Unilateral complex partial denture performance evaluation: 5 years follow up clinical study

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SUMMARY

Introduction: Removable partial denture (RPD) is common treatment option for unilateral partially edentulous patients not indicated for implant therapy. Unilateral complex partial denture (UCPD) could be an alternative approach to RPD treatment, but there is lack of evidence about UCPD treatment outcomes during the long-term clinical performance. The aim of this study was to use periodontal, prosthodontic and participant satisfaction measures to evaluate the long-term clinical performance of UCPD.

Material and methods: This 5 year follow-up clinical study evaluated pocket probing depth (PPD) and vertical clinical attachment loss (CAL-V) of direct abutment (DA), indirect abutment (IA) and control teeth (CT). Also complications and failures of UCPD were analysed using questionnaire of participant satisfaction with UCPD (stability, comfort and manipulation).

Results: Evaluation of data showed that CAL-V and PPD significantly increased over time for DA, IA and CT (p<0.0001), but the tooth function (DA, IA and CT) did not significantly influence changes in PPD and CAL-V. The fracture of one abutment tooth and increase of the number of artificial teeth deformations (p=0.039) were observed after 5 years. Participant satisfaction with denture after 1 year and 5 years vs. 7 days was significantly improved.

Conclusion: Despite limitations of this clinical study and assuming regular oral maintenance with proper indication, UCPD might be considered as good treatment option for Kennedy II rehabilitation in patients not indicated for implant therapy or who cannot tolerate extensive RPD design.

Keywords: denture complications and failures; periodontal parameters; participants’ satisfaction; unilateral complex partial denture

INTRODUCTION

Oral rehabilitation of unilaterally shortened dental arch includes removable, fixed and implant borne restorations [1, 2, 3]. Removable partial denture (RPD) is still common treatment option for unilateral partially edentulous patients who can’t be candidates for an implant treatment due to various reasons including lack of bone support with anatomical limitations such as position of maxillary sinus, inferior alveolar nerve and health condition. Evidence has shown satisfactory clinical results with clasp-retained RPDs concerning survival and extraction rate of abutment teeth [4, 5], but aesthetic outcomes for clasp-retained RPDs in comparison to precision attachment retained RPDs were low [6]. To enable proper assessment of the oral needs and treatment demands of dental patients with adequate prediction of therapeutic interventions outcomes, it is important to recognize patients’ self-perception of quality of life in terms of oral-health. Namely, the presence of denture plate as a part of RPD might cause the so-called foreign body sensation and nausea whereas claspers often do not meet patients aesthetic and comfort needs [7, 8]. To overcome those problems, unilateral complex partial denture (UCPD) without denture palate retained with latch type of attachment could be an optional treatment for unilaterally partially edentulous patients (Kennedy class II). However, the use of UCPD in dental practice might be a controversial subject, having in mind possibility of overloading abutment teeth and lack of major connector with contributing factor in denture retention. Hence, to date there have been few clinical reports concerning UCPD, while the actual impact of UCPD on oral health is not clarified yet.

The aim of this study was to use periodontal, prosthodontic and participant satisfaction measures to evaluate the long-term clinical performance of UCPD with a snap in latch attachment.

MATERIAL AND METHODS

Participants

This study design and data collection methods were approved by the Ethics Committee of the School of Dental Medicine, University of Belgrade, Serbia (No: 36/26).
Fourteen participants provided informed consent forms in accordance with the World Medical Association Declaration of Helsinki, and participated in the study (10 men and 4 women; age range: 57 to 68 years). The predefined inclusion criteria were: participants were maxillary unilaterally partially edentulous (Kennedy class II) with missing second premolar and first and second molars; not indicated for implant treatment due to lack of bone and position of maxillary sinus; refused denture with palatal plate and therefore indicated for UCPD; and available for periodic checkups every 6 months up to 5 years. Since 3 patients didn’t maintain oral hygiene properly and didn’t come to the clinic for regular check-ups, they were excluded from the study. Also, one patient refused to use his denture for the reason of discomfort caused by the pin of latch attachment. The final number of participants enrolled in the study was 10.

Interventions

The design of UCPD considered precision attachment retained restoration (SD snap in latch attachment, Servo-Dental GmbH & Co. KG, Hagen, Germany) consisting of free-end denture saddle attached to splinted 2 abutment teeth, canine and first premolar covered with milled crowns due to the absence of major connector. The primary part of attachment made of fully combustible plastic was integrated in a milled crown on the abutment tooth and casted together with crowns. The secondary component of attachment made of titanium was adhered into unilateral saddle and created the latch type connection of the whole restoration.

Preprosthetic procedure included the following periodontal treatment: motivation for oral hygiene; instruction in oral hygiene procedures with adequate oral hygiene manual; scaling, root planning and polishing.

The procedures for making UCPD included teeth preparation, taking impression for crowns using addition polymerization silicone material (Elite HD+; Zhermack, Italy) and try-in phase of metal framework that involved primary part of attachment and try-in ceramic. The impression for unilateral metal framework of saddle was made with the crowns placed on teeth. After casting metal framework for free-end saddle, it was evaluated intraorally. The following phases included the placement of secondary component of attachment and adhering into metal framework. Glazed crowns and finished UCPD with maximally extended free-end saddle were attached together and placed in mouth. The crowns were cemented according to standard procedures for cementing milled crowns with attachments. The participants were instructed how to use and maintain denture and additionally educated and motivated to perform appropriate oral hygiene protocols.

The patients were asked to visit the clinic every 6 months for regular check-ups. During the appointments they were re-motivated to maintain oral hygiene of the teeth and appliance.

Outcomes

After denture insertion, during the appointments after 7 days, 1 year and 5 years, trained and calibrated external examiners (in most cases in the presence of treatment coordinator) measured periodontal indices, recorded prosthetic parameters and completed the questionnaire of participant satisfaction with UCPD during the study.

Periodontal outcomes

Teeth were classified according to their relation to the attachment and free-end saddle and divided into the three groups: direct abutment (first premolar), indirect abutment (canine) and control teeth (same tooth on the opposing side of the jaw). Periodontal conditions of direct abutment (DA), indirect abutment (IA) and control teeth (CT) were evaluated using pocket probing depth (PPD) and vertical clinical attachment loss (CAL-V). The measurements of PPD and CAL-V were conducted with graduated periodontal probe at 6 sites per tooth (buccal, distal-buccal, mesial-buccal, lingual, mesial-lingual and distal-lingual). CAL-V was measured from the crown margin.

Prosthetic outcomes

At every recall, abutment teeth and UCPD were evaluated for complications according to slightly modified standard criteria for complications and failures of RPD presented by Saito et al. [9].

1. Teeth
   - Fracture and/or missing teeth: yes or no
2. Attachment
   - Fracture and/or deformation: yes or no
3. Denture base
   - Fracture and/or deformation: yes or no
4. Artificial teeth
   - Fracture and/or deformation of acrylic veneering: yes or no

Participants’ satisfaction

The participants were asked to complete a questionnaire regarding the stability, comfort and difficulties in denture manipulation based on verbal rating scale (VRS), ranging from 1 to 5 (1= completely unsatisfied; 5= completely satisfied).

Statistical methods

All statistical analyses were performed using Statistical Package for Social Science (SPSS software package, version 18.0; SPSS Inc., Chicago, IL, USA). Mean, median, SD and range were used for descriptive data. Category variables were compared using Cochran test. Non-parametric data were analysed using Friedman and Wilcoxon test. The mixed between-within subject ANOVA was used to show the interaction of time and type of abutments. Inter-group comparisons were analysed using one-way analysis of variance (ANOVA). P value less than 0.05 was considered statistically significant.
RESULTS

The influence of three abutments (direct abutment, indirect abutment or control) on CAL-V changes during the observation period (7 days, 1 year, 5 years) is shown in Figure 1. The results showed that CAL-V significantly increased over time for all observed teeth (p<0.0001), but interaction between groups for each parameter did not show significant difference. Inter-group comparison did not show statistically significant differences between abutment teeth for each time separately.

Figure 2 shows PPD changes during the evaluation period (7 days, 1 year, 5 years) for each observed group of teeth (direct abutment, indirect abutment or control). PPD significantly increased in all observed groups over time (p<0.0001), but the results did not show statistically significant interactions between tooth function and time. The results also showed that the tooth function (direct abutment, indirect abutment or control) did not significantly influence the changes in PPD for each time separately.

Table 1. Incidence of complications and failures

| Complications and failures (number) | Evaluation period |
|-------------------------------------|-------------------|
|                                     | After 7 days      | After 1 year     | After 5 years     |
| Tooth fracture                      | 0                 | 0                | 1                |
| Retainer deformation                | 0                 | 0                | 1                |
| Denture base deformation            | 0                 | 0                | 0                |
| Fracture of acrylic veneering       | 0                 | 1                | 4*1              |

1 – Cochran test; * – statistically significant
1 – Kohranov test; * – statistički značajno

The incidence of prosthetic complications and denture failures are shown in Table 1. The results showed the fracture of one abutment tooth and deformation of one retainer after 5 years of wearing UCPD, but compared to data after 7 days and 1 year it was without statistical significance. On the contrary, the number of artificial teeth deformation was significantly increased over time (p=0.039). During the evaluation period, denture base deformation was not identified.

DISCUSSION

Despite various clinical options offered by dental implants, therapy with RPD is still the most common treatment option in partially edentulous patients without posterior teeth [10]. Therefore, it is very important to assess treatment outcomes with RPD considering the preservation of supporting tissues and teeth and patients’ comfort and aesthetic demands. Based on our evidence, there have been only few clinical studies investigating UCPD [11, 12], which is considered to be a restoration with high functional and aesthetic values.

The results of our study showed that UCPD wearers reported high scores for all 3 measured prosthetic satisfaction parameters: stability, comfort and manipulation during the appointments after 7 days, 1 year and 5 years. Taking into account the lack of literature related to UCPD and if UCPD is compared to CFPD as a restoration also characterized by attached pontics, the result of this study is in compliance with the evidence estimating that lack of palatal base in CFPD gives advantages to RPD regard-
button is pressed and denture is deliberately displaced. A since removal is not possible unless the aforementioned denture stability in unilateral cases and mouth safety, ized attachment system. Also, type of attachment offers eral free end saddle treatment in comparison to miniatur- attachment with sprue might be more suitable for unilat- restoration replacement. According to these findings, latch ment after 4 years of clinical function with the need for irreversible mechanical wear of male part of used attach- the results of Schmitt et al. [13] who reported high rate of attachment after 5 years of wearing UCPD, in contrast to show reparable deformation of the sprue in one latch (canine and first premolar), which behaviour was similar limits on splinted direct and indirect abutments of UCPD (FEM) analyses of UCPD [14]. Namely, comparing the are also in accordance with the finite element method non-splinted abutment teeth). The findings of our study of abutment teeth was the most common complication splinted abutment teeth had high survival rate, fracture and manipulation after 7 days in comparison to the scores after 1 and 5 years. As the time passed the patients got used to the appliance with evident increase of the comfort and manipulation.

The overload of abutment teeth for restorations without palatal plate and attached pontics is a controversial question. The results of the present study showed fracture of one abutment tooth after 5 years of UCPD function. This is in accordance with the findings of Schmitt et al. who performed 5-year follow up study comparing unilateral and bilateral dentures retained by miniaturized attachment system [13]. According to their findings, in contrast to unilaterally retained removable dentures where splinted abutment teeth had high survival rate, fracture of abutment teeth was the most common complication and cause for failure of bilateral partial dentures (with non-splinted abutment teeth). The findings of our study are also in accordance with the finite element method (FEM) analyses of UCPD [14]. Namely, comparing the UCPD and RPD through FME stress analysis, calculations showed that applied forces are within physiological limits on splinted direct and indirect abutments of UCPD (canine and first premolar), which behaviour was similar to the behaviour of direct abutment of conventional RPD.

The results regarding the technical complications showed reparable deformation of the sprue in one latch attachment after 5 years of wearing UCPD, in contrast to the results of Schmitt et al. [13] who reported high rate of irreversible mechanical wear of male part of used attachment after 4 years of clinical function with the need for restoration replacement. According to these findings, latch attachment with sprue might be more suitable for unilateral free end saddle treatment in comparison to miniatur- ized attachment system. Also, type of attachment offers denture stability in unilateral cases and mouth safety, since removal is not possible unless the aforementioned button is pressed and denture is deliberately displaced. A fracture of acrylic veneering present in our patients was also common complication similar to findings of Schmitt et al. [13]

Due to the fact that primary causes of denture abut- ment teeth failures are periodontal disease and caries [15, 16], periodontal status of abutment teeth involved in UCPD restoration was evaluated. The results of UCPD clinical prognosis through evaluation of periodontal status of direct and indirect abutment teeth and control teeth in the opposite side of the same jaw showed that PPD and CAL-V significantly increased for all observed groups over time. However, PPD and CAL-V values of direct abutment and indirect abutment teeth were not significantly different from control teeth that were not involved in UCPD. Therefore, we might estimate that teeth splinting increases load potential despite the presence of palatal base and latch attachment providing elastic connection between fixed and maximally extended free-end saddle. As mentioned by Jorge et al. [17] such favorable results could be attributed to well planned prosthetic treatment and properly designed removable partial dentures.

It’s interesting to mention that follow-up clinical studies of RPD showed controversial findings regarding the influence of tooth function (direct abutment, indirect abutment or control) on periodontal attachment loss. Contrary to findings showing that tooth function significantly influences gingival recession and probing depth [18, 19], Drake and Beck [20] did not find difference in PPD between patients wearing RPDs and not wearing RPDs. In accordance with this, Schmitt et al. [13] even identified improvement in periodontal parameters for abutments of unilateral denture compared to the baseline values suggesting that restoration is reliable treatment modality for periodontal health.

For better prediction of clinical performance of unilat- eral complex partial denture it is necessary however to enrol more participants for longer evaluation time, because the main limitation of this study was the small sample size and therefore it might be considered as preliminary study. Although the sample size was small, its distribution was in accordance with previous studies [21, 22].

| Table 2. Participant satisfaction with denture | Table 2. Pacijentovo zadovoljstvo protezom |
|-----------------------------------------------|-------------------------------------------|
| Evaluation period | Period evaluacije | p value | vrednost p |
| Prosthetic parameters | Protični parametri | After 7 days | Posle 7 dana (min.–max.) | Md | After 1 year | Posle godinu dana (min.–max.) | Md | After 1 year | Posle 5 godina (min.–max.) | Md |
| Denture stability Protezne stabilitet | 4 (3–5) | 5 (4–5) | 5 (4–5) | p=0.018*1 |
| Stabilnost proteze | } | 4 (3–5) | 5 (4–5) | 5 (4–5) | p=0.001*1 |
| Comfort Komfor | 3 (2–4) | 5 (4–5) | 5 (4–5) | p=0.002*1 |
| Manipulation Manipulacija | 3 (2–4) | 5 (4–5) | 5 (4–5) | p=0.010*2 |

Md – Median; * – statistically significant; 1 – Friedman test; 2 – Wilcoxon test
CONCLUSION

Despite the limitations of this clinical study and with assuming regular oral hygiene maintenance with proper indication conditions, UCPD might be good treatment option in Kennedy II rehabilitation for patients not indicated for implant therapy or who cannot tolerate extensive RPD design. Good clinical performance indicators were observed over time and patients reported adequate satisfaction, comfort and suitable manipulation.

REFERENCES

1. McKenna G, Allen PF, O’Mahony D, Cronin M, DaMata C, Woods N. The impact of rehabilitation using removable partial dentures and functionally oriented treatment on oral health-related quality of life: a randomised controlled clinical trial. J Dent. 2015; 43(1):66–71. [DOI: 10.1016/j.jdent.2014.06.006] [PMID: 24973731]

2. Wolfart S, Müller F, Gerß J, Heyedecke G, Marré B, Böning K, et al. The randomized shortened dental arch study: oral health-related quality of life. Clin Oral Implants Res. 2014; 18(2):525–33. [DOI: 10.1007/s00784-013-0991-6] [PMID: 23680969]

3. Pjetursson BE, Tan K, Lang NP, Brägger U, Egger M, Zwahlen M. The randomized controlled clinical trial: a retrospective analysis of patient satisfaction factors affecting the usage of removable prostheses with self-adjusting magnetic attachments. J Prosthet Dent. 2014; 111:131–5. [DOI: 10.1016/j.prosd.2013.03.001] [PMID: 23221159]

4. Behr M, Zeman F, Passauer T, Koller M, Hahnel S, Buergers R, et al. Clinical performance of cast clasp-retained removable partial dentures: a retrospective study. Int J Prosthodont. 2013; 26(2):138–44. [PMID: 23718334]

5. Perić S, Kranjčić J, Pavičić DK, Mikić VL, Čelebić A. Treatment outcomes with removable partial dentures: a retrospective analysis. Int J Prosthodont. 2013; 26(2):147–50. [DOI: 10.11607/ijp.2959] [PMID: 23165883]

6. Koyama S, Sasaki K, Kawata T, Atsumi T, Watanabe M. Multivariate analysis of patient satisfaction factors affecting the usage of removable partial dentures. Int J Prosthodont. 2008; 21(6):499–500. [PMID: 19149065]

7. Inukai M, Baba K, John MT, Igarashi Y. Does removable partial denture quality affect individuals’ oral health? J Dent Res. 2008; 87(8):736–9. [DOI: 10.1177/1540800607008081] [PMID: 18650544]

8. Koyama S, Sasaki K, Kawata T, Atsumi T, Watanabe M. Multivariate analysis of patient satisfaction factors affecting the usage of removable partial dentures. Int J Prosthodont. 2008; 21(6):499–500. [PMID: 19149065]

9. Saito M, Notani K, Miura Y, Kawasaka T. Complications and failures in removable partial dentures: a clinical evaluation. J Oral Rehabil. 2002; 29(7):627–33. [DOI: 10.1046/j.1365-2842.2002.00898.x] [PMID: 12153451]

10. Tanasić IV, Tihacek-Sojić LD, Milić-Lemić AM. Prevalence and clinical effects of certain therapy concepts among partially edentulous Serbian elderly. J Prosthodont. 2015; 24(8):610–4. [DOI: 10.1111/jopr.12261] [PMID: 25594777]

11. Barker D, Cooper A. A novel use of a unilateral hinged partial denture. Br Dent J. 2006; 201(9):571–3. [DOI: 10.1038/sj.bdj.4814207] [PMID: 17099662]

12. Budtz-Jørgensen E, Isidor F A. 5-year longitudinal study of cantilevered fixed partial dentures compared with removable partial dentures in a geriatric population. J Prosthett Dent. 1990; 64(1):42–7. [DOI: 10.1038/sj.bdj.4814207] [PMID: 17099662]

13. Schmitt J, Wichmann M, Etner S, Hamel J, Holst S. Five-year clinical follow-up of prefabricated precision attachments: a comparison of uni- and bilateral removable dental prostheses. Quintessence Int. 2011; 42(5):413–8. [PMID: 21519561]

14. Radović K, Caiović A, Todorović A, Stančić I, Črbović I. Comparative analysis of unilateral removable partial denture and classical removable partial denture by using finite element method]. Srp Arh Celok Lek. 2010; 138:706–13. [DOI: 10.2298/SARH10112706R] [PMID: 21365883]

15. Wagner B, Kern M. Clinical evaluation of removable partial dentures 10 years after insertion: success rates, hygienic problems, and technical failures. Clin Oral Invest. 2000; 4(2):74–80. [DOI: 10.1007/s007840050119] [PMID: 11218504]

16. Kern M, Wagner B. Periodontal findings in patients 10 years after insertion of removable partial dentures. J Oral Rehabil. 2001; 28(11):99–7. [DOI: 10.1111/1365-2842.2001.00788.x] [PMID: 11722713]

17. Jorge HJ, Quishida CC, Vergani CE, Machado AL, Pavarina AC, Giampaolo ET. Clinical evaluation of failures in removable partial dentures. J Oral Sci. 2012; 54(4):337–42. [DOI: 10.2334/josd.nsd.54.337] [PMID: 23221159]

18. da Fonte Porto Carreiro A, de Carvalho Dias K, Correia Lopes AL, Bastos Machado Resende CM, Luz de Aquino Martins AR. Periodontal conditions of abutments and non-abutments in removable partial dentures over 7 years of use. J Prosthodont. 2017; 26(8):644–9. [DOI: 10.1111/jopr.12449] [PMID: 28684601]

19. Zlatarić DK, Čelebić A, Valentić-Peruzović M. The effect of removable partial dentures on periodontal health of abutment and non-abutment teeth. J Periodontol. 2002; 73(2):137–44. [DOI: 10.1002/jopr.2002.73.2.137] [PMID: 11895277]

20. Drake CW, Beck JD. The oral status of elderly removable partial denture wearers. J Oral Rehabil. 1993; 20(1):53–60. [DOI: 10.1111/j.1365-2842.1993.tb01514.x] [PMID: 8429423]

21. Yang TC, Maeda Y, Gonda T. Clinical performance and satisfaction of removable prostheses with self-adjusting magnetic attachments. J Prosthodont Dent. 2014; 111:131–5. [DOI: 10.11607/prosd.201307001] [PMID: 24210730]

22. Shimura Y, Wadachi J, Nakamura T, Mizutani H, Igarashi Y. Influencer of removable partial dentures on the formation of dental plaque on abutment teeth. J Prosth Res. 2010; 54:29–35. [DOI: 10.1016/j.jopr.2009.08.003] [PMID: 19818702]
Procesa uspešnosti terapije jednostranom kompleksnom
skeletiranom parcijalnom protezom: petogodišnja klinička
studija

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Uvod

Parcijalna skeletirana proteza (PSP) najčešća je terapijska opcija kod jednostrane krezubosti kada nije indikovana implantološka terapija. Jednostrana kompleksna parcijalna skeletirana proteza (JKPSP) predstavlja alternativu konvencionalnoj PSP, jedino što je ne postoji evidenti podaci o uspešnosti terapije nakon duže kliničke upotrebe. Cilj ovog rada bio je da se na osnovu analize subjektivnih pokazatelja, odnosno analize periodontalnih i protetskih parametara, kao i na osnovu subjektivnih ocena pacijenta, izvrši provera uspešnosti JKPSP retiniranim atečmenom tipa reze sa oprugom nakon petogodišnjeg praćenja.

Materijal i metod

Kod deset ispitanika obe pola izvršeno je praćenje gubitka vertikalnog pripoja givinge i dubine parodontalnih džepova, kod primarnog retencionog zuba (PRZ), sekundarnog retencionog zuba (SRZ), koji su bili u sastavu JKPSP i kontrolnog zuba (KZ) suprotne stene vilice. Takođe, analizirani su protetske kompleksije (fraktura zuba, gubitak veštačkih zuba) i zadovoljstvo pacijenata na osnovu popunjenih upitnika, gde su oni ocenjivali stabilnost, komfor i rukovanje JKPSP.

Rezultati

Nakon analize dobijenih podataka uočeno je da se vrednost dubine parodontalnih džepova i gubitka vertikalnog pripoja givinge kod PRZ statistički značajno razlikuju u odnosu na SRZ i KZ (p < 0,0001). U dubini frakturalnog retencionog zuba imaju drugu vrednost u odnosu na dubine frakturalne zube kjukač avg. (p < 0,0001). Zabeležene protetske kompleksije u vidu frakturalne zube i deformacije veštačkih aktilnih zube nisu bile statistički značajne posle pet godina praćenja. Zadovoljstvo pacijenata JKPSP posle prve godine posle pet godina nošenja se značajno popravilo u odnosu na prvih sedam dana posle predaje. Zaključak Nezavisno od ograničenja ove kliničke studije, uzimajući u obzir adekvatnu indikaciju i pravilno održavanje higijene, JKPSP se može smatrati dobrom opcijom za rehabilitaciju krezubosti Kenedi II klase kod pacijenata kod kojih nije indikovana terapija implantatima, odnosno koji ne prihvataju prisustvo veštačke zubju. Pacijenti su bili zadovoljni protezama, njihovim komforom i lakoćom rukovanja protezama.

Ključne reči: protetske kompleksije; periodontalni parametri; zadovoljstvo pacijenata; jednostrana kompleksna parcijalna skeletiranja proteza

UVOD

Protetska rehabilitacija jednostrano skraćenog zubnog niza podrazumeva izradu parcijalnih proteza, fiksnih nadoknada odnosno kručnih mostova i implantatno nošenih nadoknada [1, 2, 3]. Parcijalna skeletirana proteza (PSP) još je u vezi veoma lakoćom rukovanja protezama. Implanti odcjeniti su za protezama sa velikom spojnicom. Pacijenti su bili zadovoljni protezama, njihovim komforom i adekvatnom stabilizacijom. Cilj ovog rada bio je da se na osnovu analize subjektivnih pokazatelja, odnosno analize periodontalnih i protetskih parametara, kao i na osnovu subjektivnih ocena pacijenta, izvrši provera uspešnosti JKPSP retiniranim atečmenom tipa reze sa oprugom nakon petogodišnjeg praćenja.

MATRIJNAL I METOD

Učesnici studije

Dizajn studije i prikupljanje podataka odobreni su od strane Etičkog komiteta Stomatološkog fakulteta Univerziteta u Beogradu (Br: 36/26). Četnrao učesnici studije je dalo svoj pisani pristank na uključavanje u studiju (10 muškaraca i četiri žene, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiji (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešće u studiju (stroga katena, zdrava, starosti od 57 do 68 godina). Definisani kriterijumi za učešć...
dolascu na redovne kontakte, dok je jedan pacijent odbio da nosi JKPS usled nekomformnosti usled prisustva atecmensa. Konačan broj učesnika bio je 10.

**Protetski postupci**

Dizajn JKPS podrazumevao je jednostrano slobodno sedlo, bez prisustva velike spojnike, koji je preciznim veznim elementom (SD snap i latch attachment, Servo-Dental GmbH & Co. KG, Hagen, Germany) povezan sa frezovanim krunama na retencijnim zubima – očnjaku i prvom premolaru. Patrica atecmensa napravljena od plastike bila je livena zajedno sa frezovanim krunama koje su cementirane na retencione zube. Titanijumska matrica atecmensa bila je sastavni deo jednostranog sedla i zajedno sa oprugom i dugmetom za stavljanje i skidanje proteze predstavljala vezu tipa reze za celu konstrukciju. Preprotetska priprema podrazumevala je odgovarajuću parodontalnu pripremu kod nadležnog specijaliste: motivaciju za održavanje oralne higijene, instrukcije o sredstvima i postupcima za održavanje oralne higijene, uklanjanje mekih i čvrstih naslaga.

Postupci u okviru protetske rehabilitacije podrazumevali su: preparaciju retencijnih zuba, otiskivanje zuba za fiksne nadoke, adicijom siliikonom (Elite HD+, Zhermack, Italy), probu metalne konstrukcije sa primarnim delom atecmensa i probu keramiike. Otiskivanje za metalni deo JKPS je obavljeno preko kruna postavljenih na retencione zube. Sledeci postupak podrazumevao je probu skleta JKPS, zatim postavljanje sekundarnog dela atecmensa. Glazirane namenske kruna su cementirane zajedno sa postavljenom JKPS i u istom aktu predate pacijentima. Pacijenti su obuceni o načinu održavanja oralne higijene i dodatno motivisani kako bi poštovali odgovarajući protokol održavanja higijene usled prisustva atecmensa.

**Objektivni i subjektivni pokazatelji**

Nakon predaje JKPS evaluacija objektivnih parametara je izvršena posle prvih sedam dana, prve godine i pete godine. Obučeni specijalista stomatološke protetike je izvršio merenje parodontalnih parametara, evaluirao protetske parametre i sprovede popunjavanJE upitnika o subjektivnom zadovoljstvu parodontalnih parametara, evaluirao protetske parametre i

**Protetski parametri**

Protetski komplikacije su sprovođene prema nešto izmenjenim kriterijumima za komplikacije i greške kod PSP koje su predložili Saito i sar. [9].

1. **Zubi**
   - Prelom i ili gubitak zuba: da ili ne
2. **Atecmen**
   - Prelom i ili deformacija: da ili ne
3. **Skelet proteze**
   - Prelom i ili deformacija: da ili ne
4. **Veštački zubi**
   - Fraktura i ili deformacija akrilatne fasete: da ili ne

**Zadovoljstvo pacijenta**

Učesnici studije su popunjavali upitnike odgovarajući na pitanja koja se tiču stabilizacije, udobnosti i poteškoća tokom manipulisanja JKPS-om. Ocene su bile u rasponu od 1 do 5 na vizuelno-analognoj skali (VAS), gde je 1 značilo potpuno nezadovoljan, a 5 potpuno zadovoljan.

**Statistička analiza**

Sve statističke analize su izvršene pomoću programa SSPI (SPSS software package, version 18.0: SPSS Inc., Chicago, IL, USA). Srednja vrednost, medijana, standardna devijacija i raspon su korišćeni za opisivanje podataka. Varijable kategorije su poređene pomoću Kornovog testa (Cochran test). Neparmetrijske analize su izvršene pomoću Fridman i Vilkokson testa (Friedman and Wilcoxon test). ANOVA je korišćena da se prikaže uticaj vremena na promene na retencijnim zubima, dok je međugrupna komparacija izvršena analizom variancije (ANOVA).

**REZULTATI**

Na Grafikonu 1 prikazan je gubitak vertikalnog pripoja gingive (CAL-V) na direktnom retencijnom zubu (prvi premolar), indirektnom retencijnom zubu (očnjak) i kontrolnim zubima (zubi iste klase na suprotnoj strani vilice) evaluacijom nakon sedam dana, prve i pete godine. Rezultati su pokazali da je značajno povećan gubitak vertikalnog pripoja gingive na svim posmatranim zubima (p < 0,0001), ali bez statistički značajne razlike. Komparacija između grupa takođe nije pokazala statistički značajne razlike u pojedinačnim terminima evaluacije.

Na Grafikonu 2 prikazane su vrednosti za dubinu parodontalnog džepa (PPD) u terminima evaluacije (sedam dana, prve i pete godine) za svaku posmatranu grupu zuba (DRZ, IRZ, KZ). Dubina parodontalnih džepova značajno je povećana za sve posmatrane grupe tokom vremena (p < 0,0001), ali rezultati nisu pokazali statistički značajnu interakciju između funkcije zuba i vremena. Rezultati su takođe pokazali da funkcija zuba u odnosu na to da li je direktni, indirektni retencijski zubi ili kontrolno ne utiče značajno na promene u dubini parodontalnih džepova terminima evaluacije. Učestalost protetskih komplikacija i oštećenja na protezi prikazana je u Tabeli 1. Rezultati su pokazali prelom jednog direktnog retencijnog zuba i deformaciju jednog atecmensa posle pet
godina nošenja JKPSP. U poredenju sa podacima nakon sedam dana i prve godine nošenja JKPSP, ovaj rezultat nema statističku značajnost. Broj oštećenja na akrilatnim zubima iz proteze značajno je povećan tokom vremena. Deformacija baze proteze nije uočena ni kod jednog pacijentana uključenog u studiju.

U Tabeli 2 prikazano je zadovoljstvo pacijenata protezama koje uključuje stabilnost i udobnost proteze, kao i poteškoće tokom manipulisanja JKPSP-om. Rezultati su pokazali značajno poboljšanje svih posmatanih parametara nakon prve i pete godine nošenja proteze u poredenju sa podacima merenim sedam dana po predaji proteze. Stabilnost proteze ocenjena je najvišom ocenom tokom celog perioda evaluacije.

**DISKUSIJA**

Parcijalno krezubi pacijenti sa skraćenim zubnim nizom najčešće se zbrinjavaju parcijalnim skeletiranim protezama i pored različitih terapijskih rešenja koja su omogućena ugradnjom dentalnih implantata [10]. S tim u vezi, od velikog je značaja uskladiti očuvanje potpornih tkiva (rezidualnog grebena i dentalnih implantata [10]. S tim u vezi, od velikog je značaja uskladiti očuvanje potpornih tkiva (rezidualnog grebena i dentalnih implantata [10].

Rezultati ove studije su pokazali da su nosioći JKPSP ocenili govor prihvatljivim rezultatima u vezi sa kliničkom evaluacijom. Pacijenti su bili zadovoljni protezama, njihovim komfortom i lakoćom rukovanja.

ZAKLJUČAK

Nezavisno od ograničenja ove kliničke studije, uzimajući u obzir adekvatnu indikaciju i pravilno održavanje higijene, JKPSP se može smatrati dobrovrementnim i efikasnim terapijskim rešenjem za Pacijente sa jednostrane aleke proteze. Rezultati ove studije pokazuju da su nosioći JKPSP ocenili govor prihvatljivim rezultatima u vezi sa kliničkom evaluacijom. Pacijenti su bili zadovoljni protezama, njihovim komfortom i lakoćom rukovanja.