



Oral health-related quality of life of edentulous patients after complete dentures relining

Oralno zdravlje i kvalitet života bezubih pacijenata nakon podlaganja totalnih zubnih proteza

Nebojša Krunić*†, Milena Kostić†, Milica Petrović*, Marko Igić*

*Faculty of Medicine, University of Niš, Niš, Serbia; †Clinic of Dentistry, Clinical Centre Niš, Niš, Serbia

Abstract

Background/Aim. Tooth loss affects oral health-related life quality. More than a third of edentulous patients are not fully satisfied with their complete dentures and mainly complain of insufficient stability, retention, and pain during mastication. Solving the problem may include relining by materials that are based on silicone or acrylic. The aim of this study was to determine the level of patients' satisfaction before and after relining upper dentures with soft and rigid liners. **Methods.** The patients ($n = 24$) were divided into two study groups. Maxillary denture relining of the first group of patients was performed with hard acrylic based resins while in the second group of patients complete denture was relined with a silicone-based soft liner. They were asked the questions from the specifically adapted the Oral Health Impact Profile Questionnaire for edentulous patients before and three months after relining dentures. **Results.** After relining the patients showed a higher degree of satisfaction with their dentures in all the tested domains (masticatory function, psychological discomfort, social disability and retention and hygiene). The patients with soft denture relines were more satisfied. **Conclusion.** Relining of maxillary complete dentures significantly positively impacts the quality of life of patients in all the tested domains (masticatory function, psychological discomfort, social disability, pain and oral hygiene). Better results were achieved using a silicone-based soft liner, which recommends it as the material of choice for relining dentures.

Key words:

denture rebasing; acrylates; silicons; quality of life.

Apstrakt

Uvod/Cilj. Gubitak zuba utiče na oralno zdravlje i na kvalitet života. Više od trećine bezubih pacijenata nije zadovoljno svojim totalnim protezama, a većina njih se žali na nedovoljnu retenciju i stabilizaciju, kao i bol prilikom žvakanja. Rešenje njihovog problema moglo bi biti podlaganje proteza materijalima na bazi silikona ili akrilata. Cilj ovog istraživanja bio je utvrđivanje stepena zadovoljstva pacijenata pre i posle podlaganja proteze mekim i tvrdima materijalima. **Metode.** Pacijenti ($n = 24$) bili su podeljeni u dve studijske grupe. Kod prve grupe pacijenata podlaganje gornje totalne proteze izvršeno je akrilatnim materijalima, dok su u drugoj grupi proteze podlagane silikonskim materijalom. Pacijentima su postavljena pitanja iz specijalno prilagođenog the *Oral Health Impact Profile* upitnika pre i tri meseca nakon podlaganja proteza. **Rezultati.** Pacijenti su pokazali veći stepen zadovoljstva u svim ispitivanim oblastima (mastikatorna funkcija, psihološka i socijalna nelagodnost, retencija i higijena) nakon podlaganja. Pacijenti su bili zadovoljniji nakon podlaganja proteze mekim materijalom. **Zaključak.** Podlaganje maksilarnih totalnih proteza značajno doprinosi poboljšanju kvaliteta života bezubih pacijenata u svim ispitivanim domenima. Bolji rezultati postižu se silikonskim podlogama, što ih čini materijalima izbora za podlaganje totalnih proteza.

Ključne reči:

zubna proteza, podlaganje; akrilati; silikoni; kvalitet života.

Introduction

Edentulism is a handicap that affects the quality of life and nutrition¹. Tooth loss leads to functional impairment at the level of the orofacial system, significantly interfering with chewing, swallowing and speech, as well as to temporomandibular joint dysfunction, disorders of intermaxillary relation and facial physiognomy^{2,3}. In addition, a less attractive facial appearance,

difficulty with speech and avoidance of social contacts may result in psychosocial problems⁴.

Well-designed denture may improve the oral health of patients and consequently their quality of life^{5,6}. The success of prosthetic rehabilitation by conventional complete dentures is variable and depends on capacity of adaptation to treatment limitations⁷. In addition to training of dentists, a very important factor for the acceptance of prosthesis by pa-

tients is the degree of their satisfaction^{8,9}. From the patient's point of view, denture satisfaction appears to be primarily related to aesthetics, retention and function⁴. The level of acceptance of complete denture depends on gender, education level, socioeconomic status, and the type of personality¹⁰⁻¹².

More than a third of edentulous patients are not fully satisfied with their complete dentures, and mainly complain of insufficient stability, retention and pain during mastication¹³. Continuous residual alveolar ridge resorption leads to the insufficient support of complete dentures. Liner should be added to the inside of the denture to allow equal force distribution, reduce localized pressure as well as improve denture retention and stability^{14,15}.

Relining can be made with soft materials, which maintain resilience for a long time, or cold-cured hard poly (methacrylate), which are chemically identical to the material denture base is made of.

The Oral Health Impact Profile (OHIP) is a commonly used questionnaire for assessing oral health related quality of life¹⁶. The original English version of the OHIP was presented by Slade and Spenser in Australia in 1994¹⁷. The OHIP consists of 49 questions divided into seven constitutive domains: functional limitations, physical discomfort, psychological discomfort, physical disability, psychosocial disability, social disability and handicap. Both original and modified OHIP versions were used in different language areas respecting linguistic and cultural differences existing in these regions¹⁸⁻²¹. This questionnaire demonstrated satisfactory validity, reliability and responsiveness in different cultural areas and surrounding countries²²⁻²⁵. In 2009 Stančić et al.²⁶ presented the Serbian version of OHIP-14 as a part of assessing oral health-related quality of life of elderly patients. Pisani et al.²⁷ proposed version of the questionnaire related to the edentulous patients, and their version was used in this study (Appendix 1). The OHIP-EDENT was adapted as a specific instrument for edentulous subjects, which was aimed at detecting changes as influenced by clinical aspects of edentulism and treatments^{28,29}.

The aim of this study was to determine the level of satisfaction of edentulous patients before and after relining maxillary dentures with soft and rigid denture liners.

Methods

Study sample and procedure

The study was conducted at the Dental Clinic, Faculty of Medicine, University of Niš, with the approval of the Ethics Committee (No. 01-2113-2). The sample of patients was formed after taking anamnesis and clinical examination. The sample consisted of 24 patients of both sexes, aged 50–70 years, with a minimum of one and maximum of five years maxillary denture usage time. The patients wore upper total and lower partial dentures. The study included the patients who had indication for maxillary complete denture relining, because of pain or lack of retention and stability. The study did not include patients with inflammatory changes in the oral cavity, candidiasis, hyperplasia, neurological disorders and malignancies. For the sake of uniformity of understanding the questionnaire all the patients included in the study had secondary degree of education.

The sample (n = 24) was randomly divided into two study groups (n = 12). Maxillary denture relining of the first group of patients was performed with cold curing acrylic-based rigid liner (Triplex Cold, Ivoclar Vivadent, Lichtenstein). In the second group of patients dentures are relined with silicone-based resilient liner (GC Reline Soft, USA). Denture relining was performed according to chair side procedures prescribed by the manufacturer's instructions. Denture relining with silicone-based soft liner implied the use of an appropriate primer.

The patients were asked the questions from specifically adapted questionnaire in the time baseline and three months after relining dentures.

Translation of OHIP-EDENT

The original version of OHIP-EDENT was translated into Serbian by the accredited translator and revised by the prosthodontist, accompanied by back-translation into English after the Serbian version was revised (Appendix 2). The translation of the questions was adjusted to the questionnaire version provided by Stančić et al.²⁶ Three possible answers to these questions and their scores were: never – 0, sometimes – 1 and almost always – 2 (Likert scale)²⁷.

The results were statistically analysed using the Wilcoxon test (SPSS version 16.0, USA, $p < 0.05$).

Results

Table 1 presents the mean score values and standard deviations for the questionnaire, as well as comparisons between periods.

Table 1
The mean score values before and after relining of dentures (Wilcoxon test)

Material	Treatment	Score ($\bar{x} \pm SD$)	<i>p</i>
Rigid denture liner			
Masticatory related complains	before	3.33 ± 1.44	0.004*
	after	1.17 ± 1.03	
Psychological discomfort	before	4.58 ± 1.38	0.002*
	after	2.08 ± 1.31	
Social disability	before	2.08 ± 1.83	0.133
	after	1.08 ± 0.67	
Retention and hygiene	before	7.67 ± 1.97	0.005*
	after	4.75 ± 1.14	
Sum	before	17.67 ± 4.60	0.003*
	after	9.08 ± 1.93	
Silicone-based soft liner			
Masticatory related complains	before	2.92 ± 1.38	0.007*
	after	0.83 ± 1.34	
Psychological discomfort	before	4.50 ± 1.93	0.009*
	after	1.33 ± 1.72	
Social disability	before	2.33 ± 2.10	0.026*
	after	0.67 ± 1.15	
Retention and hygiene	before	8.50 ± 1.38	0.002*
	after	4.75 ± 0.96	
Sum	before	18.25 ± 3.72	0.002*
	after	7.58 ± 2.81	

Score: 'Never' – 0, 'Sometimes' – 1, 'Almost always' – 2.

* Statistically significant difference ($p < 0.05$).

All four domains indicated a statistically significant difference ($p < 0.05$) between the reference period, except the social disability for rigid denture relining. Statistically significant reduction in mean scores indicates the improvement in all the domains after relining dentures. Larger decrease in mean scores was observed in soft liner which indicates the advantage in the use of silicone liners relative to the rigid acrylic ones.

The percentage score for responses N (never), S (sometimes) and A (almost always) in the time baseline and after 3 months of relining is shown in Figure 1. After relining in all the tested domains a higher response rate of 'never' (N) was observed. The answers 'sometimes' (S), and 'almost always' (A) were more common in the period before relining of dentures, which proved positive effect of relining of dentures.

prosthetic appliance to which he/she is accustomed, while improving its functionality at the same time.

The study included a specific group of patients wearing upper complete and lower partial dentures, which represents the most frequent clinical situation in prosthodontic patients between 50 and 70 years of age. The uniformity of clinical finding and period of wearing dentures significantly affect the results of patients' satisfaction. Empirically, it was concluded that the patients were more satisfied with retention and stabilisation of upper complete dentures compared to lower total dentures. Thus, the starting assumption of the study was that comparison of relining effects of these two dentures on oral health related quality of life would be irrelevant. In addition, construction of lower complete denture and upper partial denture is rarely indicated. The patients with both complete dentures were excluded from the

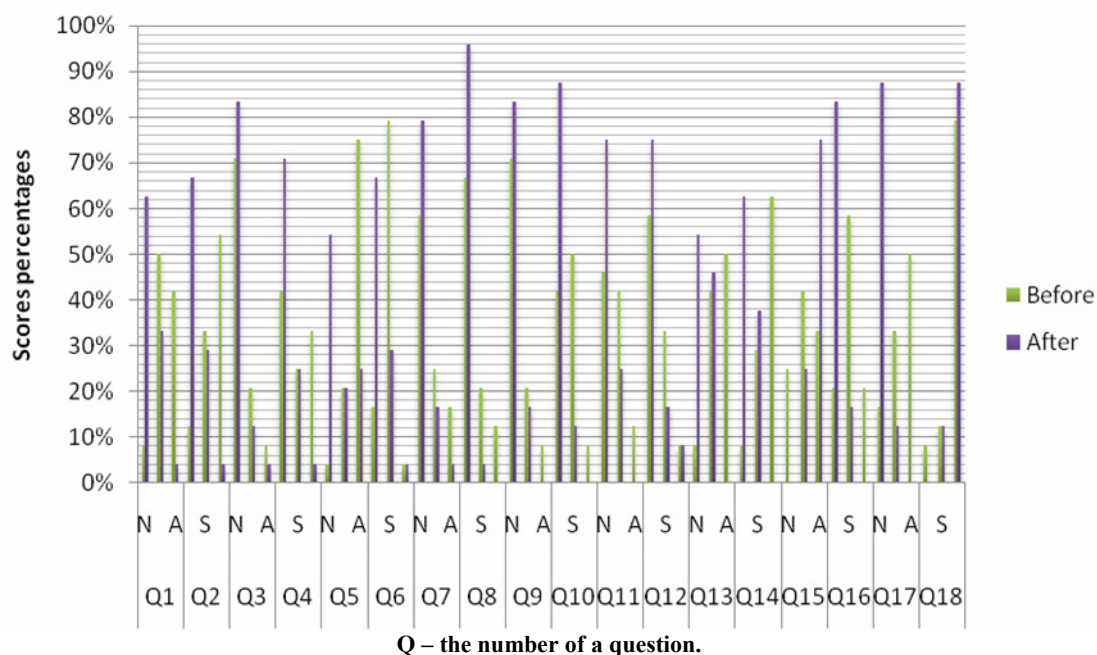


Fig. 1 – Percentage of scores: N (never), S (sometimes) and A (almost always).

Discussion

Tooth loss affects masticatory function, disabling normal nutrition of the patient. Wearing complete dentures is associated with their many functional limitations, to which the patients adapt over time and for which neuromuscular mechanism is the most responsible⁸. To be able to use it, patients must be confident with their dentures and satisfied with them.

With respect to changes that constantly occur in the orofacial system, primarily concerning alveolar ridge resorption, retention and stability of dentures gradually decreases, and security in their use also decreases. Creating new dentures is not always the solution to the problem, and represents considerable financial problem. Having the existing dentures relined, the patient continues to use a

study due to absolute loss of tooth proprioceptor and rare need for simultaneous relining of both complete dentures. For the sake of uniformity, of understanding the questions, and since OHIP-EDENT has not been used in Serbian speaking region so far, the subjects used in the study were of similar educational status.

The used questionnaire contained all the necessary parameters related to functionality of dentures, possible occurrence of pain and the psychological and social aspect of their use. The answers to these questions are a clear indication of how patients feel about their dentures. The obtained results clearly showed that patients were satisfied after relining dentures. There was an improvement of comfort and chewing ability, eating enjoyment, food choices, security and speech after denture modification. Relining of dentures improved the quality of patients' life, reducing their

anxiety and concern. The results positively correlated with the results of several studies^{4, 27, 29}.

The results of this study suggest the advantage of using soft liners in comparison with cold curing acrylic resin. The use of soft liners became a reality in dentistry because they have many clinical advantages. Soft materials have the ability to repair the inflamed mucous membrane, uniformly distribute load functional area in support of the dentures and improve their retention and stability²⁷. Kimoto et al.³⁰ also concluded a higher degree of satisfaction of patients whose dentures were lined with resilient material compared to conventional heat curing acrylate. Contrary to the results, the study of Mohamed⁴ proved better chewing ability and biting force after relining dentures with conventional heat curing acrylate compared to resilient liners. These results showed a significant

decrease in masticatory function six months after resilient relining.

Conclusion

Relining of maxillary complete dentures significantly positively impacts the quality of life of patients in all the tested domains (masticatory function, psychological discomfort, social disability, pain and oral hygiene). Better results were achieved using a silicone-based soft liner, which recommends it as the material of choice for relining dentures.

Taking into account the study limitations on the patients with upper total denture, further research should be directed towards more complete understanding of different prosthodontic treatment effects on oral health related quality of life in patients with lower complete dentures and edentulous patients.

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Appendix 1

The Oral Health Impact Profile (OHIP) questionnaire for edentulous patients (OHIP-EDEN)

Please circle the number next to the answer of the question: 0-never; 1-sometimes; 2-almost always.

Masticatory related complains

Do your braces interfere during chewing?

Do you avoid certain foods because of problems with your dentures?

Do you feel pain and cracking in the joints?

Psychological discomfort

Are you worried and anxious due to the problems with denture?

Are you constantly aware of the presence of dentures

Have you ever had to end a meal due to problems with denture?

Are you worried by the thought that you will forever serve denture?

Are you embarrassed because you wear denture?

Social disability

Do you avoid social contacts due to problems with denture?

Are you irritable toward others because of problems with denture?

Do you have a feeling that because of denture you can't relax in the society?

Do you feel that your life has less quality because you wear denture?

Retention and hygiene

Did you notice that on your denture retains food?

Can you see food particles under the denture?

Are your denture stable fit in your mouth?

Does denture make wounds in your mouth?

Do you feel pain while your denture is in your mouth?

Are you able to properly clean your denture?

Appendix 2

The Oral Health Impact Profile (OHIP) questionnaire for edentulous patients (OHIP-EDEN) translated into Serbian

Molim Vas zaokružite broj odgovora pored postavljenog pitanja: 0-nikad, 1-ponekad, 2-skoro uvek.

Smetnje u žvakanju

Da li imate smetnje pri žvakanju hrane?

Da li teže jedete određenu hranu zbog problema sa protezama?

Da li dok jedete osećate bol i pucketanje u zglobovima?

Psihološke smetnje

Da li ste zabrinuti ili uznemireni zbog problema sa protezom?

Da li ste stalno svesni činjenice da Vam je proteza u ustima?

Da li ste nekada morali da prekinete obrok zbog problema sa protezom?

Da li ste prihvatili činjenicu da ćete od sada stalno nositi protezu?

Društvene smetnje

Da li zbog problema sa protezom izbegavate kontakte sa ljudima?

Da li ste neprijatni sa ljudima iz okoline zbog problema sa protezom?

Da li se zbog problema sa protezom ne možete opustiti u društvu?

Da li mislite da je Vaš život manje kvalitetan od kada nosite protezu?

Retencija i higijena proteze

Da li ste primetili da Vam se na protezi zadržava hrana?

Da li ste primetili ostatke hrane ispod proteze?

Da li Vam se proteza pomera u ustima?

Da li dok koristite proteze osećate bol?

Da li lako čistite Vaše proteze?