For dental technicians, it is especially challenging to produce natural-looking, age-appropriate reconstructions in the visible area of the mouth in older people. It is recommended to follow a systematic procedure based on the characteristics of the natural teeth for the individualisation and characterisation of such a restoration. This is the only way results can be achieved that blend harmoniously with the remaining dentition. In this case study, I show how such a complex case can be solved with VITA VM 9 veneering ceramics and VITA INTERNO materials (both VITA Zahnfabrik) for internal characterisation.

Assessment and planning

A 77-year-old patient presented to the dental practice after a coronal transverse fracture of tooth #21 that had already been treated with a direct composite. Clinically, the results were morphologically and aesthetically inadequate (Fig. 1). On the adjacent natural tooth (#11), age-related discolourations, initial white and brown spot lesions in the cervical area, and a vestibular transverse dark-brown crack were apparent. The dentist and patient decided on restoration of the tooth with a full-ceramic crown for long-term stabilisation, on which
the colour effect of tooth #11 was to be reproduced in detail. In order to achieve a predictable result, the situation was moulded and a model was developed for a wax-up. Tooth #21 was prepared for a full crown and a master model was produced using a precision mould (Fig. 2).

CAD/CAM fabrication and veneering

The crown framework was made of CAD/CAM-supported VITA YZ HT zirconium dioxide (Fig. 3). For a deep initial fluorescent effect, a wash firing was performed with EFFECT LINER 5 (orange) and EFFECT LINER 6 (green-yellow). Layering with VITA VM 9 was the foundation for reproducing the basic shade (Fig. 4). The VITA INTERNO materials then enabled intensification of the deeper individual shade nuances after the wash and dentine firings (Figs. 5 & 6). Int 04 (orange) and Int 11 (grey-brown) were used in the cervical and interdental areas; Int 05 (terracotta) was used in the centre. The inside areas were nuanced with Int 08 (blue), Int 05 (terracotta) and Int 07 (anthracite), and the incisal edges with Int 02 (sand). Cracks and brown spots were reproduced with Int 10 (brown), and white spots with Int 01 (white).

Finalisation of the restorations

After establishing the basic morphology with a stone and the details with a fine diamond-coated bur, the interior crack was recreated from the outside with a fissure bur to achieve a 3-D effect. The surface texture was kept as smooth as possible, in accordance with the patient’s age. After the glaze firing, only a goat hair brush and diamond polishing paste were used to slightly reduce the gloss effect. After trying out the full-ceramic crown, the patient was very satisfied with the result (Fig. 7), and a self-adhesive bonding agent was applied. The shade and form of the restoration integrated harmoniously with the other teeth (Fig. 8). The veneering ceramic, in combination with two stain firings, made it possible to achieve age-appropriate aesthetics (Fig. 9).

about

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