

CHANGES IN CORRELATIONS BETWEEN CERVICAL CROWN EDGE AND MARGINAL GINGIVA IN FIXED PROSTHODONTICS

Mariana Dimova, V. Doseva*

Department of Prosthetic Dentistry,

**Department of Periodontology, Faculty of Stomatology,*

Medical University - Sofia, Bulgaria

ABSTRACT:

Gingival adaptation of fixed prosthodontics and periodontal tissue's assessment place the main role in prosthodontics long term results.

The aim of this study was to assess changes in correlations between cervical crown edge and marginal gingiva in patients with fixed prosthodontics.

Material and methods: 54 patients: 31 women and 23 men, aged from 32 to 71 years (middle age- 52 years) were examined. Patients were with different fixed constructions: full metal, metal-ceramic, acrylic and PFM crowns and bridges with 2 to 25 years longevity (middle duration of presence- 14 years).

Clinical periodontal examinations included: hygiene index, gingival bleeding (PBI), the distance between cervical crown edge and marginal gingiva, probing pocket depth, clinical attachment level, gingival overgrowth, tooth mobility.

Results: Clinical examination indicated little inflammation of the gingival tissues of crowned teeth with margins at the gingival and minor clinical signs of inflammation in cases with supragingivally location of the crown margin. Higher average of PBI was observed when the crown margins were located subgingivally. In summary-crowns and fixed prosthodontics increased the incidence of advanced gingival inflammation adjacent to restorations, particularly if they had intracrevicular finish line placement, poor marginal adaptation, and rough surfaces.

Conclusion: The main factors to realize periodontal prophylactic role of fixed prosthodontics and to preserve periodontal health are exact adaptation of crowns and retainers toward gingival preparation limits, maximum release of the interdental spaces, correct contour of the crowns, good polishing, motivation and instruction for mouth hygiene of the patient.

INTRODUCTION:

Biological capacity of reduced and healthy periodontium to support fixed partial dentures has been documented. Combined periodontal and prosthetic therapy tends to a high rate of successful outcomes after 10 to 25 years. Gingival adaptation of fixed prosthodontics and

periodontal tissue's assessment place the main role in outcome's reevaluation. Important factors for long-term prognosis are adequate treatment of the periodontal lesions, maintenance of healthy periodontium, careful planning, design and making of the prosthodontic construction. Authors paid special attention on periodontal prophylactic role of provisional and definitive constructions and necessity for healthy and stabilized periodontium in order to achieve long-term success (1, 2, 3, 4, 5, 6, 7, 8, 9, 10). Insertion of fixed dentures may influence the periodontal conditions. Clinical observations showed that the gingiva supporting prosthodontically treated teeth often is inflamed and that pocket formation, gingival recessions and gingival overgrowth may occur.

The aim of this study was to assess changes in correlations between cervical crown edge and marginal gingiva in patients with fixed prosthodontics.

MATERIAL AND METHODS:

Subject of this study were 54 patients: 31 women and 23 men, aged from 32 to 71 years (middle age- 52 years), who were examined during clinical practice of students- IVth and Vth year of study. Patients were with different fixed constructions: full metal, metal-ceramic, acrylic and PFM crowns and bridges with 2 to 25 years longevity (middle duration of presence- 14 years). Total number of crowns was 97: 6 acrylic, 9 gold, 23 metal ceramic, 59- base alloy crowns. Total number of bridges was 24: 1- full metal base alloy, 2 full metal gold, 14 PFM (1- gold and 13- base alloy), 7 metal ceramic. Total number of retainers was 72 and the number of pontics was 36.

Clinical periodontal examinations included: hygiene index (HI- the % free from plaque surfaces), gingival bleeding (PBI), the distance between cervical crown edge and marginal gingiva to the nearest 0,5mm, probing pocket depth (the distance between the gingival margin and the bottom of the pocket to the nearest 0,5mm), clinical attachment level (the distance between the cemento- enamel junction or artificial crown margin and the bottom of the pocket to the nearest 0,5mm), gingival overgrowth (the negative distance between crown margin and gingival margin), tooth mobility.



Fig. 1, 2, 3, 4, 5, 6, 7: Supragingivally located margin of fixed prosthodontic constructions

RESULTS:

Total number of crowns and retainers was 169. They were with different location of the crown margins: 25 subgingivally located, 39 at the gingival margin and 105 supragingivally located (fig 1-7). In this group of patients 13% free from plaque surfaces and PBI (papillary bleeding index)= 2,07 were recorded that demonstrated moderate gingival inflammation and unsatisfactory level of hygiene control. Clinical examination indicated little inflammation of the gingival tissues of crowned teeth with margins at the gingival and minor clinical signs of inflammation in cases with supragingivally location of the crown margin. Higher average of PBI was observed when the crown margins were located subgingivally. In summary- crowns and fixed prosthodontics increased the incidence of advanced gingival inflammation adjacent to restorations, particularly if they had intracrevicular finish line placement, poor marginal adaptation, and rough surfaces.

DISCUSSION:

The role of prosthetic restorations in the final appearance of the surrounding soft tissues has long been recognized. Outcomes of this study confirm that subgingivally located crown margin, crowns, rugged cervical surfaces may retain plaque, cause gingival inflammation,

increased pocket depth. It has been shown that fixed constructions are compatible with periodontal health even in cases of severely reduced periodontal tissue support, provided crown edges have supragingival location. For esthetic reasons it may be necessary to place crown margins at the gingival margin or with a tolerable limit subgingivally 0,5mm. Reconstructions with crowns and bridges could be able to assure interproximal hygiene with interdental brushes. Regular oral health maintenance programs for patients receiving fixed prosthodontics may reduce gingival inflammation, recessions and overgrowth.

CONCLUSION:

Along with the functional and aesthetic results, prosthodontic constructions must correspond to biological needs as well. They don't have to irritate the periodontal tissues, alveolar bone and gingiva. If patients follow a strict maintenance program, a good prognosis can be anticipated.

The main factors to realize periodontal prophylactic role of fixed prosthodontics and to preserve periodontal health are exact adaptation of crowns and retainers toward gingival preparation limits, maximum release of the interdental spaces, correct contour of the crowns, good polishing, motivation and instruction for mouth hygiene of the patient.

REFERENCES:

1. Eichner, K., R. Voß: Kronenrand-Diskussion. Dtsch. Zahnärztl. Z., 1971, 26, 742
2. Eichner, K.: Kronenrand und das marginale Parodontium aus klinischer Sicht. Dtsch. Zahnärztl. Z., 1969, 24, 741
3. Eichner, K.: Kronenrand und Parodontium. Dtsch. Zahnärztl. Z., 44, 1989, 10, 737-741
4. Hüttner, G.: Nachuntersuchungen von Kronen und Brückenzahnersatz – Der Kronenrand und das marginale Parodontium. Med. Diss, FU Berlin, 1970
5. Hüttner, G.: Nachuntersuchungen von Kronen und Brückenzahnersatz auf den Kronenrand und das marginale Parodontium. Dtsch. Zahnärztl. Z., 1971, 26, 724
6. Rehberg, H.: Der Kronenrand. Exakter Randschluss – was ist das? Dtsch. Zahnärztl. Z., 26, 1971, 7, 696-699
7. Schärer, M., L. Rinn, F. Kopp: Ästhetische Richtlinien für die rekonstruktive Zahnheilkunde. Quintessenz Verlags-GmbH, Berlin - Chicago - London - Moskau - São Paulo - Tokio, 1980, 99-110
8. Shillingburg, H., S. Hobo, L. Whitsett: Grundlagen der Kronen - und Brückenprothetik. Quintessenz Verlags-GmbH, Berlin - Chicago - London - Moskau - São Paulo - Tokio, 1977, 159
9. Wirz, J., R. Bangert, K. Jäger: Kronen - und Brückenprovisorien. Teil I: Anforderungen. Quintessenz, 43, 1992, 8, 1297-1305
10. Wirz, J.: Klinische Material - und Werkstoffkunde. Quintessenz Verlags-GmbH, Berlin - Chicago - London - Moskau - São Paulo - Tokio, 1999, 86-310

Adress for correspondence:

Dr. Mariana Dimova, PhD,

Dept. of Prosthodontics, Faculty of Stomatology - Sofia,

1, St. G. Sofiiski str., 1359 Sofia, Bulgaria

e-mail: marianadimova@abv.bg