Clinical use of LuxaCrown and PermaCem 2.0 (DMG) using the example of four splinted anterior crowns (12-22)

Max-Richard Seidemann, dentist

Baseline situation

A 77 year-old patient approached our dental practice with a request for esthetic and functional rehabilitation of the maxillary anterior region. Aside from well-controlled hypertension and daily intake of ASS100, a review of his general medical history did not show any other abnormalities.

The initial intraoral examination found significant tooth substance defects in the maxillary anterior region as well as carious lesions in inadequately restored teeth 12-22 (Fig.1). Furthermore, teeth 12, 21 and 22 were found to have a mobility grade of one. Besides horizontal bone resorption, X-ray imaging found no further abnormalities.

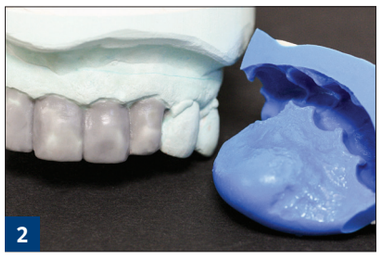
Teeth 23 and 24 were crowned (PFM crowns), while teeth 13-18 and 26-28 were missing. In the mandible, 35 and 45 were also crowned (PFM crowns), while the missing lower molars had been replaced by a partial denture.

The patient's dental hygiene showed considerable need for improvement, but he appeared motivated to improve dental hygiene following professional dental cleaning and instruction.

Given the considerable deterioration of the anterior esthetics, the presence of periodontal disease in need of treatment and missing dentures in the first and second quadrants, the treatment plan provided for the following rehabilitation steps:

- Prosthetic interim restoration of the maxillary anterior teeth following caries treatment to allow an interim denture to be incorporated to replace the missing teeth in the maxilla.
- Stabilization of loose teeth through the splinting of 12-22
- Periodontal therapy
- Once stable periodontal conditions have been achieved, final denture


1


2

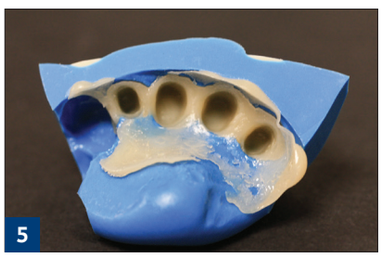

3


4

The patient did not fall under the statutory health insurance hardship provision and was limited in terms of the financial options open to him. Still, the patient was insistent on rectifying the compromising appearance of his maxillary anterior teeth as quickly as possible. Given the esthetic degradation of the anterior teeth, combined with the distress of the patient, the plan was to proceed to the immediate restoration of teeth 12-22. A temporary restoration was to be placed in advance of the upcoming periodontal therapy. The use of LuxaCrown opened up the option of careful esthetic rehabilitation of the maxillary anterior teeth and stabilization of the loose teeth. This allowed for the stable insertion of a clasp-retained interim denture. At the same time, this allowed a more reliable, occlusally stable restoration of the teeth to be assured up until the completion of the PA therapy. Where the subsequent final prosthetic restoration is not financially viable for the patient at the time of asking, LuxaCrown offers the advantage that the restoration also enables a longer wear period in excess of 6 months and up to 5 years for a semi-permanent restoration thanks to its outstanding material properties.

Course of treatment

First, diagnostic casts were created. Then a wax-up was produced in the laboratory. Then an impression was taken from the wax-up (Honigum Pro Putty, DMG) in order to get a template for the semi-permanent restoration (Fig. 2).


5

After a preservative dental restoration (caries removal and core build-ups with Ecosite Bulk Fill, DMG) (Fig. 3) teeth 12 to 22 (Fig. 4) underwent preparation. Here special attention was given to a circumferal and occlusal substance removal of at least 1.5mm in order to guarantee sufficient material thickness of the restoration. Afterwards, the teeth were lightly covered with Vaseline and the template filled with LuxaCrown (DMG, shade A3) positioned inside the mouth. Two minutes after the start of mixing, the restoration was removed from the mouth in the elastic phase (Fig. 5) and returned to the template. The surface oxygen inhibition layer was removed with an alcohol-soaked plastic pellet.

Five minutes after the start of mixing the restoration was ready for finishing. After the removal of distortions and coarse excess, contouring was performed using a yellow band grinder and flexible brown disc, ensuring a sufficiently broad connector cross-section. To enable the cleaning of interproximal spaces with interdental brushes, interproximal spaces were produced with guide paths for the interdental brushes. Then final polishing was performed using the brown discs, goat's hair brushes and polishing paste as well as high-shine buffing wheels (Fig. 6).

Then the restoration was evaluated on the patient and monitored in terms of fit, correct occlusion and the applicability of interdental brushes between the splinted crowns. The patient was shown the finished restoration in the mirror, and was very pleased with the color and shape of the splinted crowns. The prepared teeth were thoroughly rinsed with water spray and carefully dried so as to avoid an excess hardening of the dentine. The crowns' inner surfaces were then lightly abraded using sandblasting (<50µm, 2 bar).

In order to ensure a stable bond beyond the 6 months, an adhesive luting cement was chosen. PermaCem 2.0 is a self-adhesive luting cement characterized by its ease of use, excellent application properties and simple excess removal. PermaCem 2.0 (DMG, shade A2) was applied to the pretreated restoration and this was then immediately positioned on the prepared teeth with light pressure. There is no need for pre-conditioning or the use of a bonding agent with PermaCem 2.0. Following a brief period of light-curing (2 seconds, emission: 450 nm; min. light intensity 400mW/cm²), an initial excess removal was carried out using a scaler, then the patient was instructed to keep his mouth closed in habitual occlusion. After 7 minutes there was a check to see whether all the excess cement had been removed as well as an occlusal check. The interim denture, created in the meantime to replace the missing teeth in the upper jaw, was also inserted following adjustment and activation of the retaining elements (Fig. 8-10).

Conclusion

The use of LuxaCrown enabled a swift restoration of severely deteriorated anterior esthetics and function in just one treatment session. LuxaCrown impressed here with its excellent workability and outstanding stability/strength. PermaCem 2.0 enabled a reliable and long-term luting of the restoration.

The semi-permanent restoration produced is a stable restoration that enables esthetic rehabilitation and affords both the treating dentist and the patient a generous time frame and a reliable basis for periodontal therapy as well as further restoration.


6


7


8


9


10

Figures

Fig. 1 Initial situation

Fig. 2 Wax-up and impression

Fig. 3 Situation following caries removal and restoration placement.

Fig. 4 Prepared abutment teeth 12-22

Fig. 5 Situation following removal from the mouth and repositioning of the crowns in the impression

Fig. 6 Completed restoration

Fig. 7 Situation following insertion of the semi-permanent restoration and interim denture.

Fig. 8 Situation following insertion of the semi-permanent restoration and interim denture.

Fig. 9 Situation following insertion of the semi-permanent restoration and interim denture.

Fig. 10 Situation following insertion of the semi-permanent restoration and interim denture.

Address for correspondence

Dental Practice Dr. Kroker & Seidemann

Königstr. 1

49716 Meppen

June 2017