Non-invasive, long-term temporisation with a high-performance polymer

As the dentition had already undergone extensive aesthetic and functional changes and the patient was still undergoing growth processes, appropriate treatment planning was not an easy task. After the clinical findings had been evaluated in the laboratory and practice, and all advantages and disadvantages of alternative restorative treatment options had been considered, the patient with his family and the practice team settled upon the following therapy plan:

1. Study wax-up to establish an aesthetic and functional morphology of the teeth;
2. Evaluation of the aesthetics by means of a mock-up, using the wax-up as a basis (Fig. 5);
3. Functional evaluation of the situation: transfer of the newly established vertical dimension to a modified Michigan splint;
4. Precision impressions of the uncut teeth;
5. Wax-up digitisation and fabrication of CAD/CAM-manufactured, long-term temporary restorations using Telio CAD;
6. Try-in and final aesthetic incorporation of non-invasive temporaries.

Preliminary treatment
After the wax-up had been adjusted to meet the envisaged aesthetic criteria, the 12-week splint therapy began, which also served as a functional evaluation phase. The vertical dimension established in the wax-up was accurately transferred to the oral cavity of the patient. During this phase, the patient had the opportunity to become accustomed to the new vertical occlusal height.

Long-term temporisation
Following the functional evaluation phase, both maxillary and mandibular, high-precision impressions of the uncut teeth were taken. The impressions were sent to the laboratory together with a face bow. A centric bite record was taken to ensure an accurate transfer of the occlusal dimension – for this purpose, the Michigan splint was sectioned.

The temporary restorations were fabricated using Telio CAD (A2 shade). The study wax-up, which served as the basis for the CAD/CAM manufacture of the restorations, was digitised.
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This procedure resulted in form-identical, long-term temporaries (Figs. 4a & b).

It was difficult to mask the extremely discoloured tooth structure with the thin temporaries. To check the accuracy of fit and shade match, the restorations were trial fitted in the patient’s mouth using glycerine gel of various colours (High Value +2 and High Value +5 try-in pastes of the Variolink Veneer Professional Set; Fig. 5).

Seating

Based on the try-in with the try-in pastes, the dual-curing, low-viscosity “basic white opaque” shade (Variolink II Professional Set) was selected for the final placement of the temporaries. Before they were incorporated, the inner surfaces of the restorations were silicoated using the Rotatec system (Rotatec Soft 30 µm; distance to nozzle: 10 mm; blast pressure: 1 bar; blast time per unit: 10 seconds). Subsequently, the restorations were silanised using Monobond-S and coated with a layer of Heliobond bonding agent. The natural tooth structure was conditioned using the total etch technique and the Syntac dentine adhesive system. Final polymerisation was performed with a bluephase G2 light-curing unit (Figs. 6a & b).

The temporisation phase with the new vertical bite dimension allows a good prediction of the final rehabilitation planned for once the patient has reached full growth (Figs. 7a & b). The immediate treatment with long-term temporary restorations enabled us to meet the needs of the patient at this stage already using a non-invasive technique, and the patient was most satisfied with the result (Figs. 8a & b).