

Radiant, beautiful anterior teeth

Restoring a smile after severe periodontitis

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The loss of the interdental papillae is a grave consequence of periodontal disease. Surgical reconstruction is still not feasible. There are several approaches to reducing or masking the black triangles which occur as a consequence of the missing papillae. Conventional restorations are an option if the teeth additionally show increased mobility. If this is not the case, that is, if the periodontal tissue is healthy, it is crucial to find a biomimetic solution, meaning that the restoration should take esthetic, biomechanical and biological factors into account.

Initial situation

The treatment of missing papillae by means of ceramic veneers will be presented on the basis of a clinical case. A female patient aged around forty was unhappy with the look of her smile, which she described as “disgraceful”. The esthetic diagnosis consisted of an analysis of the features of the face, the smile, the teeth and the gingiva. The analysis (Figure 1) revealed the following findings:

- Face: tense and shy look due to self-consciousness about her teeth.
- Smile: considerable esthetic compromises due to the black triangles.
- Teeth: healthy triangular, curved teeth; the margins of the roots are visible.
- Gingiva: healthy periodontal tissue; interdental papillae are missing; the teeth are stable; recess at tooth 12.

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- Radiological examination: regular alveolysis in the cervical third.

Procedure

The following procedure was determined on the basis of the analysis:

- surgical intervention at tooth 12 in order to increase the gingiva (transplantation of connective tissue) fabrication of a mock-up in order to visualize the final result
- tooth preparation on the basis of the mock-up
- temporization
- try-in of the veneers (adaptation, shape and shade)
- incorporation of final restoration.

Treatment course

Surgical intervention to increase the gingiva: Connective tissue was removed from a lobe which was moved towards the tooth crown. Before further treatment was conducted, a four-month healing phase was necessary.

Preparing the mock-up: A silicone matrix was fabricated on the basis of the wax-up, which was based on the findings of the esthetic analysis. The temporary restorations



Figure 1: Preoperative view.



Figure 2: Mock-up.



Figure 3: Preparations with subgingival margins in the proximal region.



Figure 4: Checking the relation between the preparations and the volume of the final restoration with the help of a silicone matrix.

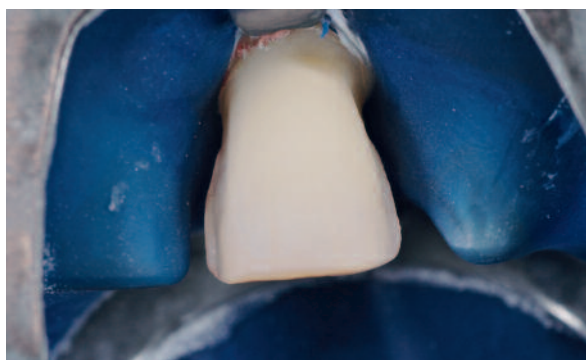


Figure 5: Isolating individual teeth in order to achieve optimum bonding.

were fabricated with the help of the matrix from a self-curing, flowable Bis-GMA-based composite. This allowed us to discuss the restoration beforehand with the patient, who provided her input and approved of the restoration (Figure 2).

Preparation: In order to keep the depth in check and observe the biological concept, the drill was placed directly on the mock-up. With this procedure, a uniform thickness of approx 0.5 mm is achieved on the basis of the volume of the final restoration (cf Gürel 2006). After removing the preparation key (mock-up), the presence of larger, non-prepared enamel areas is observed. In the present case, the treatment protocol was slightly varied in view of the cervical preparation margins: Usually, the preparation margins are located above the gum line for veneer preparations; in this case, however, the margins had to be designed subgingivally (Figure 3). This approach was chosen for various reasons: In order to eliminate the black triangles, meet the biological requirements (cleaning and soft edges) and take the biomechanical properties of the

ceramic (preventing non-supported areas in the ceramic) into account, only one single contact surface with a soft transition from the edge of the root to the margins of the contact surface could be designed to mask the missing papillae (Figure 4).

The all-ceramic veneers were fabricated with the IPS e.max® Press (MO1) lithium disilicate glass-ceramic material, and the incisal third was veneered with IPS e.max® Ceram. The pressed veneers, which showed a minimum thickness of 0.3 mm, feature a high stability and outstanding accuracy of fit on the one hand and excellent light-optical properties on the other.

Try-in of the IPS e.max Press veneers: After removing the temporary restorations, all veneers were tried in simultaneously. This enabled the overall appearance to be visualized. Subsequently, the accuracy of fit was checked. Variolink® Veneer Try-In paste was used for this procedure to simulate the effect of the cementation material on the shade of the restoration.

Clinical procedure: The veneers were individually



Figure 6: Lateral view of the IPS e.max Press veneers (from right).



Figure 7: Lateral view of the IPS e.max Press veneers (from left).



Figure 8: Frontal view of the restorations. An expansion of the interdental papillae can be observed.



Figure 9: View of the maxillary teeth. The optical properties of IPS e.max Press material are particularly highlighted in this image.



Figure 10: Light transmission through IPS e.max Press veneers.

cemented in the adhesive technique, starting with the incisors (Figure 5), followed by the lateral incisors and

canines and so on, thus allowing the clinician to carry out corrections on the proximal areas of the less prominent

teeth (distal surfaces of canines or premolars). The restorations were conventionally placed with Variolink Veneer. In a last step, the composite joints were carefully finished with a scalpel in order to maintain the surface gloss of the ceramic and the excellent fit in the periodontal tissue (Figures 6 to 8).

Note

Clear communication between the dentist and the dental technician is mandatory in clinical cases such as this to allow as much information as possible to be exchanged (models, images of the initial situation, images of the preparations and their shade, impression of the temporary restorations in place, shade determination). In the present case, it was agreed with the ceramist to design the margins of the contact surfaces on the stone model two millimetres from the papilla, because, for the papilla to grow back, the distance between the contact point and the tip of the papilla must be less than five millimetres (Tarnow). After some months, the papilla will have grown and filled the small spaces that were reserved for it. This is also a confirmation of the biocompatibility of the lithium disilicate glass-ceramic IPS e.max Press (Figures 9 and 10). By strictly observing the treatment strategy and using materials which show optimum optical and biomechanical properties, the patient's smile was modified and restored while abiding by the principles of minimally invasive dentistry. I would like to thank Gérald Ubassy for his cooperation and his exceptional talent.

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