

THE RELATION AND INFLUENCE OF THE TERMINAL CORONAL AREA ON MARGINAL PERIODONTIUM IN CONJUNCT WORKS

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ABSTRACT. The results obtained converge in the finding that most periodontal changes are related to the location of the junction between the denture and the periodontal area. A correct contour of dental crowns in proximal contact areas and the occlusal design are very important for the esthetic and functional restoration of the dento-maxillary apparatus and periodontal health. In order to achieve successful tooth rehabilitation, restoration should be a normal continuation of the contour of the tooth, so as not to promote the accumulation and development of bacterial plaque.

KEYWORDS: dental crown, periodontium, gingival threshold, embrasures.

INTRODUCTION

The dento-periodontal junction plays an important role in the pathology of periodontitis of prosthetic origin. Thus, to maintain periodontal health, decreasing the hiatus between the tooth and the prosthetic restoration becomes a crucial factor.

Defining the “ideal” limit of a prosthetic restoration has occasioned much discussion in the literature. Even now there are still some issues and questions: how to get the best possible adjustment of prosthetic crowns or how to clinically integrate all knowledge obtained.

I doubt there is one answer that would prove to be completely satisfactory for all situations.

The problem arises when it comes to determining the most favorable level for a prosthetic restoration to be integrated in the context of marginal periodontal biology.

To ensure periodontal health and to restore the morphological function of teeth during prosthetic restorations, balance between form and function must be restored. A very important aspect of this balance is the relation between the marginal periodontium and the microprosthesis.

Fixed prosthetic parts are some of the most common ways to treat edentations, used in dentistry to functionally restore the dento-maxillary apparatus and to maintain the health of periodontal tissues. The prognosis for the life of prosthetic parts depends on establishing a physiological periodontal climate and facilitating possibilities to maintain periodontal health through hygiene.

To promote the successful functional and esthetic rehabilitation of an edentation, the periodontium of the restored tooth should be healthy before commencing the recovery procedure. The main topographic features that should be taken into account when making the future prosthetic part are:

- The interdental contact area. During dental eruption, the configuration of proximal surfaces and the tendency to mesialize teeth, interdental contacts are established through maximum convexities. Interdental contacts in turn border and describe other areas,

particularly important in periodontal health: occlusal embrasures, axial embrasures and interdental spaces. Failure to respect the interdental contact area results in retention of food. Mechanical compression by retention of food in the area mechanically traumatizes the interdental papilla and promotes accumulation and development of bacterial plaque, immediately resulting in gingival inflammation. Following the “wedge” effect of food impact, dental migrations may occur, changing occlusal relations. Traumatic occlusion is associated and inflammation becomes a co-destructive factor of the marginal periodontium. The impact of food on the interdental area is favored by:

1. flat occlusal surface,

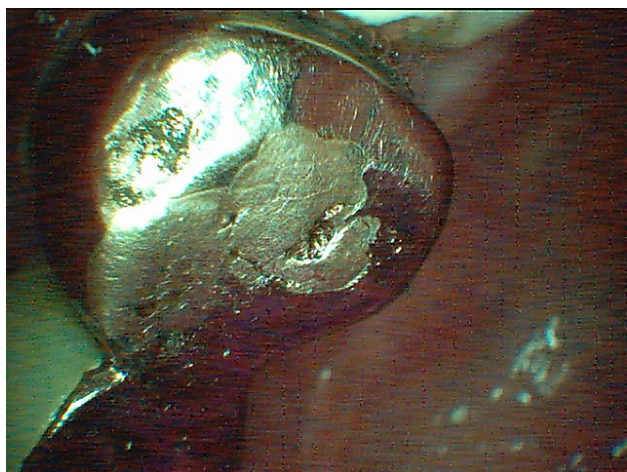


Image no. 1

2. uneven level of adjacent marginal ridges
3. failure to accurately model the shape and size of occlusal surfaces.

In order to avoid such adverse effects, interdental contact areas should be modeled as follows:

- the vestibular and lingual transition lines of two adjacent teeth should be symmetrical both horizontally and vertically;
- the cervical lines of two adjacent proximal surfaces should be situated at the same occlusal-cervical level.

Thus, foods “leak” from the occlusal surface during mastication, and the kinetic energy exerted by food fragments decreases.

The coronal area. The form of anatomical crowns of the teeth shows some axial curvatures located in the cervical or medium third of vestibular and oral surfaces. Prosthetic restorations must take account of these curves, or the prosthetic crown may alter the axial contour. The change in axial contour has destructive effects on the periodontium.

- The gingival sulcus area. The edges of microprostheses that are placed in the gingival sulcus are a common factor in the etiology of marginal periodontitis.



Image no. 2

The most cautious attitude in modeling dental crowns is to avoid, as much as possible, placing the edges of the microprosthesis in the gingival sulcus. The smaller the depth of penetration of prosthetic restorations in the gingival sulcus, the lower the inflammatory response will be.

Equally harmful is placing the edges of dentures that are too short with respect to the gingival sulcus



Image no. 3

using low-quality materials



Image no. 4

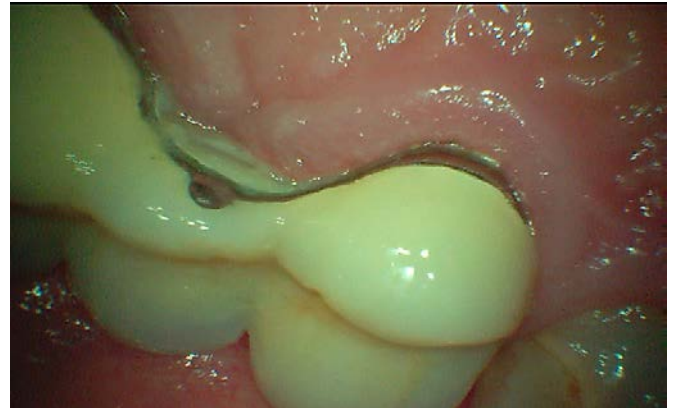


Image no. 7



Image no. 5

wide restorations



Image no. 8

poorly designed bridge bodies



Image no. 6

All these can contribute to localized inflammation in the periodontal tissue.

Ideally, the emergence profile of the restoration must match the submarginal surfaces of prepared teeth. If such works are poorly designed or executed, inflammation often develops because these restorations provide a protected environment in which normal microbial population grows and turns into periodontitic microbial flora.

The pathogenic potential of marginally ill-adapted and incorrectly polished areas allows the accumulation of bacterial plaque, with changes in the local ecosystem.



Image no. 9

MATERIALS AND METHODS

We selected a case from the 247 cases that we examined to attempt a correct assessment of the marginal configuration of the denture on abutments polished in knife blade mode. This type of polishing was the most common in the examined casuistry, which is why we chose a case.

Patient aged 25. For the treatment of edentation we opted for fixed dentures. Dental abutments were polished so as to provide large aggregation surfaces with a minimum degree of convergence between axial surfaces and the creation of a space for embrasure recovery. Two-stroke impressions create prerequisites for obtaining a working model for the dental technician, which can avoid unexpected engravings of the model.



Image no. 10



Image no. 11

The gingival sulcus area is very well defined on the working model, as is the interdental space for modeling elements of the fixed denture, preserving natural contours and embrasures.
Adaptation at the gumline was done with great accuracy.

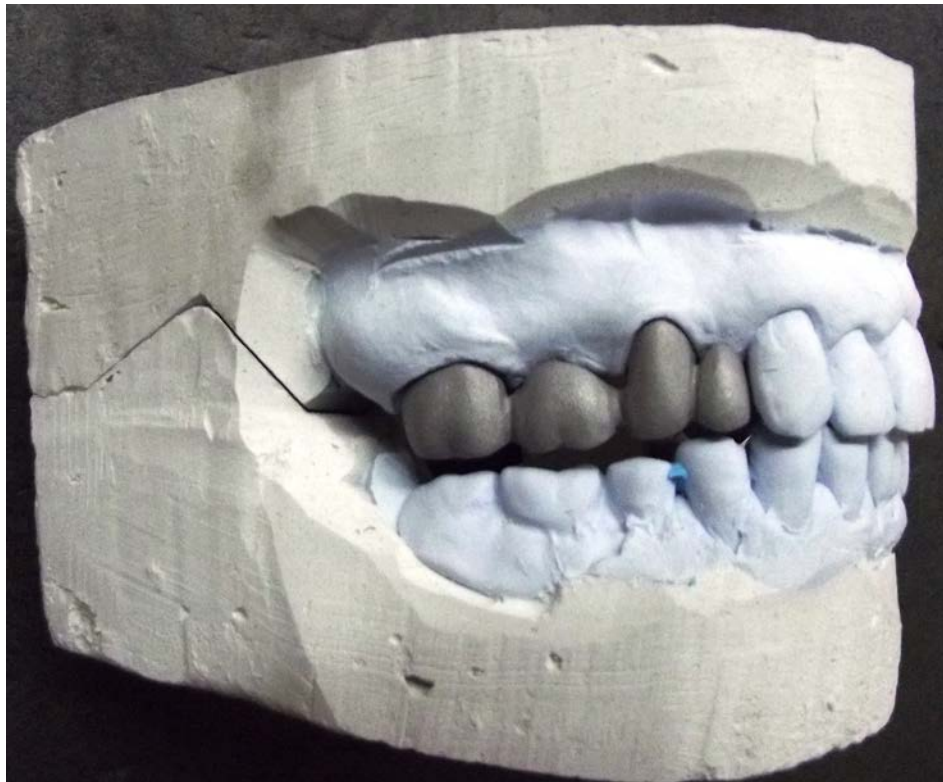


Image no. 12

The finished denture, adapted to the prosthetics field, shows good marginal adaptation and the accomplishment of set goals.



Image no. 13

RESULTS

Of the 247 patients with fixed prosthetic treatments, I chose a case by which I wanted to prove that there is no clear superiority of any gingival edge of cast shell crowns. The very placement of dental crown edges may have a limited influence on dental tissue. In most cases examined, with few exceptions, prosthetic abutments were polished in knife blade, and very few with threshold, in chamfren, threshold with bevel or chamfren with bevel. The following elements can be used to argue the above-mentioned:

1. The dental technician can easily make, when needed, various changes on the working model. This retouching can be done because the tooth does not have intricate contours.
2. The working rift can be emphasized in the working model. This is possible because all retentiveness and the enamel ridges from the clinical crown have been suppressed. This avoids short edges in the frontal area, which are highly problematic esthetically.
3. There are fewer dental crown adaptation problems.

4. As the edge of the crown inevitably reaches the subgingival area, it elongates axial walls of the dental abutment.

5. Prosthetic crown preparation, modeling, processing and polishing techniques are made easier.

DISCUSSIONS

The correlation between the prosthetic crown and periodontal health depends on several factors, including marginal adaptation. This refers to the discrepancy that may arise between the terminal area of the abutment and the edge of the prosthetic crown. Ideally there should be no discrepancies between the edge of the tooth and the prosthetic restoration. The emergence profile of the prosthetic piece should coincide with the submarginal areas of the prepared tooth. An open marginal configuration favors the retention of bacterial microorganisms and intermediate metabolic products resulting from food bolus decomposition. The discrepancy area is represented by a rough surface, remaining after pre-prosthetic preparation. These rough surfaces are cleaned with difficulty in the subgingival area, ultimately leading first to acute, then to chronic marginal periodontal inflammation.

CONCLUSIONS

Influence of the coronary terminal area ratio on periodontal health is unanimously recognized. The edges of incorrectly placed prosthetic restorations with respect to the free gingival margin may initially cause its inflammation, and if aggression continues for a longer period, periodontal changes may appear over time. Rigorous dental hygiene seems to minimize these negative effects only when denture edges are not placed deeply under the gums.

However, although statistics should discourage deep subgingival placement of crowns edges, a large part of schools and professionals continue to do so. Have they never noticed the harmful effects of such an approach or is the esthetic effect prevalent for them? To answer such questions, in this study we statistically monitored a total of 247 patients with fixed prosthetic treatment. The conclusion was that, in patients who are regularly scheduled and monitored, fixed dentures do not influence periodontal health.

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