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 can also be used to restore posterior teeth.

IPS Empress Direct materials are available in various levels of opacity, translucency and brightness. By combining the different materials, tooth-like light 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 an aesthetic smile line with a uniform colour, the composite 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 silicone template to restore...
the tooth shape. A layering scheme was estab-
lished 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.
The various 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).

At a second appointment, the operating field
was isolated with a rubber dam, since absolute
moisture control is indispensable in the placement
of resin composites (Fig. 2). The outer margins of
the old filling were traced with a pencil. This was
done to highlight the transition between the filling
and the tooth structure in the removal of the
old filling. A small chamfer was prepared on the
vestibular side, as this is indicated for this type of
restoration (Fig. 3). Next, the enamel and dentine
were etched with 37% phosphoric acid (Total Etch)
and a three-component adhesive (Syntac) was
applied (Figs. 4 & 5).

In order to obtain the desired tooth shade, the
dentine part of the restoration was built up first
with dentine material (IPS Empress Direct Dentin
A2; Fig. 6). A translucent and opalescent material
(Trans Opal from the IPS Empress Direct range) was
used to build up the enamel part (Fig. 7). Thin white-
opaque strips (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 pro-
cedure to be precisely controlled. A three-step sili-
cone 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).