Missing OU	2.05	3.59	.0016	0.58–3.52
Constant	23.18	4.00	.010	8.30–38.07

Table 4bRegression Analyses Between MissingOcclusal Units (OU) and OHIP-J Summary Score with AgeAdjustment

	Coefficient	t	Р	95% CI
Missing OU	2.06	3.84	.012	0.68-3.43
Age	-0.10	-0.05	.963	-0.55-0.53
Constant	23.76	1.52	.189	-16.38-63.90

Results

One missing OU was related to an increase of 2.1 OHIP-J units (95% CI: 0.6–3.5, P=.016; Table 4a). The regression coefficient remained unchanged at 2.1 OHIP-J units when age was included in the statistical model, thus indicating very little potential confounding by age (Table 4b).

Discussion

Previous studies investigating the effect of tooth loss on OHRQoL showed that loss of teeth is associated with a reduction in OHRQoL.⁴ The results of the present study are in accordance with these findings.

In a review of Käyser's work, Kanno and Carlsson⁵ found no clinically significant differences between SDA

subjects with 3 to 5 OUs and complete dental arches with regard to several patient-reported outcomes. OHRQoL should be able to capture important components of these outcomes, because small effects, which may have been undetected when analyzing several patient-reported outcomes separately, may be revealed when a single psychometrically sophisticated summary measure of perceived oral health such as OHRQoL is used.

Although the present study was performed using patients with different levels of SDA instead of comparing subjects with and without SDA, the study design is nevertheless appropriate to investigate whether missing OUs are perceived by the subjects. Using the predictor as a continuous variable instead of as an arbitrary cutoff point made it possible to compare subjects with more missing OUs to subjects with fewer missing OUs over the full range of the potential risk factor. A priori, it seems likely that differences in the number of missing OUs change the subject's OHRQoL more gradually than stepwisely-a finding that was observed in these SDA subjects. Dose-response relationships such as the one observed in this study are considered strong support for cause-effect associations. Assuming that the association between missing OUs and OHRQoL is not strongly affected by cultural influences, the results from this study of Japanese SDA subjects should be generalizable to other populations.

Conclusion

The results suggest that missing OUs are related to OHRQoL impairment in SDA subjects.

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Literature Abstract

Relationship between Candida and nocturnal denture wear: Quantitative study

The study examined the relationship between overnight denture wearing and *Candida* sp counts in saliva of edentulous subjects. Twenty-four patients who satisfied the described inclusion criteria received maxillary and mandibular conventional complete dentures. Patients were divided into 2 groups. Group 1 (11 patients) was asked to wear the dentures during sleep throughout an initial period of 7 nights. Group 2 (13 patients) continued to remove the dentures overnight. Salivary tests were performed after 3 months following insertion and during 3 examination periods for both groups. For group 1, the first examination was carried out after overnight denture wearing. Subsequent examinations were conducted after 1 and 7 nights without dentures used during sleep. The protocol for group 2 was similar and comprised 3 examinations with inverse conditions. The first examination was performed without previous denture use during sleep, and the following were carried out after 1 and 7 nights of overnight denture wearing. The results showed that modifications on overnight denture wear produced immediate alteration on *Candida* growth. The group (group 1) that wore their complete dentures both day and night and left them out during sleep presented an immediate decrease in *Candida* sp counts as soon as they changed their denture-wearing habits (from 3.7 ± 0.6 CFU mL⁻¹ to 2.3 ± 1.6 CFU mL⁻¹). On the other hand, those individuals (group 2) who wore their complete dentures only during the day and then started to wear them also during sleep presented an immediate increase in *Candida* sp counts (from 1.5 ± 1.4 CFU mL⁻¹ to 2.3 ± 1.8 CFU mL⁻¹). The authors concluded that there was a significant relationship between overnight denture wear and *Candida* sp. For this reason continuous denture wear should be considered as an important factor in candidal infection.

Compagnoni MA, Souza RF, Marra J, Pero AC, Barbosa DB. J Oral Rehabil 2007;34:600–605. References: 41. Reprints: Dr Marco Antonio Compagnoni, Department of Dental Materials and Prosthodontics, Araraquara Dental School, Sao Paulo State University, Rua Humaita, 1680, 14801-903, Araraquara, SP, Brazil. E-mail: compagno@foar.unesp.br—Huong Nguyen, Singapore

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