Symmetry and aesthetics
Harmonious treatment of peg teeth with a high-performance adhesive system

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Achieving the best possible outcome with as little effort as possible is a principle of economics that when applied to dental medicine translates to creating an aesthetic restoration with minimally invasive or non-invasive procedures.

Dental anomalies pertaining to the shape or the size of teeth may be symmetrical or asymmetrical. Often such anomalies can be seen on the lateral incisors, a condition also known as “peg tooth.”

Previously, a number of treatments were recommended, including extraction of the tooth with subsequent orthodontic correction of the gap or placement of an implant-retained restoration. However, the advent of new possibilities in the area of adhesive cementation in conjunction with highly aesthetic and high-strength glass-ceramic restorations has provided clinicians with an economically efficient and functionally sound alternative treatment method.

Owing to the restricted size of the bonding surface, the treatment of peg teeth demands the use of a high-performance adhesive system. Total-etch systems are preferred over self-etch systems in such cases. Clinicians also have to ensure that tooth preparation is confined to the dental enamel.

Clinical case
A 16-year-old female patient requested enhancement of the aesthetic appearance of her smile (Fig. 1), as she disliked the compromised appearance of her anterior teeth due to her peg-shaped maxillary lateral incisors. Orthodontic treatment had been performed two years before, during which it was decided that the peg-shaped teeth should be preserved (Fig. 2). Now the time had come to correct the shape of the lateral incisors (Fig. 12 and 13 using adhesively cemented all-ceramic veneers made of IPS e.max Press lithium disilicate glass-ceramic (Ivoclar Vivadent).

As a reference, an intra-oral image taken from the labial aspect was digitally modified, which allowed the dental technician to plan the restoration effectively and to fabricate a wax-up according to the desired outcome. In addition, it gave the clinicians a clear indication of how to modify the gingiva. Prior to the treatment appointment, the model and the wax-up were recorded in the form of a silicone key and transferred to the mouth using the method developed by Galip Gürel at the New York University College of Dentistry (Fig. 3).

The silicone key for the lateral incisors was filled with Tello CS C & B (Ivoclar Vivadent), a self-curing, temporary crown and bridge material for the fabrication of temporary restorations, and then inserted into the mouth (Fig. 4). After two minutes of curing, the impression was removed and the restorative preview was shown to the patient. Both the patient and the dentist were satisfied with the defined shape of the lateral incisors.

The depth-marking grooves through the composite masks were made (Figs. 14-16) to ensure that as much dental enamel as possible was preserved, as this is also conducive to the quality of the bond that is achieved. These grooves served as reference points throughout the preparation process.

Minor gingival modifications were also made during the same appointment in order to achieve a harmonious and aesthetic emergence profile (Fig. 7). After a healing phase of one week, the impressions for the fabrication of the master model and the final restorations were taken. The dental technician produced two veneers made from IPS e.max Press material in the LT A1 shade.

In terms of shape and size, the wax-up served as a reference (Fig. 5).

Cementation of the veneers
The two veneers were tried in with yellow-shaded and transparent glycerine gel (Vario link II by Ivoclar Vivadent). A mixture of both materials was used to create a harmonious transition between the canines (showing a high shade saturation) and the very bright central incisors.

In this case, the Vario link II dual-curing composite system and the ExciTE F DSC adhesive (Ivoclar Vivadent) for the cementation of the veneers was chosen. Excess cementation material was largely removed after polymerisation for three seconds in the Soft mode of the curing light, and the fine excess was removed after final polymerisation in the High mode (Fig. 9).

Conclusion
The lithium disilicate crystals in IPS e.max Press enable fabrication of highly aesthetic restorations with mechanical strength, compatibility with veneering ceramics and excellent optical properties. By combining the material with a total-etch cementation system such as Vario link II, clinicians can treat cases involving adhesively cemented ceramic restorations with confidence.

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Figs. 1–13
Fig. 1: The young patient’s smile before the dental treatment showed asymmetrical and peg-shaped lateral incisors. – Fig. 2: After the orthodontic treatment, the anterior region showed an inhomogeneous appearance with large diastemas. The relative position between the dental arches had been optimally observed (orthodontic treatment by Dr. Jean Buch). – Fig. 3: The wax-up as modelled by the dental technician. This wax-up was used for the planning of the gingival modifications. – Figs. 4–5: Controlled preparation through the aesthetic mock-up is a prerequisite to ensuring that the permanent restoration is only cemented on dental enamel. This improves the quality of the cementation and gives the restoration a more aesthetic appearance in the long term compared with restorations cemented only on dentine. – Fig. 6: The extent of gingival modification was kept to a minimum but was indispensable for the achievement of the desired aesthetic outcome. – Fig. 7: The veneers fabricated by the dental technician. – Fig. 8: The situation directly after seating of the veneers. – Fig. 9: One week after seating, the result was excellent with regard to both function and aesthetics. – Figs. 10–13: The patient’s new smile is expected to be long-lasting. A very favourable prognosis could be made because the materials used have proved their clinical suitability.