Enjoy the simple things: cementation with self-adhesive resin cement

Christian Lampson[1]

None other than Albert Einstein once said: "Everything should be made as simple as possible, but not simpler." It is a mantra that is applicable to many situations, including dentistry. Bringing back the necessary work to the essentials without losing the focus on a qualitative outcome. In this article, we share some tips and tricks on how this can be applied to your cementation process on the basis of a case report.

The patient needed dental treatment after a hoof strike with trauma of the upper front teeth as a result. Tooth 21 could not be preserved; tooth 22 required endodontic treatment and a core build-up with a glass fibre post. It was planned to restore teeth 11, 12, 22 and 23 with zirconia crowns, an implant at the site of tooth 21 and a direct restoration on tooth 13.

Even though it's not the first thing that comes to mind, it is best to already select the cement during the treatment planning as well. Patient factors and the restorative design may influence the choice. Self-adhesive resin cements simplify the placement of indirect restorations by eliminating the need for separate etchants and primers. Precious time can be saved because fewer steps are required. However, as with any cement system, be sure that it's indicated in the specific case and always use it according to the manufacturer instructions to ensure optimal performance and longevity.

Fig 1: Situation before cementation with the temporary crowns in situ.

[1] Dr. Christian Lampson obtained his dental degree in 2007 at the University of Heidelberg (Germany) and finished his doctorate in 2008. He is working in the Praxisklinik Dr. Dr. Thein und Kollegen in Karlsruhe since 2009. The focus of his activities is on aesthetic dentistry.

Fig 2: After removal of the temporary restorations.

Fig 3: The preparations were cleaned with a pumice slurry.

A long-term temporary restoration from tooth 11 to 22 was made chairside with TEMPSMART DC (GC). To optimize the alveolar bone and soft tissue prior to implant insertion, tooth 21 was orthodontically extruded before extraction. Thereafter, the implant (diameter 4.1 mm, length 14 mm) was placed according to an immediate placement protocol followed by immediate insertion of a laboratory fabricated milled long-term temporary restoration (Shade A3). Teeth 11,12, 22 and 23 were prepared with a circumferential chamfer and rounded edges. The implant impression was taken using the pick-up technique, which was applied for the exact transfer of the implant position after 4 months of healing time.

Thereafter, the placement of the definitive zirconia restorations was planned (Fig.1).

The temporary restorations were removed and the field was isolated with cotton rolls (Fig. 2). The implant crown was placed and the screw channel was closed with universal bond and composite after having covered the screw with Teflon tape. The preparations were cleaned with a pumice slurry (Fig. 3). Thereafter, they were thoroughly rinsed and dried (Fig. 4). After the try-in, the intaglio surfaces of the zirconia crowns were ultrasonically cleaned, dried and sandblasted with Al2O3 to remove all contaminants. To have a good bond strength, it is important that both surfaces – the tooth abutment as well as the intaglio surface of the crown - are clean before cementation. Zirconia has phosphate-based bonding sites which attract the phospholipids in saliva and these should be removed prior to cementation. Simply rinsing off with water won't do the trick. Specific cleaning solutions could also be used.

The self-adhesive resin cement G-CEM ONE (GC;

Fig. 4: After cleaning, the preparations were abundantly rinsed and dried.

Fig 5: Cementation of the crowns on teeth 22 and 23 with G-CEM ONE (GC) self-adhesive resin cement (Shade A2).

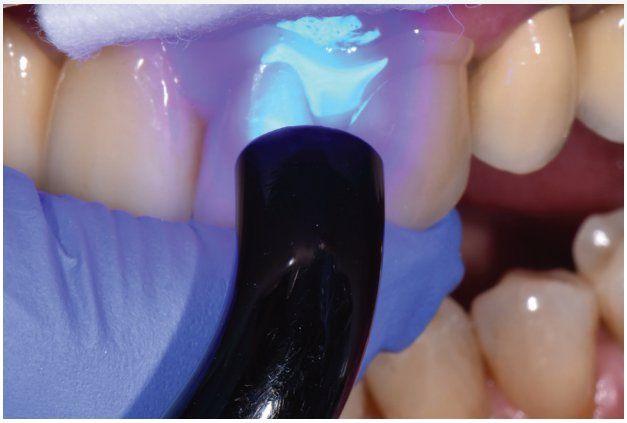

Fig 6: Tack-curing of the cement with the curing light.

Fig 7: Excess was easily removed with a scaler.

Fig 8: Interproximal clean-up with dental floss.

Fig 9: Final result directly after cementation.

Shade A2) was used (Fig. 5) because of its excellent dark-cure properties (as light does not effectively penetrate the zirconia crown, this is very important), good handling and easy excess removal. It was not necessary to use the G-CEM ONE Adhesive Enhancing Primer (AEP) as the restorations were sufficiently retentive. With the tack-curing

10: Intraoral view at follow-up, showing lifelike aesthetics and healthy gingival aspect.

option, the excess cement reaches a rubbery consistency very fast (Fig. 6). This rubbery stage is the best moment to remove the excess: it can be peeled off easily with a scaler (Fig. 7). The contact points were flossed to remove leftover debris and to ensure that all excess is thoroughly removed from the interproximal areas (Fig. 8). Once all debris was removed, the margins were light-cured again to reach complete setting. If needed, the margins can still be polished (Fig. 9). At the follow-up appointment a few months later, the gingiva showed a healthy aspect (Fig. 10).

Thinking of the appropriate steps and appropriate materials before the actual cementation is already half the work. Some steps, such as cleaning the surfaces, require extra attention to ensure good quality and to avoid problems at a later stage. In other steps, time can be saved: by selecting a self-adhesive resin cement and tack-cure before excess removal, your precious time can be efficiently spent. This is not only beneficial in terms of cost, but when the cementation can be done faster, there is also less risk of moisture in the working field.

References

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