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Hypertrophic Gingivitis As A Consequence Of Oversized Crowns – Case Report

Sanja Dimova[1], Bruno Nikolovski[2], Marie Nane Bogoevska[1]; Boban Gruevski[3], Vera Radojkova Nikolovska[4]
PHI Dentissimo Aesthetic, Skopje
Goce Delcev University, Faculty Of Medical Sciences, Stip
PHI Dental Aesthetic Spot, Skopje
Ss. Cyril And Methodius University, Faculty Of Dentistry, Skopje

Abstract
Introduction: *Hypertrophic gingivitis is a form of chronic gingivitis common among patients with prosthetic restorations, especially when these are oversized. This condition leads to reduced pink aesthetics, pain, and bad breath, which often drive patients to seek professional help.*
Objective: *The purpose of this study is to determine if replacing old crowns with new ones can alter the condition of the gingiva and to assess if the state of gingiva in hypertrophic gingivitis is completely reversible.*
Materials and Methods: *The materials for this case study come from private practice, focusing on a 38-year-old female non-smoker without allergies or chronic diseases. Research methods include comparing gingival and periodontal indices before and after replacing inappropriate prosthetic restorations.*
Results: *Replacing the old, poorly fitted crowns resulted in significant improvement in the gingival health of the patient.*
Keywords: *Oversized crowns, Hypertrophic Gingivitis, Periodontitis*

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I. Introduction

Prosthetic restorations are common cause of changes in gingival health, including alterations in the color, size, and consistency of the gingiva. When dental crowns are fabricated with larger dimensions than necessary, they can lead to the development of hypertrophic gingivitis. This condition represents a chronic form of gingivitis, resulting from prolonged compression of the gingiva by the crowns, regardless of whether they are metal-ceramic or all-ceramic. Clinically, hypertrophic gingivitis is manifested by enlarged and thickened gingiva that extends beyond the normal level. The gingival color often ranges from red to dark violet or livid, sometimes accompanied by increased vascularization. Its consistency is firm and elastic, losing the stippled texture typical of healthy gingiva. The condition is usually painless; however, sensitivity and bleeding may occur during brushing or mastication. The most common cause of hypertrophic gingivitis is prolonged irritation from oversized or improperly fabricated crowns. When combined with poor oral hygiene and accumulated plaque, these factors contribute to gingival inflammation and tissue enlargement.[1] Occasionally, the cause lies in crown placement that extends excessively subgingival thereby inducing morphological and structural changes in the gingiva. Hormonal imbalances during pregnancy or puberty can enhance the effects of local irritants and indirectly contribute to the onset of hypertrophic gingivitis.[2] Systemic diseases and the consuming of certain systemic medications— such as immunosuppressive drugs and anticonvulsants—may also result in this condition. Common complications associated with oversized prosthetic restorations in cases of hypertrophic gingivitis include gingival overgrowth that partially covers the crown margins, resulting in an unesthetic appearance and difficulty maintaining oral hygiene. This leads to halitosis and increases the risk of developing periodontal disease.[3] Hypertrophic gingivitis is treated by removing the dental calculus and soft deposits, and then by removing and replacing the old prosthetic restorations with new ones. At the same time, it should be taken into consideration that the dimensions of the new crowns must be appropriate, to eliminate the irritation on the gingiva. Regarding the choice of material, it is also better that the new crowns are made of non-metal ceramic – Zirconia, as a much more biocompatible material compared to metal-ceramics.

II. Aim

The aim of this paper is to describe the effect of old and oversized crowns on gingival health, to determine if replacing old crowns with new ones can improve the condition of the gingiva and to assess if the state of

gingival tissue in hypertrophic gingivitis is completely reversible, monitored through gingival and periodontal indices, before and after therapy.

III. Material And Method

A female patient, aged 38, in December 2024 came to our dental office due to aesthetic dissatisfaction with the teeth she had been wearing for more than 10 years. During the anamnestic examination, we established that this is a patient without health problems, a patient who does not use any chronic therapy, is a non-smoker, and does not report any allergies to food or medication. The patient regularly visits the dentist and maintains satisfactory oral hygiene by using several additional dental aids. But despite all of that, the condition of her gingiva remained unchanged, aesthetically thickened and red. In fact, that was the biggest problem for the patient, along with the constant bleeding and unpleasant breath from the mouth, which were continuously present. Several times a conservative approach and treatment of the gingiva were used, including ultrasonic cleaning and periodontal pockets curettage, but all of that did not give results. During the clinical examination, we established numerous changes in the gingiva that were the result of inadequately made and oversized crowns, which, due to improper marginal adaptation, caused chronic and constant irritation despite the ongoing treatment. We noticed changed color, shape, and size of the gingiva, changed consistency of the gingiva, and upon pressure, the presence of serous exudate. We concluded absence of significant pain, except in certain teeth, for which upon performing a panoramic X-ray, we found periapical changes, mainly caused by improperly endodontically treated teeth.

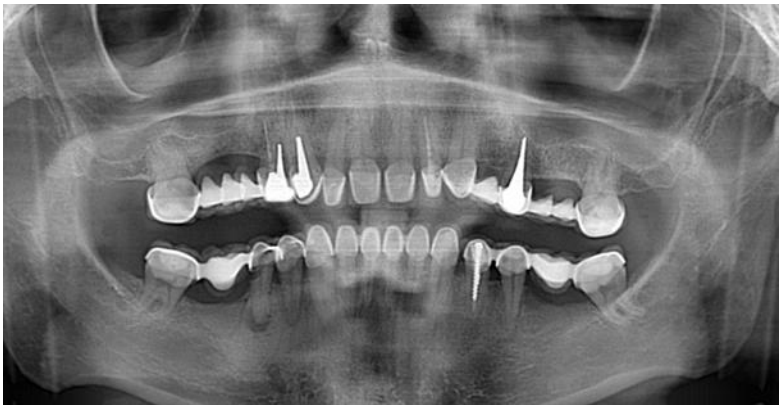

Figure 1. *Orthopantomogram of the patient before the crowns were changed*

At the same time, periodontal probing and index measurements were performed to assess the degree of gingival inflammation and the periodontal condition of the patient.

IV. Results

At the beginning, we examined the Plaque Index according to the method of (Löe&Silness). After preparing the patient and marking the examined surfaces, we found a moderate amount of plaque, which was visible even to the naked eye. The Plaque Index was 1.5. Gingival Index (Silness&Löe) was 2.9 that indicated the presence of advanced gingival inflammation. During these examinations, we found a changed color of the gingiva, which in certain regions was from red to livid in color, edematous and full of secretion. The consistency was smooth and thickened, which did not resemble the granular structure characteristic of healthy gingiva. With the help of probing, we diagnosed bleeding in the form of a point in several examined regions. In some parts, the bleeding was more abundant and appeared as a line along the gingival margin. Bleeding index in this patient showed 29% of the examined regions affected by bleeding, which was a sign of the presence of moderate gingival inflammation. The Clinical Attachment Loss Index (CAL) according to Ramfjord was examined as one of direct indicators of whether this type of chronic gingivitis progresses to periodontal disease. This index in the patient amounted to 4, which indicated a mild loss of attachment. For that reason, quick and timely replacement of this type of old prosthetic restoration would be crucial in the therapy of such gingival conditions. As the main therapy, besides the conservative treatment that we applied to the patient, there was also replacement of the old crowns with new ones, properly dimensioned prosthetic restorations. As a first step of this treatment, we started with conservative treatment, which consisted of scaling and root planning and topic medicament application. We also included systemic antibiotic therapy, a combination of penicillin antibiotic (Amoxicillin) in a dose of 500 mg three times per day with metronidazole (Flagyl) in a dose of 400 mg three times per day, to act on the wider spectrum of bacteria and infections that were present in the oral cavity of this patient. This combination of penicillin preparation with metronidazole has proven to be an effective therapy in the treatment of severe periodontitis, but it can also be used as additional therapy in the active phase of treating gingivitis.[4] After

completing the seven-day antibiotic therapy, the old crowns were removed, and local treatment was continued in the form of manual and laser curettage, and laser bio-stimulation of the gingiva. For home care, the patient was instructed to rinse with 0.2% chlorhexidine and to apply an antibiotic cream to the gingiva by gentle massage twice daily for seven days. After we achieved healthy gingiva with normal color and consistency, we proceeded with laser contouring, in order to achieve an aesthetic result, which was important for the patient. Temporary PMMA (Polymethyl Methacrylate) crowns were made, with the purpose of giving the gingiva a new forming line and to allow complete healing before taking the final impressions for new crowns. We chose Zirconia, which, as the most biocompatible material, was the most appropriate choice for this case. As a method for the most modern and precise impression-taking, which gives micron precision and does not cause gingival irritation, we chose to take the impression using a dental scanner. After the digital design was made and the patient's satisfaction with the achieved aesthetic success was evident, the teeth were fabricated and placed in the patient's mouth. Immediately after the placement of the new teeth, we had visible and proven results, and of course, we continue to follow the same results regularly every six months.

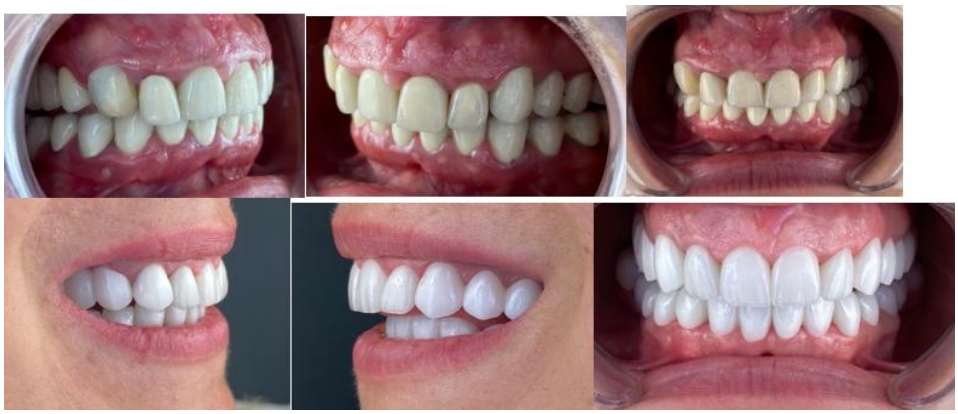

Figure 2. *Case Presentation Before and Immediately After Replacement and Placement of New Crowns*

The patient was called for a regular check-up after six months. At each check-up, we establish a nice color and structure of the gingiva, without the presence of spontaneous or provoked bleeding, and without deepening of periodontal pockets. The oral hygiene of this patient remains appropriate and satisfactory, but now, due to the possibility of maintaining good hygiene, the results are evident.

Figure 3. *Case presentation after six months of replacing the old crowns*

After a six-month follow-up, we observed a significant reduction in the gingival indices. In the following table, we present the difference between the indices at the beginning (before the therapy) and six months after the therapy.

Index	Before the therapy	Follow-up after six months	Interpretation
Plague Index (PI)	1.5	0.5	Good oral hygiene, minimal plaque
Gingival index (GI)	2.9	0.5	Reduced inflammation, pink gingiva without bleeding
Bleeding Index (BI)	29%	<10%	Only local bleeding during probing
CAL index	4	4	

V. Discussion

Numerous studies show that the material from which the crowns are made has influence on the condition of the gingiva[5], but to a significantly smaller extent compared to the shape and dimensions of the crowns that are fabricated. If the crowns are made correctly, with proper dimensions that do not press on the gingiva and do not cause mechanical irritation, they can also be made of metal-ceramic and still not cause gingivitis. The most important thing is to respect the biological width, and the crowns to be made with a precise and clear margin.

Metal-ceramic as a material is only less aesthetically acceptable because of the gray color that can appear on the gingiva after a longer period of wearing the crowns. Non-metal ceramic, Zirconia, is considered the most biocompatible material, and therefore it usually is not a cause of gingivitis if the crowns are made properly. Oversized crowns that press on the gingiva and have irregular marginal adaptation, cause reduction of the biological space between the teeth and the gingiva. Because of that, accumulation of plaque and bacteria is constant, and in that way, it causes chronic gingivitis or initial periodontitis.[6]

In this case, the oversized crowns and their placement too deep into the gingiva cause chronic irritation and constant presence of gingival inflammation. All of this reduces the possibility for proper and adequate oral hygiene, which allows the gingival inflammation to remain active until the crowns are removed. The long-term pressure from this type of prosthetic restorations causes thickening of the gingiva – hypertrophic gingivitis – which is the focus of this paper. The signs are evident and unchangeable, because it is a matter of constant and chronic irritation from oversized and rough edges of prosthetic restoration, which, if not removed, gives no results from the therapy that could be applied. Continuous bleeding from the gingiva, unpleasant smell, disturbed aesthetics, and thickening are some of the signs that cause discomfort for the patient. In some patients, recession of certain parts may also occur, which is considered an irreversible condition.[7] In comparison with many other case reviews, we can notice that the presence of inadequate and oversized prosthetic restorations is a frequent cause of the appearance of hypertrophic gingivitis. An improperly shaped crown margin, or a crown that extends more subgingival than it should, is the most common cause of this condition. Because of that, it cannot be treated only with a conservative approach. As part of the therapy, the replacement of old crowns with new ones is mandatory, in order to obtain healthy gingival tissue. The goal to remove the constant mechanical irritation that puts pressure on the gingiva, and if it is not removed as a factor, complete healing will not occur. In the presented case, gingival hypertrophy was most pronounced in the areas where the crowns were made with excessive thickness, which led to mechanical compression on the marginal gingiva and creation of retention zones for accumulation of plaque and biofilm[8] which over time resulted in chronic inflammation and change in the form of the gingiva. These findings are in accordance with the results presented by *Volchansky and Cleaton-Jones,* who confirmed that the position and contours of the crowns are directly related to inflammatory changes of the gingiva.[9] Similarly, *Sirinirund* stated that oversized crowns disturb physiological self-cleaning, increase the accumulation of dental plaque, and cause an increase in the gingival index.[10] In the analyzed case, percussion sensitivity was not pronounced, which indicates that the inflammation was limited to the soft tissues and did not affect the periodontal ligament or the alveolar bone, unless the problem persisted for a very long time. Percussion pain existed only in the area of the lower right premolars, due to periapical changes from inadequately endodontically treated teeth. The marginal gingiva showed a mildly painful reaction, smooth and elastic consistency characteristic for hypertrophic gingivitis. After removal of the oversized crowns and their replacement with new crowns with correctly anatomically contoured margins and supragingival placement, a gradual reduction of inflammation and decrease of hypertrophy was observed.

Figure 4 *Case presentation before and immediately after replacement of old crowns with new ones*

According to the current condition of the gingiva, we notice that at each subsequent check-up, the gingiva is in an even better situation. We notice a change in the indices from the first measurement, which took place in December 2024, and was then controlled again in July 2025. At that time, we also made a control panoramic X-ray, which confirmed an improvement in the periodontal tissue, the condition of the bone, and the periapical space around the teeth. Regular check-ups are crucial and very important in maintaining healthy gingiva, especially in any kind of prosthetic restoration.

Figure 5 *Orthopantomogram of the patient after six months of replacement with new crowns*

VI. Conclusion

Based on all the data and examinations that we conducted during this case report, it can be concluded that oversized crowns represent a significant local factor for the development of hypertrophic gingivitis. The key to such situations is timely and early diagnosis of this gingival condition. The longer this type of chronic gingivitis lasts, the greater irreversible consequences it can leave on the periodontal tissue. That is why it is important to diagnose it precisely and on time, to apply adequate therapy, to perform it correctly, and to maintain regular control. We can conclude that by correcting the design of the crowns, respecting the biological width, and establishing a supragingival margin, normalization of the gingival tissue and restoration of healthy periodontal status are achieved.

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