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

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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 prosthetic 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 silicate 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 refinement. 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 (Ivoclar Vivadent) in shade ETG1, 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 and posterior 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 (Modifier Sky Blue, MM yellow-orange, MM reddish-orange, high value and others) and fired them at 650 °C in order to imitate 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, MT 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 polishes. The veneers were then polished using diamond paste (Fig. 12). Finally, we added Variolink II Base (Transparent) to seal the veneers and light cure it. 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. Figure 15 shows a photograph taken at a follow-up appointment after three years.