

Restoring aesthetics and function with a reliable long-term restoration.

Application of a new semi-permanent material for exceptional clinical results.

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Clinicians often face great challenges dealing with extensive restorative clinical cases. Redefining aesthetics and function in failing dentitions is many times a challenging and time-consuming process. During the temporary restoration phase not only aesthetics and function need to be discussed with the patient and the restorative team, but also establishing endodontic and periodontic stability is of primary interest. During this temporary phase, which at times may last a prolonged period of time, the use of high performance temporary restorative materials can be beneficial. In the case presented below the use of a new supreme quality composite material designed to serve as a long-term quality semi-permanent restorative material will be discussed.

Case Presentation

The 35-year old female patient presents to our office with the wish to restore her upper and lower dentition. Both jaws were restored with fixed bridges many years ago. She experiences pain and discomfort and complains about recurrent infections in her lower jaw. She also feels uncomfortable with her dental aesthetics. Her primary concern is to restore her lower jaw first, then proceed with the upper jaw. An initial panoramic radiograph (Fig. 1) shows extensive restorations in both jaws. Only a few teeth are left in the lower jaw, presenting extensive bone loss, periapical infections and root fractures. All of her lower teeth are unfortunately unsalvageable. Additionally there is also an extensive crestal bone loss present at the posterior segments of her lower jaw. Luckily there is just enough bone present for the placement of four titanium implants in the interforaminal segment. The treatment of choice for restoring her lower jaw is a short arch fixed implant retained composite veneered bridge. This solution restores her health issues, her function and aesthetics in a very favorable way. A few months later the decision is taken to restore also the upper jaw. Her main concern is that the shape and color of her teeth are not pleasing (Fig. 2). Additionally, during the intraoral inspection, it is obvious that the restorative margins are insufficient (Fig. 3); several teeth present cervical carious lesions (Fig. 4). An extensive wear pattern is obvious from the occlusal view. When designing a new restoration for this extensive case several issues need to be taken into account.

Tooth shape, tooth color and establishing optimal restorative margins for maintaining periodontal health are factors of great importance that need to be taken care of. Upon removal of the upper existing restorations extensive loss of enamel and dentin are present, as expected. Several teeth present carious lesions at their cervical region, buccally as well as palatally (Fig. 5). A positive issue is that she is not presenting extensive crestal bone loss around the existing upper teeth; her periodontal tissues are stable. A simple acrylic provisional restoration gives her a limited level of comfort and self-confidence during the initial restorative phase.

Complex cases presenting such an extensive loss of hard tissue and also involving extensive endodontic pretreatment always pose a flexible decision making process. Every single tooth in the upper jaw is affected by extensive lack of hard tissue, coronal and marginal decay, as well as endodontic infection. Also, the gingival margins need to be reestablished involving periodontal surgery to some extent, with or without crestal bone removal. Every single tooth needs to be assessed individually in terms of its prognosis. Usually, it is extremely difficult to predict each tooth survival possibilities in a short-term basis; in these complex cases it is always advisable to run through a long-term temporary phase of several months up to even some years. Respecting this long-term evaluation process the need for a high quality restoration is of paramount importance.

The first restorative step involves endodontic reentry in all endodontically compromised treated teeth. This step is performed with Gates reamers and hand files (Fig. 6). After the root canals are filled with sealant, the build up takes place. For this reason the glass-fiber reinforced tapered LuxaPost posts (Fig. 7) were adhesively cemented with the dual cure composite core build-up and post cementation material LuxaCore Z - Dual (Fig. 8).

LuxaCore Z - Dual presents high strength and thus ensures exceptional stability under the crown. Additionally LuxaCore Z - Dual cuts like natural dentine, thus allowing for a very easy and smooth preparation (Fig. 9). At this point the preparation margins are redefined, in order to ensure that no cervical decay lesions are left untreated in proximity to the margins. The step of soft tissue removal is initially performed under local anaesthesia with electrotomy;



Fig. 1: Initial panoramic radiograph.



Fig. 2: Lack of harmony during smiling.



Fig. 3: Insufficient margins.



Fig. 4: Extensive destruction of hard tissue.



Fig. 5: Multiple extensive carious lesions.



Fig. 6: Endodontic reentry.



Fig. 7: Try-in of LuxaPost posts.



Fig. 8: Post cementation and core build-up with LuxaCore Z - Dual.



Fig. 9: Tooth preparation.



Fig. 10: Semi-permanent restoration with LuxaCrown.



Fig. 11: Preparation for the adhesive cementation.



Fig. 12: Optimal marginal fit.



Fig. 13: Pleasing final outcome – oral harmony reestablished.

no osseous resection was performed yet. After all preparations are completed and gingival retraction cord is placed, a precise VPS Honigum full arch impression is taken. Additionally, a sectioned rigid bite registration is taken with O-Bite. Finally, the existing provisional bridge is relined with Luxatemp. In the lab a precise stone master cast is manufactured. All teeth are sectioned and the margins are trimmed. The long term restoration has to follow these margins for the time needed until the treatment plan is finalized; several months will pass until individual tooth risk has been assessed and soft tissue has settled and matured around the new margins. For the semi-permanent restoration a composite with optimal handling properties was chosen, LuxaCrown. LuxaCrown presents optimal mechanical properties, but also an exceptional aesthetic outcome (Fig.10). The restoration has no metal reinforcement, as there are no long spans between abutment

teeth. At the time of final cementation OptraGate is placed and all abutment teeth are cleaned properly (Fig. 11). An adhesive cementation with dentin pretreatment and dual cure composite cement PermaCem 2.0 will be performed. After, adhesive cementation composite cement residues are removed carefully. The final aesthetic and functional clinical outcome is exceptional (Fig. 12). The lip support is optimal, the overall aesthetic appearance is very pleasing (Fig. 13).

Summary

In extensive and challenging clinical cases where a trustworthy and effective long-term solution is needed, a new generation of semi-permanent material should be given priority. It displays exceptional mechanical properties, ease of handling and optimal aesthetic results.

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