Short Communication

Dental Impact on Daily Living of Telescopic Crown–Retained Partial Dentures

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This study aimed to analyze changes in Dental Impact on Daily Living (DIDL) scores in patients who had no prosthesis, a nonfunctioning prosthesis, or an acrylic resin prosthesis after providing them with a telescopic crown–retained partial denture. DIDL scores were recorded in 98 patients prior to and 6 to 24 months after treatment. All DIDL scores (overall and dimension scores) increased significantly after treatment. Results were only slightly affected by gender and age. Patients with fewer teeth benefited more than those with more teeth. Within the limitations of this study, the results show that a telescopic crown–retained partial denture can improve patients' oral health-related quality of life. *Int J Prosthodont 2008;21:419–421.*

Little information is available regarding the impact of removable partial dentures (RPDs), especially telescopic crown–retained removable partial dentures (TRPDs), on the overall well-being of a patient.[1]

The Dental Impact on Daily Living (DIDL) is a proven but rarely used questionnaire that focuses on the influence of a prosthetic restoration on daily life, performance, and well-being of a patient.[2] In comparison to the Oral Health Impact Profile (OHIP), the patient himself weighs the different dimensions recorded in the DIDL, thus giving a better reflection of the significance of a specific dimension in his or her daily life.[3]

The aim of this study was to analyze changes in DIDL scores before and after treatment with a TRPD. The following null hypothesis was tested: Providing a patient with a TRPD does not affect DIDL scores.

Materials and Methods

From July 2001 to February 2005, 141 patients who had no prosthesis, a nonfunctioning prosthesis, or an acrylic resin prosthesis were provided with a TRPD in the clinical courses of the Department of Prosthodontics, Justus-Liebig University, Giessen, Germany, under the supervision of clinical instructors who were calibrated regarding the treatment protocol used in this study. One hundred twenty-nine patients agreed to attend a follow-up examination 1 year later; however, 31 patients missed this appointment. Thus, 98 patients were reinvestigated 12.4 months (± 4.08; range: 6 to 24) after treatment. In all patients, the DIDL index and number of teeth, telescopic crowns, and distal extensions in the study arch were recorded (Table 1).

The dentures were fabricated in a calibrated dental laboratory. The secondary crowns (alloy: MainBond Sun, Heraeus Kulzer; facings: Sinfony, 3M ESPE) were waxed-up directly on the parallel-cut primary crowns. For the denture saddles, PalaXpress (Heraeus Kulzer) and acrylic resin teeth (Ivoclar-Vivadent) were used.

In patients with complete dentures in the opposite arch, bilateral balanced occlusion was established or canine guidance was achieved.

Statistical Analysis

A control for conformity between the 98 study patients and those originally provided with a TRPD was carried out for the variables listed in Table 1.

The different DIDL outcome scores were computed according to Table 2 (see also for a list of abbreviations). Because ΔWDS and ΔFTS were not normally distributed, nonparametric statistical procedures (Wilcoxon signed rank test, H test, and *U* test) were applied.

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Table 1 Patient Characteristics and Conformity Between All patients and Patients Included in the Study

Variable	All patients (n = 141)	Included patients (n = 98)	Conformity
Age (y)	60.0 ± 10.6 (27–82)	60.3 ± 10.0 (39–80)	$P = .28$* $P = .84$**
Male/female (%)	52.5/47.7	57.1/42.9	$P = .26$***
No. of teeth per patient	4.6 ± 2.1 (1–10)	4.4 ± 2.2 (1–10)	$P = .52$* $P = .81$**
No. of telescopic crowns per patient	3.6 ± 1.4 (1–8)	3.4 ± 1.4 (1–8)	$P = .73$* $P = .93$**
No. of distal extensions per denture	1.7 ± 0.6 (0–2)	1.7 ± 0.6 (0–2)	$P = .81$*
Type of denture before treatment (n)			
No denture	37	19	$P = .21$*
Acrylic resin denture	57	42	
RPD with metal framework	47	37	

*t test; **Levene test for variance homogeneity; ***chi-square goodness of fit test.

Table 2 Outcome Variables of the DIDL Instrument*

Outcome variable	Description	Value range	Calculation of results
Dimension weight (DW)	Weights attributed by each person for each dimension	0 to10	$\Delta DW = DW_{at} - DW_{bt}$
Relative dimension weight (RDW)	Value attributed by the respondent to the dimension divided by the sum of the values attributed to all dimensions.	0 to 1	Only used for calculating of WDS
Weighted dimension score (WDS)	Sum of impact levels (positive +1, neutral 0, or negative –1) attributed by the respondent to the items within a dimension divided by the number of dimension items and multiplied by RDW. Since dimensions are not, in general, equally important to an individual, this procedure attributes the same total importance to a dimension for the analyses.	–1 to 1	$\Delta WDS_{(dim)} = WDS_{(dim)at} - WDS_{(dim)bt}$ Dimension (dim) = appearance, pain, comfort, performance, eating restriction
Final total score (FTS)	The FTS is calculated as a combination of the FDS and RDW values. The FTS represents the ability of a respondent to carry out daily activities and to interact with people.	–10 to 10	$\Delta FTS = FTS_{at} - FTS_{bt}$
Impact level (IL)	Classification of the FTS: < 0 = unsatisfied; 0 to 7 = relatively satisfied; > 7 = satisfied	–	–

*Calculations were carried out according to Leao and Sheiham.[2] For details see Leao and Sheiham.[3]
ΔDW = difference in dimension weights before (DW_{bt}) and after (DW_{at}) treatment; ΔWDS = difference in weighted dimension scores before (WDS_{bt}) and after (WDS_{at}) treatment; ΔFTS = difference in final total scores before (FTS_{bt}) and after (FTS_{at}) treatment. Positive values for ΔDW, ΔWDS, and ΔFTS denote an improvement.

A univariate correlation matrix (Spearman) and a canonical correlation analysis were calculated to analyze the interrelationship among the dependent variables ΔWDS and ΔFTS on one hand and the independent variables age, number of teeth, number of telescopic crowns, and number of distal extensions on the other.

Results

Results of the analysis of conformity indicate that the study group is representative (Table 1).

DW was not correlated to age (Spearman, $P > .05$) or gender, with the exception of appearance at follow-up (H test, $P < .05$), which was rated higher by women. After treatment, DW did not change significantly (Table 3).

FTS increased significantly (Wilcoxon, $P < .01$) from 4.7 to 7.4. The largest improvement was observed for the acrylic resin denture group (ΔFTD, Fig 1a). ΔWDS increased most significantly (Wilcoxon, $P < .001$) in all dimensions independent of gender (Fig 1b). After treatment, the impact level increased in 40 patients and decreased in only 3 patients. Thus, the null hypothesis was rejected.

The canonical correlation analysis revealed significant ($P < .05$) correlations for ΔWDS (eating restriction) and the number of telescopic crowns (–0.12), as well as for ΔWDS (comfort) and age (–0.01). This was corroborated by the univariate analysis (Table 3).

Discussion

Due to its design, this study primarily reports on a subject's perception of a TRPD. It does not allow for comparisons to be made between a TRPD and any other treatment option, which is a limitation. However, since the patients in this study showed inferior denture conditions prior to treatment, any improvement or new denture—independent of its type—would likely have increased patient satisfaction. Furthermore, it must be emphasized

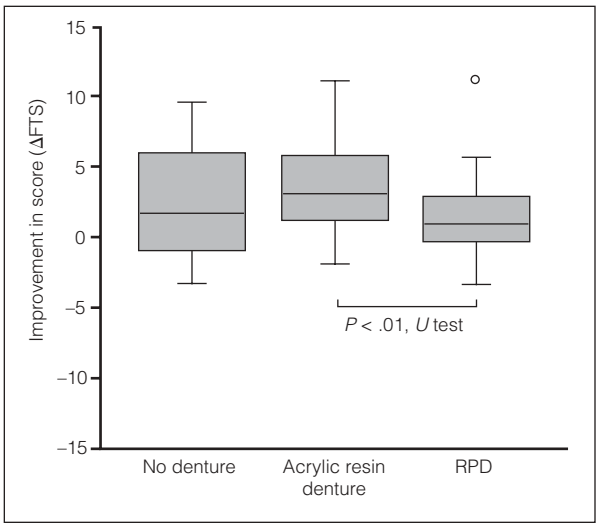

Fig 1a Prosthodontic status before treatment and changes in final treatment score (ΔFTS) after treatment. The only significant difference between the groups was found between the acrylic resin denture and RPD groups (*U* test, $P < .01$).

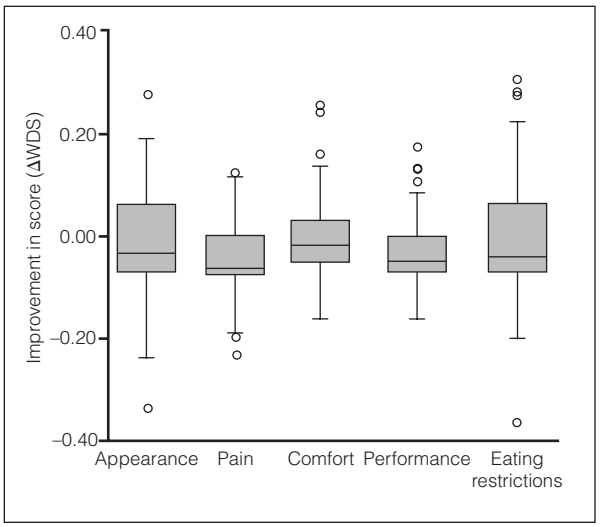

Fig 1b Changes in weighted dimension scores **(**ΔWDS) for the different dimensions. The differences between the dimensions were significant (H test, $P < .01$).

Table 3 Change in Dimension Weights (ΔDW) for the Each Dimension and Correlation Analysis Between the Independent Variables and the Weighted Dimension Scores (ΔWDS) for Each Dimension and ΔFTS.

		Spearman-Rho correlation analysis (ΔWDS)			
Dimension	Mean ΔDW (SD)	Age	No. of telescopic crowns	No. of teeth	No. of distal extensions
Appearance	0.30 (2.01)	−0.03	−0.03	−0.02	0.01
Pain	−0.02 (1.79)	−0.21*	0.04	−0.09	0.07
Comfort	−0.07 (1.79)	−0.22*	−0.10	−0.03	0.04
Performance	−0.17 (2.35)	−0.29 **	−0.11	0.02	0.07
Eating restriction	−0.24 (2.10)	0.03	−0.18	−0.23*	0.18
Final total score	2.48 (3.36)	−0.23*	−0.18	−0.20	0.08

*$P < .05$; **$P < .01$.

that treatment options using fixed prostheses improve the quality of life more than any type of RPD or TRPD.[4]

The observation that patients with fewer teeth benefited more from the TRPD may be related to the fact that the beneficial effects of the denture on patient satisfaction are counteracted by the oral discomfort inevitably induced by the prosthesis itself. Only when the denture adds a significant amount of occlusal units to the dentition is patient satisfaction increased.[5] Further, the greater the difference between the old and new restoration in terms of stability and retention, the greater the improvement in satisfaction experienced by the patient.

Conclusion

Within the limitations of this study, it can be concluded that a telescopic crown-retained removable partial denture has a positive impact on a patient's well-being and quality of life, especially in patients with few remaining teeth.

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