

Coll. Antropol. 24 Suppl. (2000) 1: 25–29  
UDC 616.314-089.28  
Original scientific paper

# The Patient's and the Therapist's Evaluation of Bridges of Different Materials and Age

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## ABSTRACT

*The aim of this study was to find out patients' satisfaction with their bridges made of different materials (metal-ceramics, Au/resin, Ag-Pd/resin). One hundred and sixty four patients were examined at the Dental School, University of Zagreb, Croatia. They assessed their bridges – the overall quality, aesthetics, speech, chewing and the health of the gingiva by the scale from 1–5. The same categories were also assessed by a trained prosthodontist. The majority of the patients was really satisfied and gave the highest grades (quality, aesthetics, speech, etc.) and therefore the results were skewed and asymmetrical towards the biggest scores (biggest grades). The best gingival health was evaluated by the group of patients with ceramic crowns and bridges ( $p < 0.05$ ) and the worst by the patients with Ag-Pd bridges. Speech was scored higher for the lateral than for the frontal bridges. Patients evaluated the health of the tissue surrounding their bridges, overall quality of fixed prosthodontic appliance and aesthetics with significantly higher scores than the prosthodontist ( $p < 0.01$ ). The results point at a difference between the patient's and the therapist's evaluations and to the patient's insufficient care about the gingiva around the bridge abutments.*

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## Introduction

Most of the patients are satisfied with their new fixed prosthodontic constructions, but after some time the number of

patients who are not completely satisfied with the treatment results increases. Many problems occur: veneers could be broken or detached, a gap between veneer and the alloy could appear, bacteria

and plaque may enter the marginal gap and discredit aesthetics, etc. Problems also may arise from the inflammation of marginal gingiva and the pocket formation<sup>1–6</sup>. Although many papers discuss patients' satisfaction with complete denture therapy<sup>7–9</sup>, there are few papers on their satisfaction with fixed prosthodontic appliances<sup>10</sup>.

The aim of this study was to find out patients' satisfaction with their bridges made from various materials (metal-ceramics, Au alloy-resin, Ag-Pd-resin), functioning in the oral cavity for more than three years. We also studied if there is any difference between the patients' and the therapist's evaluation.

## Materials and Methods

One hundred and sixty four patients with bridges, made of 3 different materials: 1. metal-ceramic, 2. Ag-Pd alloy + resin Ivocron »Ivoclar«, 3. Au-Pt + resin-chromasit »Ivoclar«, participated in this study, at least 3 years after the therapy was completed. The patients were examined by a trained therapist (specialist of prosthodontics) at the School of Dental Medicine, University of Zagreb, Croatia.

In a questionnaire, the patients graded general quality of their bridges, aesthetics, speech, quality of chewing and the state of the tissue surrounding the abutments of the bridge by using the scale from 1–5. The dentist examined the same bridges without any idea about the patient's opinion.

Thirty six bridges were made of metal-ceramic, 49 of Au-Pt alloy with the resin – chromasit »Ivoclar« and 79 of Ag-Pd alloy with the resin – Ivocron »Ivoclar«. There were 65% of posterior and 35% of anterior bridges.

Statistical analysis was made using the statistical package SPSS 3.0. Descriptive statistics, Kolmogorov-Smirnov

one sample test, non-parametric Kruskal-Wallis test and non parametric Wilcoxon test were performed.

## Results and Discussion

One sample Kolmogorov-Smirnov test revealed that the distribution of the patients' and the therapist's assessments were asymmetrical towards the biggest values, and therefore significantly differed from the normal distribution ( $p < 0.01$ ), indicating that the quality of the assessed bridges was satisfactory, and that the patients' satisfaction was high.

The patients' and the therapist's evaluations of the overall quality of bridges, aesthetics, gingiva surrounding abutments, as well as the patient's evaluation of chewing (expressed in percentages) are shown in Table 1.

The significance of the difference between the bridges made of three different materials in the patients' or the therapist's evaluations, and the significance of the difference in the patients' assessment of speech quality between anterior and posterior bridges was tested by Kruskal-Wallis nonparametric test and the results are shown in Table 2. Significant differences (assessed by the therapist) in general quality, aesthetic appearance ( $p < 0.05$ ) and the state of gingiva ( $p < 0.05$ ) existed between the patients with 3 different bridge materials, metal-ceramic bridges of the best grades, as tested by Kruskal-Wallis test. This was an expected result, considering all the problems with veneers in alloy-resin combination (detachment, marginal gap, discoloration, abrasion, etc.).

There was no significant difference in the therapist's assessment of speech quality between 3 different materials ( $p > 0.05$ ). There was also no significant difference in the patients' assessment of general quality, speech, chewing and the state of gingiva between 3 different

**TABLE 1**  
PATIENTS AND THE THERAPIST'S GENERAL ASSESSMENT OF BRIDGES, AESTHETICS,  
SPEECH, GINGIVA AND CHEWING (IN %)

	Grade	1	2	3	4	5
		%	%	%	%	%
General Assessment	Patients	3.2	10.8	10.2	21.7	54.1
	Therapist	6.9	9.8	24.8	39.7	20.6
Aesthetics	Patients	1.2	10.8	12.2	21.7	54.1
	Therapist	5.9	9.8	25.8	30.7	30.7
Fonation	Patients	5.2	14.8	15.2	29.7	40.1
	Therapist	2.9	8.8	18.8	23.7	45.7
Gingiva	Patients	3.2	6.8	9.2	17.7	63.1
	Therapist	12.9	13.8	40.8	19.7	15.6
Chewing	Patients	0	5.8	13.4	21.7	62.1

**TABLE 2**  
KRUSKAL-WALLIS TEST: DIFFERENCE IN ASSESSMENTS OF THE QUALITY BETWEEN BRIDGES  
OF THREE DIFFERENT MATERIALS (AG ALLOY-RESIN; AG/PD ALLOY-RESIN; METAL-CERAMICS)  
AND IN PATIENTS' ASSESSMENT OF FONATION BETWEEN ANTERIOR AND POSTERIOR BRIDGES

Difference in the patient's assessment between bridges of three different materials		
Variable	Corrected $\chi^2$	Probability level
General assessment	1.20	$p > 0.05$ ns
Aesthetic	3.56	$p < 0.05^*$
Fonation	0.24	$p > 0.05$ ns
Mastication	0.23	$p > 0.05$ ns
Gingiva	1.38	$p > 0.05$ ns
Difference in the therapist's assessment between bridges of three different materials		
General assessment	3.96	$p < 0.05^*$
Aesthetic	4.63	$p < 0.05^*$
Fonation	0.27	$p > 0.05$ ns
Gingiva	5.71	$p < 0.05^*$
Difference in patient's assessment of fonation between anterior and posterior bridges		
Fonation	4.10	$p < 0.05^*$

bridge materials ( $p > 0.05$ ), while the difference was significant for aesthetic, ceramic bridges of the best grades ( $p < 0.05$ ). It is interesting to point out that the therapist's opinion the gingival health was the best with ceramic bridges, while our patients found out no difference. It seems that the patients are not sufficiently concerned about the gingival

health, which is very important for prevention of periodontal diseases<sup>11–13</sup>. A significant difference was found in speech assessment between the patients with *anterior and posterior bridges*, with more complaints and worse grades for the anterior bridges ( $p < 0.05$ ).

The difference between the patients and the therapist's evaluations was tes-

**TABLE 3**  
**WILCOXON TEST: SIGNIFICANCE OF THE DIFFERENCE BETWEEN PATIENTS' AND THE THERAPIST'S ASSESSMENT IN THE QUALITY OF FIXED REMOVABLE PROSTHESIS**

Significance of the differences between patients' and therapist's assessment		
Variable	Z	p
General quality of bridges	- 4.2692	< 0.01
Aesthetics	- 3.1753	< 0.01
Speech	- 2.7162	< 0.01
State of gingiva	- 5.1463	< 0.01**

ted by Wilcoxon test and the results are shown in Table 3. Wilcoxon test revealed differences between the therapist's and the patients' opinion. The patients were generally more satisfied with their bridges than the therapist ( $p < 0.01$ ), as well as with their aesthetic appearance. This could be attributed to the lack of criticism in patients, who are probably satisfied to have anything in the mouth compensating for the missing teeth<sup>14,15</sup>.

The therapist gave higher grades for speech than the patients ( $p < 0.01$ ). This is probably due to a short period of judg-

ing the patient's speech and the inability to compare the patients' speech before and after the bridge insertion.

The patients evaluated the health of gingiva around the bridge abutments better than the therapist and this assessment made the greatest difference between the patient and the therapist ( $p < 0.01$ ). This result points at the patients' insufficient care about oral hygiene and gingiva, with the bridge, as a foreign body, aggravating maintenance of oral hygiene.

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## **PROCJENA TERAPIJE MOSTOVIMA OD RAZLIČITIH MATERIJALA I RAZLIČITE STAROSTI PREMA OCJENI PACIJENATA I STOMATOLOGA**

### **S A Ž E T A K**

Svrha ovog istraživanja je bila ustanoviti mišljenje pacijenata o mostovima izrađenim iz 3 različita materijala (keramika, Au/akrilat, Ag-Pd/akrilat) koji su bili u ustima najmanje 3 godine. Ukupno je sudjelovalo 164 pacijenta, koji su pregledani u ambulanti za protetiku Stomatološkog fakulteta u Zagrebu. Pacijenti su ocijenili svoje mostove – ukupni dojam, estetiku, govor, žvakanje i stanje gingive oko zuba nosača pomoću skale od 1 do 5. Iste kategorije ocijenio je i specijalist stomatološke protetike. Većina pacijenata bila je jako zadovoljna svojim mostovima te su dali najveće ocjene kvaliteti, esteticu, govoru, žvakanju i stanju gingive te su stoga distribucije bile asimetrične prema najvišim vrijednostima i nisu bile normalno distribuirane ( $p < 0,01$ ). Stomatolog je ustanovio najbolje stanje gingive i najbolju estetiku kod keramičkih mostova ( $p < 0,05$ ), a najgore kod Ag-Pd mostova. Pacijenti su dali bolje ocjene govoru kod bočnih nego kod prednjih mostova ( $p < 0,05$ ), a također su procijenili zdravlje gingive, kvalitetu mostova i estetiku bolje od protetičara ( $p < 0,01$ ). Rezultati ukazuju na razlike između procjene stomatologa i pacijenta te na nedovoljnu brigu oko stanja gingive nosača mostova i na nedovoljnu higijenu.