Oral Hygiene and Gingival Health in Patients with Fixed Prosthodontic Appliances – A 12-Month Follow-Up

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A B S T R A C T

The aim of this study was to assess and observe the oral hygiene and gingival condition in patients before and after fixed prosthodontic therapy through a 12-month period in combination with oral hygiene instructions. It was also analysed how factors, such as type of fixed prosthodontic appliance, constructive material, the position of a fixed partial denture (FPD) in the mouth, age and gender influenced oral hygiene. The dental arches were divided into three segments each and teeth and gingiva were examined using the Plaque and Gingiva Index by Silness and Löe, and for the mineralized deposits assessment the Calculus Index by Green and Vermillion was employed. The preliminary examination was conducted before the prosthodontic therapy, and the reexaminations were carried out 14 days, 1, 6 and 12 months after crown and/or FPD placement. A total of 93 subjects from the original study group of 146 patients attended all clinical examinations, while the rest was excluded. The sample consisted of 60 women, 33 men at age between 21 and 95 (average 51.8). A total of 39 patients had single crowns (C), 50 FPDs and 5 C+FPD. The frequency of plaque found during the preliminary visit was higher than that found in the other periods (p<0.001). Patients with C showed better oral hygiene levels than patients with FPDs or C+FPDs (p=0.001). Our results revealed no significant difference in oral hygiene status among patients with FPDs made of different materials (p=0.083). The worst hygiene levels were found in patients with fixed prosthodontic appliances in both jaws (p=0.012). Younger patients showed better hygiene levels than the older ones (p=0.002). Our research showed that appropriate educational and motivational measures can lead to improved oral hygiene, even after FPD placement. Presumably, the oral health in a group of adult patients can be kept acceptable by providing a prophylactic oral hygiene program.

Key words: oral hygiene, gingival condition, fixed partial dentures

Introduction

The purpose of a prosthodontic treatment is to replace a certain number of lost or damaged teeth in order to achieve a functional and esthetic rehabilitation of the stomatognatic system. The success of this therapy depends on many factors which should be considered during treatment planning. Some of the parameters which help us evaluate the success of a prosthodontic treatment are the structural and biological durability of the restoration. The dental technician and practitioner are mainly responsible for the structural durability, while the patient himself can have a great influence on the biological performance.

Tooth decay, gingival inflammation and periodontal disease are quoted as the most common biological complications of fixed prosthodontic appliances[1–6]. Among this, tooth decay is the most frequent reason of failure[7,8]. It is well known that these conditions are caused by bacteria settled in the dentogingival plaque accumulated due to insufficient oral hygiene, and consequently, for oral health the appropriate hygiene regime is crucial[9].

Especially in patients with fixed prosthodontic appliances the physiological self-cleaning process can be restricted or hindered. In these cases, dental plaque accumulation is facilitated. Submissive places for plaque accumulation are predominantly crown margins, contact surfaces of pontics to the oral mucosa and bridge connectors. These areas require more care to remove all food remains and accumulated plaque.

Studies have reported that poor marginal adaptation[10–17], deeper intracrevicular margin placement[6,18–30], rougher restoration surfaces[31–38], and over contoured restorations[39–43] can contribute to localized periodontal inflammation. Thus, it is necessary that the fixed prosthodontic construction allows a proper cleaning procedure.

Studies indicate that education of patients about the importance of oral hygiene and related instructions lead to improved hygiene levels[44]. That is why patients need to be instructed in the appropriate way of tooth/restoration cleaning and using of supplementary cleaning instruments which allow a more effective removing of dental plaque. Studies demonstrate that frequent careful professional cleaning of teeth of patients with fixed dentures helps to maintain satisfactory oral hygiene[45]. It is necessary to determine reasonable recall intervals for the successful establishment and maintenance of oral health.

As already mentioned, failure can occur as a consequence of mistakes made during treatment planning or fabrication process, but can also reflect inappropriate aftercare. All the mentioned implies the importance of appropriate oral hygiene, not only for protecting the residual teeth, but for ensuring the durability of the prosthodontic restoration and preserving the abutment teeth for future restorations.

The aim of this study was to assess and observe oral hygiene and gingival condition through a 12-month period in patients who received instructions in oral hygiene before and after fixed prosthodontic therapy. It was also analyzed how factors such as a type of fixed prosthodontic appliance, constructive material, its position in the mouth, as well as age and gender of patients influenced the oral hygiene.

Subjects and Methods

Participant selection

Originally 146 patients of the Department of Prosthodontics in the School of Dental Medicine, University of Zagreb were included in the investigation. Medical history confirmed that they were free of any acute or chronic diseases (diabetes mellitus, uremia, blood diseases, autoimmune diseases etc.), and were not undergoing a drug therapy which might have an influence on the gingiva and oral mucosa. Only subjects whose treatment plan had foreseen a fixed prosthodontic appliance were selected. A total of 50 patients received one or more single crowns (C), 58 patients received one or more fixed partial dentures (FPD), and 38 patients received C+

FPD. The purpose of research was presented to all the participants and they provided a written consent.

Patients who did not respond to the recalls were excluded from the research. A total of 93 subjects attended all clinical examinations [N(C)=39, N(FPD)=49, N(C+FPD)=5)], of which 60 women and 33 men. The age range was between 21 and 95 years (average 51.8). Only data of these patients were taken into consideration for statistical analysis.

Data collection

All the research parameters were obtained by clinical examination. The oral hygiene and gingival status were recorded during the study. A calibrated dental practitioner conducted the examination using an explorer and a dental mirror under standard operating lights. For establishing the gingival status a WHO periodontal probe was used. The teeth were examined in the same order for each patient and data were recorded on special forms which included general information about the patients (name, age, gender, and profession), medical history, and oral hygiene status.

Before any prosthodontic procedure the oral hygiene was assessed by using the Plaque Index (PI) according to Sillness and Löe[46]. For measuring the mineralized deposits the Calculus Index (CI) from the Simplified Oral Hygiene Index by Green and Vermillion[47] was used. Gingival condition was assessed according to the Gingival Index (GI) by Sillness and Löe[48]. The maxillary and the mandible arches were divided into three segments each (teeth 8–4, 3–3 and 4–8). Every present tooth was examined for plaque, calculus or gingival inflammation signs and the corresponding scores from 0 to 3 were assigned. When in doubt between two scores, the higher score was given. From each segment the tooth with the highest score was used for calculating the individual index, for that particular segment. The index for each patient was obtained by summing the indices for all six segments and dividing by six or by summing the indices for all three segments of maxillae or mandible and dividing by three. The score interpretation is presented in Table 1.

The obtained data were taken as a starting point for comparison of the hygiene status during the first 12 months after the insertion of a FPD. After the preliminary examination and before the prosthodontic procedure the patients were submitted to professional tooth cleaning, including removal of calculus.

Prosthodontic appliances

Crowns and FPDs were made of materials as follows: either ceramic-fused-to-metal (CFM; N=57) or acrylic veneer on metal (AM), whereby the metal in this system was either gold (AM-G; N=15) or silver-palladium (AM-Ag-Pd; N=21) alloy. All fixed appliances were produced in the Laboratory for Fixed Prosthodontics in the School of Dental Medicine, University of Zagreb under the standards of the Department of Fixed Prosthodontics: the preparation implied a rounded shoulder, crown margins were located at the gingiva, pontics were spheroidally de-

TABLE 1
CRITERIA FOR CLASSIFYING THE ORAL HYGIENE LEVELS

Scores	Plaque Index (PI)	Calculus Index (CI)	Gingival Index (GI)
0	No plaque	No calculus present	Normal gingiva, no inflammation discoloration or bleeding
1	A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may be seen in situ only after application of disclosing solution or by using the probe on the tooth surface.	Supragingival calculus covering not more than third of the exposed tooth surface.	Mild inflammation, slight color change, mild alteration of gingival surface, no bleeding on pressure
2	Moderate accumulation of soft deposit s within the gingival pocket, or the tooth and gingival margin which can be seen with the naked eye	Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both.	Moderate inflammation, erythema and swelling, bleeding on pressure
3	Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.	Supragingival calculus covering more than two third of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.	Severe inflammation, erythema and swelling, tendency to spontaneous bleeding, perhaps ulceration

signed with linear contacts to the oral mucosa and the contact points between the retainer and the pontic were placed above the interdental papilla. The crowns and FPDs had been temporarily fixed (Provicol, Voco GmbH, Cuxhaven, Germany) for a period of 14 days.

Oral hygiene education and motivation

The patients were clarified about their oral hygiene status and educated about the importance of proper oral hygiene measures and their influence on oral health. All subjects were given detailed verbal instructions on how to maintain adequate daily oral hygiene with a fixed prosthodontic appliance. The use of special end-tufted and interdental brushes (Oral B, The Procter & Gamble Company, Cincinnati, Ohio, USA) was recommended which allow cleaning of difficult to reach areas such as crowns and FPDs. The instructions were strengthened by demonstrations on a model using these brushes with a special accent on the oral sites of pontics (in cases having FPDs).

Monitoring

After a period of 14 days the patients were reexamined and the oral hygiene level and gingival condition were assessed again using indexes described above.

After recording all the relevant data, abutment teeth, as well as crowns and FPDs were thoroughly cleaned and the FPDs were permanently luted with phosphate cement (Harvard, Dental-Gesellschaft, Berlin, Germany). The patients were reexamined 1, 6 and 12 months following C and/or FPD placement to reevaluate the oral hygiene and gingival status. During every recall the subjects got feedback about the present hygiene status and were reinstructed on the required hygiene measures. Patients with satisfactory oral hygiene were commended and motivated to continue their hygiene routine. All patients received professional oral cleaning after every examination.

Statistical analysis

Statistical analysis was performed by using STATISTICA version 6 (StatSoft, Inc., Tulsa, SAD) statistical package. Each index (PI, CI and GI) was calculated separately for the maxilla and the mandible for each patient by summing the scores for each sector and dividing the sum by three. Overall oral hygiene index (OOHI) was calculated by summing all three indexes for each sector for the maxilla or the mandible and dividing the sum by six. Average oral indexes were calculated by summing each of four indexes for maxilla with each for mandible and dividing the sum by two. This was done so that the results for each presented index would be comparable with the initially used scale for assessment of the indexes (0–3). The results were presented as arithmetic means and standard errors of means (SE). All the variables were normalized using logarithmic transformation before the analysis of variance (ANOVA). The changes in hygiene indexes over time together with changes over time corresponding to different categories of several factors with possible influence on the level of hygiene indexes (age, gender, type of fixed prosthodontic appliance, constructive material, and placement of appliance in maxilla and/or mandible) were analyzed using repeated measures ANOVA using only one factor for each analysis. Multifactorial analysis was not done because of the small sample that would result in uneven and incomplete design. When age was used as factor sample was divided into quartiles and age quartiles were used as levels. As gender didn't show any significant difference in any of the analyses of hygiene indexes dynamics ($p > 0.20$ for all) these results were not shown. As the calculus index didn't show variability at the time point of temporary luting for its analysis Friedman ANOVA was used. $p < 0.05$ was considered as statistically significant for all analyses.

Results

Mean indexes of oral hygiene are shown in Table 2. Data in Table 2 show a statistically significant temporary dynamics for the OOHI with significant progressive improvement (lower values) from baseline till one month after treatment and with mild progressive non-significant detriment till final endpoint (12 months after treatment). The same temporal dynamics was shown for all individual indexes (PI, CI, GI) altogether and for mandible and maxilla separately (p≤0.001 for all except for PI for maxilla, p=0.197). All indexes were slightly worse in mandible than in maxilla (statistically non-significant for all time points except for baseline for PI, CI, GI and OOHI; p=0.019, p=0.041, p=0.045, p=0.009; respectively]). GIs were somewhat worsen at 14 days post baseline (not significantly).

Statistically significant difference for OOHI was found between subgroups according to the type of fixed prosthodontic appliance (C, FPD and C+FPD) with significantly best results for C and worst for C+FPD subgroup (p=0.001). Temporal dynamics was statistically significant (p=0.018) and comparable (p=0.438 for the interaction »type of appliance*time«) (Figure 1). Almost the same associations were found for PI (p=0.027 for the type of appliance; p=0.001 for temporal dynamics; p=0.096 for the interaction »type of appliance*time«), and GI (p=0.004 for the type of appliance; p=0.048 for temporal dynamics; p=0.627 for the interaction »type of appliance*time«). For CI no significant association was
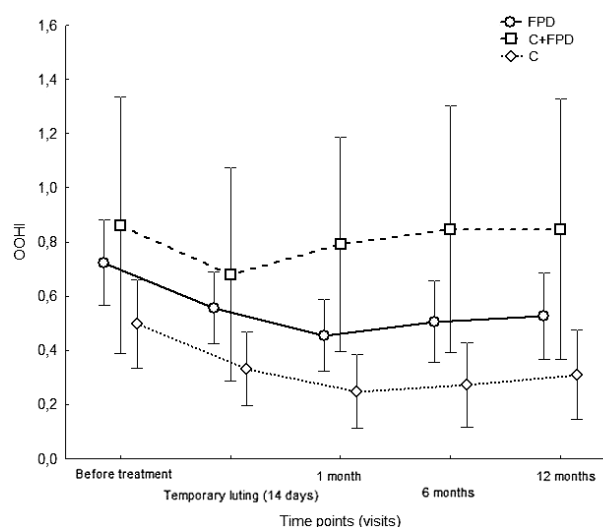

Fig. 1. Least squares mean for overall oral hygiene index (OOHI) with 95% confidence intervals according to type of fixed prosthodontic appliance [crowns (C), fixed partial dentures (FPD), and crown(s) as well as fixed partial denture(s) (C+FPD)].

found for the type of appliance (p=0.290) and for the interaction »type of appliance*time« (p=0.079), but with a significant temporal dynamics (p<0.001).

No statistically significant (p=0.083) association was found for OOHI for the constructive material of the ap-

TABLE 2
MEAN VALUES (SE) OF PLAQUE INDEX, CALCULUS INDEX, GINGIVAL INDEX AND OVERALL ORAL HYGIENE INDEX

		Plaque Index, mean (SE)	Calculus Index, mean (SE)	Gingival Index, mean (SE)	Overall Oral Hygiene Index, mean (SE)
	Maxilla	0.798 (0.079)	0.286 (0.050)	0.611 (0.084)	0.565 (0.059)
Before treatment	Mandible	1.053 (0.073)	0.439 (0.055)	0.849 (0.084)	0.780 (0.057)
	Overall	0.884 (0.076)	0.338 (0.048)	0.673 (0.077)	0.632 (0.056)
	Maxilla	0.659 (0.073)	0.000 (0.000)	0.715 (0.078)	0.456 (0.047)
Temporary luting (14 days)	Mandible	0.785 (0.075)	0.020 (0.015)	0.801 (0.084)	0.535 (0.051)
	Overall	0.669 (0.071)	0.011 (0.008)	0.703 (0.076)	0.460 (0.047)
	Maxilla	0.603 (0.076)	0.004 (0.004)	0.567 (0.070)	0.391 (0.045)
1 month	Mandible	0.650 (0.088)	0.000 (0.000)	0.679 (0.080)	0.443 (0.054)
	Overall	0.564 (0.079)	0.000 (0.000)	0.560 (0.070)	0.375 (0.048)
	Maxilla	0.639 (0.082)	0.067 (0.026)	0.544 (0.075)	0.417 (0.054)
6 months	Mandible	0.760 (0.089)	0.073 (0.021)	0.699 (0.086)	0.511 (0.059)
	Overall	0.638 (0.085)	0.047 (0.015)	0.562 (0.078)	0.416 (0.055)
	Maxilla	0.679 (0.077)	0.141 (0.035)	0.552 (0.075)	0.454 (0.055)
12 months	Mandible	0.739 (0.091)	0.157 (0.030)	0.675 (0,087)	0.523 (0.062)
	Overall	0.656 (0.084)	0.118 (0.025)	0.569 (0.079)	0.447 (0.057)
	Maxilla	0.197	<0.001	0.001	<0.001
P-value*	Mandible	<0.001	<0.001	<0.001	<0.001
	Overall	<0.001	<0.001	<0.001	<0.001

*p-value was calculated for the change over time using repeated measures analysis of variance (plaque index, gingival index, overall oral hygiene index) or using Friedman ANOVA for Calculus Index

pliance (CFM, AM-G, AM-Ag-Pd), although the best OOHI was connected with CFM and worst with AM-Ag-Pd. Temporal dynamics was statistically significant (p<0.001) and comparable (p=0.124 for interaction »material*time«) (Figure 2). Comparable associations were found also for GI (p=0.126 for material; p<0.001 for temporal dynamics; p=0.628 for interaction »material*time«), and for CI (p=0.053 for material; p<0.001 for temporal dynamics; p=0.958 for interaction »material*time«). For PI statistically significant association was found for the type of material used for appliance (p=0.007) together with the statistically significant temporal dynamics (p<0.001) but without significant interaction for »material*time« (p=0.109).

Statistically significant association was also found for OOHI and placement of prosthodontic appliance (maxilla, mandible or both) with significantly worst results in a subgroup with appliances in both maxilla and mandible (p=0.012). Temporal dynamics was also statistically significant (p<0.001) and comparable between subgroups (p=0.691 for interaction »placement*time«) (Figure 3). Comparable associations were found for PI (p= 0.017 for placement; p<0.001 for temporal dinamics; p=0.626 for interaction »placement*time«), and for GI (p=0.036 for placement; p=0.014 for temporal dinamics; p=0.401 for interaction »placement*time«). For CI we haven't found a significant association with the placement of prosthodontic appliance (p=0.413) nor for interaction »placement*time« (p=0.686), but temporal dynamics was statistically significant (p<0.01).

Also a statistically significant association was found for OOHI and age (subgroups based on quartiles for age) with best values connected with the youngest quartile

Fig. 3. Least squares mean for overall oral hygiene index (OOHI) with 95% confidence intervals according to placement of appliance in maxilla and/or mandible.

and worst with oldest one (p=0.002). All age quartiles showed comparable (p=0.132 for interaction »age*time«) temporal dynamics (p<0.001) (Figure 4). Comparable associations were found for GI (p=0.007 for age; p<0.001 for temporal dynamics; p=0.269 for interaction »age*time«). For OI no significant difference was found between age quartiles (p=0.347) nor for interaction »age*time« (p=0.197). For CI significant difference was found between age quartiles with the best results for youngest and worst for oldest quartile (p=0.001). Temporal dy-
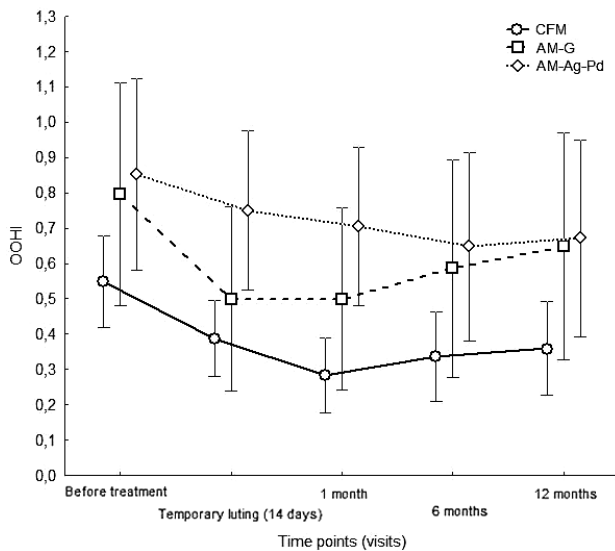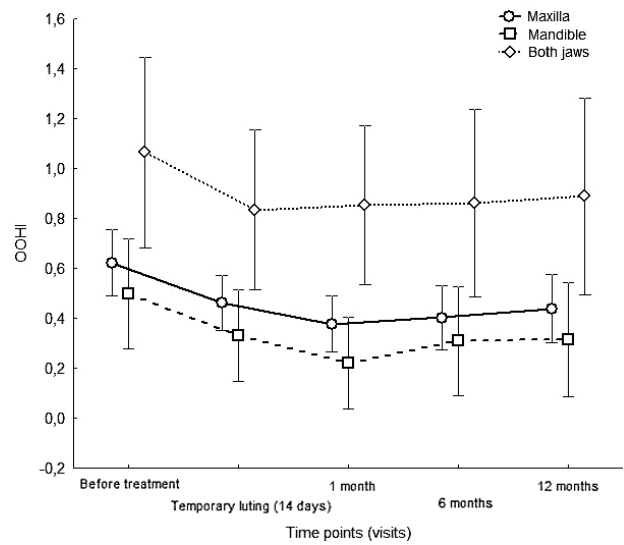

Fig. 2. Least squares mean for overall oral hygiene index (OOHI) with 95% confidence intervals according to type of material used for the appliance (ceramic fused-to-metal (CFM) or acrylic veneer on gold (AM-G) or acrylic veneer on silver-palladium alloy (AM-Ag-Pd)).
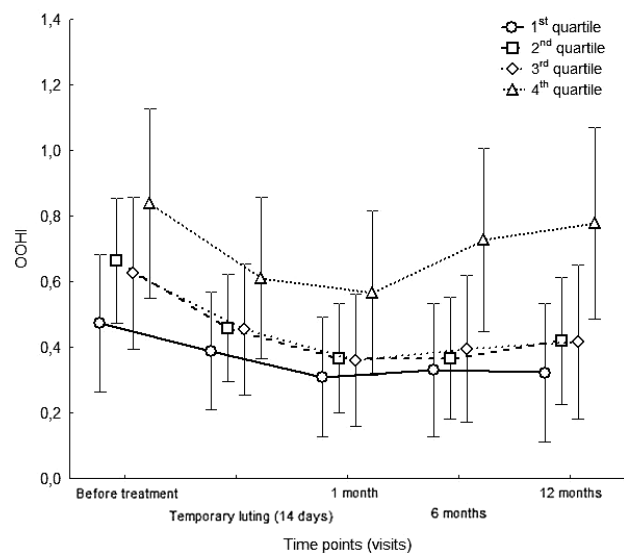

Fig. 4. Least squares mean for overall oral hygiene index (OOHI) with 95% confidence intervals according to subgroups defined by age quartiles (1st quartile – youngest subgroup, 4th quartile – oldest subgroup).

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namics (p<0.001) together with interaction »age*time« (p=0.008) were statistically significant (youngest quartile having significantly best baseline).

Discussion

There are many studies on this topic indicating that prosthodontic appliances favour plaque accumulation and have a negative impact on gingival condition due to insufficient aftercare[49,50], although there are authors reporting no statistically significant difference in the plaque index values between teeth with crowns and control teeth[30].

In this study, the frequency of plaque found during the preliminary visit was higher than that found in other periods, after prosthodontic treatment. The decrease of PI and CI in the first month was statistically significant. After 6 and 12 months a mild insignificant increase of PI was registered. The most of patients presented with the plaque index values of 0 and 1 during the reexaminations, thus indicating that they maintained a satisfactory level of oral hygiene. This could be contributed to the reexamination and reinstruction scheme. Reinstruction is detected as an important factor, since patients in other investigations show lower plaque scores after reinstruction[51]. It is concluded that professional advice and instruction and reinstruction seems very important in order to obtain good plaque control[51]. In our study the oral hygiene instructions were given directly after C and/or FPD application. Patients were reinstructed and reminded of the importance of oral hygiene after 14 days, after one month, six months and 12 months. Patients were probably more motivated for hygiene level improvement directly after the appointments which resulted in lower PI values at the first month visit due to close-meshed reexamination. Based on our results we can hypothesize that the motivation wore down between the third and fourth and fourth and fifth visit because of much longer time periods between checkups with no feedback in between. A contributing factor could also be the use of special end-tufted and interdental brushes. The results of other investigators indicate that the daily use of interdental brush is effective in reducing interproximal plaque and gingivitis scores[52] and in combination with a toothbrush it is more effective in the removal of plaque from proximal tooth surfaces than a toothbrush used alone or in combination with dental floss[53]. It has shown that only interdental brushes permit a good plaque control at the proximal areas of the abutment teeth[54].

With regard to gingival index, an increase was found between the baseline visit examination and 14 days after the temporary fixing. The reason might be the fact that clinical procedures during prosthodontic work caused damage and the period of 14 days after manipulation was too short to allow for the irritated gingiva to heal completely. Factors related to the prosthetic restorations such as the marginal edge of the crown, poor adaptation of the marginal edge, poor contours of the restoration and rough margins are often connected with inflamma-

tion of periodontal tissue[55]. It is necessary to point out that higher GI scores are found when the crown margins are located subgingivally as compared to location at the gingival margin or supragingivally[6]. The anatomic reconstruction of the crown with a perfect marginal adaptation will provide an adequate environment for maintaining the health of surrounding periodontal tissues.

However, in our research, by maintaining a satisfactory oral hygiene, the condition of soft tissues enhanced after one month and maintained stable thought next two temporal points. Other studies have demonstrated that insufficient oral hygiene is an important factor in the development of inflammatory changes in the oral mucosa beneath bridge pontics[56]. The period of monitoring in this study was too short to make reliable conclusions as other studies show that length of use of crowns influenced significantly the level of oral hygiene and gingival reaction[23,57,58]. Thereby periods of five years and longer are considered as critical.

The prevalence of calculus as a consequence of plaque in a population is a measure of the oral hygiene level and frequency of regular professional dental care. The Calculus Index in this survey fell to zero in the first month. Levels of calculus and location of formation have been shown to be affected by oral hygiene habits, access to professional care, diet, age, ethnic origin and time since last dental cleaning. Considering the fact that all patients were submitted to professional oral cleaning, including removal of dental calculus just before prosthodontic treatment, and the period of one month was too short for new calculus formation, especially under improved hygiene routine, our findings could be expected.

A statistically significant difference was found depending on the type of fixed prosthetic appliance (C, FPD or C+FPD), whereby patients with single crowns showed best, and patients with C+FPDs the worst results. Other studies were in accordance to our findings and indicate that plaque accumulation, and consequently the incidence of tooth decay was bigger in fixed denture abutment teeth compared to single crowns[4]. One of the reasons could be the occasionally difficult access for dental hygiene instruments into the interproximal areas adjacent to fixed partial denture abutment teeth. It should be pointed out that during our research the patients provided with C+FPD were the ones who mostly avoided checkups and only 13% of the original group attended to all examinations. Considering the fact that in the end they showed the worst oral hygiene and gingival condition, it can be presumed that they neglected oral health more than other participants.

Fixed prosthetic appliances may be made of different materials. Our patients usually opt for either ceramic fused-to-metal or acrylic veneer on metal, whereby the metal in this system can be gold or silver-palladium alloy. Acrylic veneers are often used due to financial reasons, as they are much cheaper than ceramics. Our examination revealed no significant difference in oral hygiene status among patients with fixed appliances made of different materials. This is in accordance to other clinical

studies which demonstrate that the amount of plaque on the test specimens of different dental materials shows no consistent differences[59]. The same study demonstrated that patients maintaining a high standard of oral hygiene are able to prevent the development of inflammatory changes in the alveolar mucosa in contact with fixed bridge pontics irrespective of the pontic material used[58]. But it should be mentioned that there are also studies revealing that the degree of in vivo plaque formation and gingival condition differ among materials[60–63].

A statistically significant difference was found depending on the placement of the fixed prosthodontic appliance (upper dental arch, lower dental arch, both dental arches), whereby the worst results were found in patients with fixed appliances in both the upper and lower jaws. Considering the fact that probably inappropriate oral hygiene had led to the requirement for such extensive rehabilitation in the first place, this results could be understandable.

Comparison of the indexes among the age groups revealed that the youngest group showed best results, while the oldest group had the worst oral hygiene. It should be pointed out that the youngest patients had the significantly best starting point, i.e. the lowest indexes at the preliminary examination, while the changes during time were comparable for all age groups. Other studies also revealed a poor state of oral hygiene among elderly people[64–66]. This could be due to reduced manual skill, or less motivation in the maintenance of adequate personal hygiene, as well as difficulties to access professional dental care[67]. Many of the older people suffer from dementia and are no longer capable of caring for their oral hygiene independently. In this context, it is important to provide assistance with oral hygiene measures from the dental professionals' point of view.

Conclusion

Altough most studies on this topic indicate that prosthodontic appliances have a negative impact on the oral hygiene level and gingival condition, our research showed that appropriate educational and motivational measures can lead to improved oral hygiene, even after the application of fixed dentures or single crowns. Presumably, the oral health in a group of adult patients can be kept acceptable by providing a prophylactic oral hygiene program. However, it should be mentioned that a significant part of initially recruited patients was lost to follow-up and that this can somewhat bias the results towards better oral hygiene.

Patients with single crowns showed better oral hygiene levels than patients with FPDs or C+FPDs. Our results revealed no significant difference in oral hygiene status among patients with fixed appliances made of different materials. The worst hygiene levels were found in patients with fixed appliances in both jaws. Younger patients showed better hygiene levels than the older ones.

Fixed prosthodontic work should be checked regularly. Check-ups contribute to a healthy periodontium and longer life span of fixed prosthodontics.

Acknowledgements

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ORALNA HIGIJENA I STANJE GINGIVE KOD PACIJENATA S FIKSNOPROTETSKIM RADOVIMA – 12-MJESEČNO PRAĆENJE

SAŽETAK

Svrha ovog istraživanja je bila odrediti stupanj oralne higijene i stanje gingive kod pacijenata prije i nakon fiksnoprotetske terapije uz odgovarajuće upute u oralnu higijenu te pratiti promjene kroz 12 mjeseci. Također je analizirano kako se čimbenici poput vrste protetskog rada, materijala od kojeg je rad načinjen, položaj u ustima, dob i spol odražavaju na stupanj oralne higijene. Zubni lukovi su podijeljeni na sekstante te su zubi i gingiva pregledani koristeći Indeks plaka i Indeks gingive prema Silnessu i Löeu, dok je prisutnost mineraliziranih naslaga procijenjana Indeksom kamenca prema Greenu i Vermillionu. Prvi pregled je proveden prije protetskih zahvata, dok su kontrole izvršene 14 dana nakon privremenog cementiranja te mjesec dana, 6 i 12 mjeseci od trajnog cementiranja krunice i/ili mosta. Od 146 pacijenata koji su izvorno bili uključeni u istraživanje 93 ih se odazvalo na sve kontrolne preglede te su samo njihovi podaci uzeti u obzir. Uzorak se sastojao od 60 žena i 33 muškaraca u dobi između 21 i 95 godina (prosječna do 51,38). Ukupno 39 pacijenata imalo je samostalne krunice, 50 mostove, a 5 krunice i mostove. Indeks plaka kod prvog pregleda bio je viši u odnosu na ostale (p<0,001). Pacijenti sa samostalnim krunicama pokazali su bolji stupanj oralne higijene od onih s mostovima ili kombiniranim radovima (p=0,001). Prema rezultatima ovog istraživanjna nije bilo statistički značajne razlike u indeksima među pacijentima s nadomjescima načinjenim od različitih materijala (p= 0,083). Najlošiji stupanj oralne higijene imali su pacijenti s nadomjescima u obje čeljusti (p=0,012). Mlađi pacijenti su imali bolju oralnu higijenu od starijih (p=0,002). Ovo istraživanje je pokazalo da odgovarajuće edukacijske i motivacijske mjere mogu dovesti do poboljšanja oralne higijene, čak i nakon stavljanja fiksnoprotetskih radova. Za očekivati je da bi se oralno zdravlje pacijenata bitno moglo unaprijediti uz odgovarajće profilaktičke mjere.