Aesthetic restoration created with composite

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The new generation of resin composite materials in combination with modern layering techniques allows today’s practitioners to treat their patients with minimally invasive, highly aesthetic direct restorations. Owing to their enhanced properties, these materials produce results that are hardly distinguishable from natural dentition, especially with regard to colour, which is particularly desirable in anterior teeth.

The new composite IPS Empress Direct (Ivoclar Vivadent) enables us to create restorations that are almost invisible to the human eye. The appropriate increment technique together with correct handling of the materials and high-gloss polishing produces predictable, aesthetic results directly in the mouth. Owing to its nano-hybrid structure, the material’s optical properties, such as scattering, can be achieved. The working steps of the technique used to place IPS Empress Direct are described in this article.

Clinical case: Step-by-step restorative procedure

A young patient presented with a defective resin composite filling in tooth #11. The margin was no longer tight and the interface between the tooth structure and the restoration exhibited staining. What is more, the chroma, opalescence and shade of the filling did not correspond to that of the natural dentition (Fig. 1).

According to the treatment plan, the filling would be removed, the cavity prepared along minimally invasive principles and the tooth restored with a direct resin composite. In order to achieve impeccable integration of the restoration in the oral environment and aesthetic blending, the cavity would have to be placed using the increment technique. As the cavity had walls on all sides, there was no need to create a wax-up or a template to restore the tooth shape. A layering scheme was established before the treatment was begun.

During the dental examination, the general preoperative situation, the natural colour of the patient’s teeth and individual characteristics were photographically documented. The layering scheme was prepared on the basis of the photographs. The different materials that would be used for the restoration were established in the process. In order to reproduce the special characteristics of the patient’s tooth anatomy, the appropriate dentine and enamel shades were selected along with an opalescent material and a white-opaque material (from the IPS Empress Direct range). A translucent and opaque material (Trans Opal from the IPS Empress Direct Dentin A2) was applied to build up the enamel part (Fig. 7). Thin white-opaque strip (IPS Empress Direct Bleach XL) were applied over the dentine segment to enhance the brightness. Finally, an appropriately shaded enamel material (IPS Empress Direct Enamel A2) was placed over the entire facial surface of the restoration to cover all the previously placed materials (Fig. 8).

The creation of surface texture as well as finishing and polishing are important working steps in imparting a restoration with a true-to-nature appearance. As a result, they have to be given due attention. In the present case, the surface texture was created with diamond burs at low speed. This allowed the procedure to be precisely controlled. A three-step siliccone polishing system (Astropol) was used to finish and polish the restoration. Finally, the restoration was polished to a high gloss finish using aluminium oxide, diamond pastes (Shiny System, Micerium), brushes and felt wheels.

It is worthwhile recalling the patient for a third appointment to ensure that the restoration blends into the natural environment when the tooth is moist and to establish whether any shape or colour adjustments need to be made (Fig. 9).