Aesthetic restorations using veneers made from a leucite glass-ceramic ingot for press technology

Fig. 1–3: The patient’s severely crowded and maloccluded teeth required orthodontic treatment prior to the restorative treatment. — Figs. 4 & 5: After six months of orthodontic treatment, the patient’s patience had worn thin. She requested permanent restorations. The images show the initial situation. — Fig. 6: The lingual brackets allowed for preparation and impression taking from the lingual aspect. — Fig. 7: Silicone impression with an individual tray from the labial side. — Fig. 8: Dimensional requirements as determined by means of the silicone key. — Figs. 9 & 10: Final preparation in detail. — Fig. 11: Acrylic provisional veneers in situ. — Fig. 12: The smile line as viewed slightly from the side. — Fig. 13: The situation at follow-up after three years.

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Orthodontic pre-restorative treatments can sometimes put a patient’s patience to the test. Lingual brackets in conjunction with a labial impression technique can shorten treatment time.

A 28-year-old patient came to my clinic to have her discoloured teeth in the maxillary and mandibular anterior dentition treated. She requested laminate veneers, as the discoloration had not improved even after several tooth-whitening procedures had been performed. There were other problems, like severe crowding and malocclusion of the teeth, which had to be treated orthodontically prior to prosthodontic restoration (Figs. 1–3). The patient was therefore referred to an orthodontist for preliminary treatment. Although the orthodontic treatment had not been concluded yet, the patient came to the clinic again after six months and strongly urged us to provide her with laminate veneers to improve her aesthetic appearance.

After intensive discussion with all parties involved and after having contemplated all the technical and medical options, we found a way to meet the patient’s request by providing her with laminate veneers during the orthodontic treatment (Figs. 4 & 5).

Since the patient had already received orthodontic treatment in the form of lingually attached brackets (Fig. 6), the impression was taken from the labial side with an individual tray. Using an individual tray, we were mostly able to avoid interference by the brackets (Fig. 7). In order to evaluate the functional and aesthetic possibilities, we fabricated a wax-up. A silicone key, created on top of the wax-up on the model, served as a guide to ensure sufficient reduction during veneer preparation (Fig. 8). Figures 9 and 10 show the preparation in more detail.

At the same time, a provisional restoration was fabricated in acrylic material based on the wax-up (Fig. 11). The accuracy of fit was optimized through intra-oral relining. We added acrylic resin material to the lingual and interdental areas to keep the provisional veneers in place.

Owing to the tooth shade of A1.5, we decided to use the leucite press ceramic IPS Empress Esthetic (Vivlar Vivident) in shade ETC1, which is suitable for very bright shades or after tooth-whitening procedures. IPS Empress Esthetic ingots generally show a lifelike light-scattering pattern and offer a balanced chameleon effect. They are available in 12 ingots, which feature seven levels of translucency, and are used to fabricate single-tooth restorations (veneers, inlays, onlays, partial crowns, and anterior crowns).

The veneers were pressed according to the fully anatomical wax-up. In order to design natural-looking mamelon structures, the incisal third was reduced. We applied IPS Empress Esthetic Veneer wash pastes (Modifiler Sky Blue, MM yellow-orange, MM reddish-orange, high value and others) and fired them at 650 °C in order to mimic the internal characteristics in the area of the incisal third. Subsequently, the veneers were covered with IPS Empress Esthetic Veneer layering materials (Incisal Opal LT, MM and HT, and Incisal White and Orange) and other layering materials and then fired. Considering the patient’s age, we did not include any abrasion marks in the incisal area or on the surface. After glaze firing, the surface characteristics were designed with the help of silicone polishers. The veneers were then polished using diamond paste (Fig. 12). Finally, we applied Variolink II Base (Transparent) to seat the veneers and light cured. Figures 13 and 14 show the treatment outcome, with which the patient was extremely satisfied. The orthodontic treatment of the patient went on for another 12 months.

The long-term outcome is of particular interest to any treatment team for obvious reasons. After completing the orthodontic treatment, therefore, fixed lingual wire retainers were applied in order to stabilize the new position of the maxillary and mandibular anterior teeth. Figures 15 shows a photograph taken at a follow-up appointment after three years.

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