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

Fig. 1: Initial situation: severely discoloured teeth and disharmony in the size and shape of the teeth owing to congenital dysplasia. — Figs. 2a & b: Teeth #4 and #6 are severely damaged. The enamel was chipped off. — Fig. 3: Try-in of the mock-up. A diagnostic template (Durian thermoforming foil, 0.5 mm) was created from the wax-up, filed with temporary material and placed on the teeth, which had been isolated with liquid Vaseline.

Treatment planning

The challenge we faced in his case was the patient's severe congenital dysplasia of the upper and lower incisors. This congenital condition had led to severe destruction of the teeth, which had already been damaged, had to be prevented to give the patient the opportunity to become accustomed to the new vertical occlusal height.

The aim of the treatment was to establish an aesthetic and functional morphology of the teeth and adjust the vertical dimension accordingly. Further destruction of the teeth, which had already been damaged, had to be prevented to give the patient the opportunity to have a pleasant social and professional future.

Initial situation

A 15-year-old male patient came to our practice with his parents because of severely discoloured and malformed teeth. His desire to have a "new" aesthetic appearance was quite understandable (Fig. 1). The patient complained about the social stress that he experienced because of the unpleasant look of his teeth. After an evaluation of the clinical findings and the patient's case history, he was diagnosed with dentogenesis imperfecta type II.

The patient was still in his growth years. The long-term temporisation phase forms the basis for the final restoration at a later stage.

The temporary restorations were CAD/CAM manufactured using the high-performance polymer Telio CAD (Ivoclar/Vivadent). This approach allowed us to achieve an improvement in the initial clinical situation while the patient was still in his growth years. The long-term temporisation phase forms the basis for the final restoration at a later stage.

Initial situation

The patient was still in his growth years. Our aim was to achieve an immediate improvement of the situation, which meant that we had to establish an appropriate morphology of the teeth and adjust the vertical dimension accordingly. Further destruction of the teeth, which had already been damaged, had to be prevented to give the patient the opportunity to have a pleasant social and professional future.

Before completing the final stages of therapy planning, we removed the temporary restorations, filled the cavities with restorative material (Tetric EvoFlow/Ceram, Ivoclar), and took an arbitrary facial bow registration. The resectioned Michigan splint enabled an accurate transfer of the vertical height.

The long-term temporaries were trial fitted using try-in pastes of various colours. The sectioned Michigan splint enabled an accurate transfer of the vertical height.

The long-term temporaries were CAD/CAM manufactured using the high-performance polymer Telio CAD on the basis of the study wax-up. They helped to improve the aesthetic appearance and evaluate the vertical dimension during the growth stages of the patient. — Fig. 7: The long-term temporaries were trial fitted using try-in pastes of various colours. The sectioned Michigan splint enabled an accurate transfer of the vertical height.

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 fit 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 (42 shade). The study wax-up, which served as the basis for the CAD/CAM manufacture of the restorations, was digitised.
Healthy choices for a healthy practice.

Thanks to its progressive design and integration capabilities, A-dec 500® has become a top choice in the industry. Now we’re happy to introduce another member to our product family: A-dec 300™. A complete system of dental equipment, A-dec 300 features a robust design with an ultra-thin profile. As one of the most compact dental equipment systems available today, its minimal moving parts simplify maintenance and cleaning. Simple. Smart. Stylish. It’s everything you need, nothing you don’t, and it’s all A-dec.

Contact A-dec at 1.800.547.1883 or visit www.a-dec300.com to learn more about A-dec 300 and our complete family of healthy solutions.
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 Varolink 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 (Varolink 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).

**Strength of a Hybrid...** ...Deliver like a flow

BEAUTIFIL Flow Plus
Yet another milestone in the Giomer family of restoratives, BEAUTIFIL Flow Plus is an injectable hybrid aesthetic restorative that exhibits superior strength, durability and aesthetics for enhanced applications in direct cosmetic dentistry.

The Plus benefits for you:
- Ideal density and stackability for effortless sculpting
- Remarkable mechanical properties
- Easy injectable delivery
- Extensive application capabilities including load-bearing surfaces
- Simulates life-like aesthetics with excellent shade match
- Benefits of fluoride with anti-plaque effect

For further information, contact your Shofu dealer TODAY!

Prof. Daniel Edelhoff is a Senior Dental Surgeon and Chair of the Policlinic for Dental Prosthetics at the Ludwig Maximilians University in Munich in Germany. He can be contacted at daniel.edelhoff@med.uni-muenchen.de.

Josef Schweiger is a dental technician and Head of the Dental Laboratory of the Policlinic for Dental Prosthetics at the Ludwig Maximilians University.