

Rebuilding & Rejuvenating to achieve Biomechanics & Esthetics with edelweiss concept A Paradigm Shift

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Restoration of an endodontically treated tooth always presents a challenge to the clinician. The tooth to be restored has lost out on majority of tooth structure as a part of the endodontic treatment. Depending on the degree of shaping with greater taper instruments, that tooth has lost a significant amount of dentin due to the endodontic access. When assessing an endodontically treated tooth for restorative treatment, the amount of remaining tooth structure is the most important variable apart from the periodontal status of the tooth, and the prognosis of the endodontic treatment itself. The tooth to be restored should exhibit a three dimensional seal and also exhibit no sensitivity to percussion or palpation, no exudate or fistula, no apical sensitivity and absence of active inflammation.

The decision to use a post when restoring an endodontically treated tooth should be based on amount of remaining tooth structure after the removal of all caries and old restorations. If the coronal tooth structure is primarily intact, and the tooth has favorable occlusion, a bonded composite restoration without a post is indicated. When significant amount of tooth structure is missing due to caries and/or fracture or the presence of an existing old restoration, there may be a need to use a post to provide retention for the the coronal restoration.

While metal posts (custom cast and prefabricated) have been the standard for many years, nonmetallic posts have been introduced to address the need for a more esthetic restoration in the anterior region. In the last several years there have been significant advances in the development of bonded fiber-reinforced esthetic posts to reinforce weakened endodontically treated teeth. These fiber posts are improvements on other types of esthetic posts used over the recent past. The presence of a metal post can cause gray shadowing of the soft tissues adjacent to the root surface, which will adversely affect the esthetic results required of bonded resin and ceramic restorations in the anterior region.

Fiber-reinforced resin posts are not as rigid as metal or ceramic posts. Some of the focus on fiber-reinforced posts has been on their ability to flex like the tooth. When a fiber-reinforced resin post is bonded within the root canal it dissipates functional and parafunctional forces, along the long axis reducing the stress on the root. When catastrophic force is placed on the crown of the tooth, the post or crown will fracture instead of the post transmitting the energy of force down the root, creating a vertical root fracture.

Although wide variety of post-core restoration technologies and materials has been introduced into the dental market, there is no consensus on the most appropriate treatment choice for post and core systems. Prefabricated posts have good biomechanical and physical properties; however they cannot be customized for the optimal adaptation to the prepared post space. On the other hand; using composite resins for core material may have a higher failure rate because of the weak bonding between the prefabricated post and composite core.

To overcome all these issues when restoring a badly broken crown endodontically treated tooth, edelweiss Dentistry Wolfurt, Austria presents a unique single piece high strength customizable composite POST&CORE system.

The edelweiss POST&CORE system is a simple and a quick solution for all your post-endodontic needs. It is a novel one piece composite POST&CORE which can be customized as per the needs of the tooth with a true monoblock effect. It is an Ideal choice for rebuilding and strengthening broken down teeth.

It offers several advantages over other post systems available in the market:

- prefabricated POST&CORE
- translucent post and opaque core for adequate apical polymerisation
- time and cost efficient
- one session treatment
- reduced treatment time
- novel monoblock single piece
- monoblock avoids wedging effect
- biocompatible
- flexural strength 20 GPa close to dentin (15 - 20 GPa)
- unmatched radiographic visibility
- cuts like dentin
- rough surface from buildup for better retention of the clinical crown
- easy to customize at the chairside

The edelweiss POST&CORE is easy to work with. Preparation of the canal, surface preparation of the post, adaptation of the post to the root canal, adhesive bonding of the edelweiss POST&CORE complex and cementation involves a minimal number of steps to achieve the greatest clinical success. The post selected to restore the tooth can be customized to match the diameter of the root canal.

Case Presentation

A 35-year-old female patient reported with a chief complaint of moderate discoloration of her upper front teeth. The patient also feared that she might loose all her upper front teeth in due course of time. The patient wanted to improve her smile and desired for a functional and esthetic makeover. The patient was extremely disappointed with her earlier dental experiences, and she insisted to rehabilitate her maxillary arch in a quick time. The edelweiss POST&CORE along with the edelweiss VENEERS and OCCLUSIONVDs gave us this opportunity to meet patient expectations to provide her a better quality of life in the future.

A thorough clinical examination and OPG revealed leaking old composite restorations in her maxillary anterior teeth with reasonable endodontic treatment (Figure 1a,1b). The treatment planned was to rehabilitate her badly borken down weakened tooth with edelweiss POST&CORE, followed by providing her esthetics using edelweiss VENEERS and function using edelweiss OCCLUSIONVDs. Because of the prefabricated nature of all these components along with the ease of use, we decided to offer this to the patient in one visit only. This was facilitated by the diagnostic wax up which was fabricated in the initial appointment.

After establishing anesthesia, all old composite restorations and secondary caries was removed using a diamond from upper right maxillary second molar to left first molar (Figure 2).The remaining amount of sound tooth substance was then evaluated to plan for post and core or only core resto-

rations. Except for both the maxillary canines and tooth number 16 and 17, all were badly broken down requiring edelweiss POST&CORE foundation restorations. The tooth number 11,12 and 21 had old prefabricated passive metal posts (Figure 2) responsible for discoloration of teeth due to corrosion. These metal posts were retrieved using a finishing diamond, Ultrasonic tips and Steiglitz forceps (Figure 3). The post space was then smoothed and modified using edelweiss POST&CORE- drill (Figure 4). A check IOPA X-ray was taken to verify the apical seal and the post space (Figure 5). A corresponding edelweiss POST&CORE (Upper small, Figure 6) was placed in the prepared canal space to verify the fit.

The adhesive protocol for edelweiss POST&CORE bonding was strictly followed. The canal space & the remaining coronal dentin were etched for 20 seconds using 35% phosphoric acid. The canal must be thoroughly washed, dried with air aspiration and endodontic paper points before the adhesive technique and cementation (Figure 7). Two coats of universal adhesive is applied using post brush into the canal space and remaining coronal dentin, followed by curing for 20 seconds using the Valo polymerisation lamp. At the same time the edelweiss POST&CORE surface is treated using edelweiss DIRECT VENEER BOND for 20 seconds and light-cured (Figure 8). The POST&CORE was cemented using a total-etch adhesive technique with a dual-cure composite resin cement (Figure 9). The upper four incisors after rehabilitating with edelweiss POST&CORE restoration (Figure 10). Similarly, tooth number 14, 15, 24, 25 and 26 were restored using edelweiss POST&CORE (Figure11). Post treatment IOPA X-rays were taken

to confirm the fit and radioopacity of edelweiss POST&CORE (Figure12). With the help of a silicone index fabricated using the diagnostic wax up, the lingual plane of all maxillary anteriors were established (Figure 13). After establishing the lingual plane, edelweiss VENEERSs are placed individually from canine to canine (Figure 14). Now with the use of posterior transparent silicone index is used as a positioning device to place edelweiss OCCLUSIONVDs (Figure 15). This technique will guide to place the OCCLUSIONVDs precisely and together in both the posterior quadrants. Once it is placed, it is tack cured (Figure 16) individually to stabilize its position, followed by removal of the silicone stent. Then each individual OCCLUSIONVD is contoured using composite resin followed by finishing and polishing (Figure 17). The final outcome results in a bioesthetic and a functional restoration (Figure 18) which the patient desired.

Conclusion

The edelweiss POST&CORE have a definite place in a restorative dentist's armamentarium. To achieve good clinical success, the clinician must choose the clinical circumstances where a edelweiss POST&CORE is indicated, choose compatible materials and techniques for cementation, and be assured that the crown preparation for the tooth has an adequate ferrule. By understanding the concepts for clinical success with edelweiss POST&CORE, followed by edelweiss VENEERS and edelweiss OCCLUSIONVDs as described in this article, the clinician can provide their patients with an esthetic, long-lasting, predictable and successful restorations.



Figure 1a

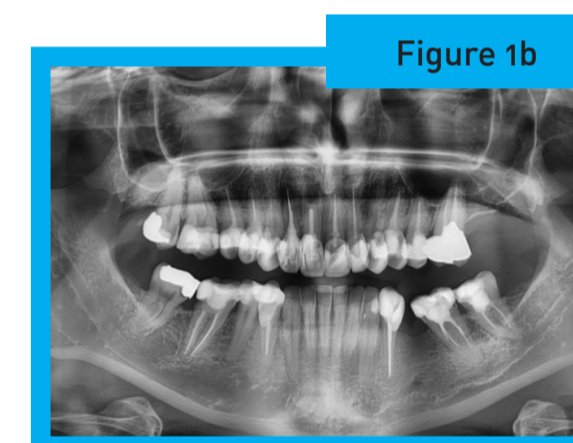


Figure 1b

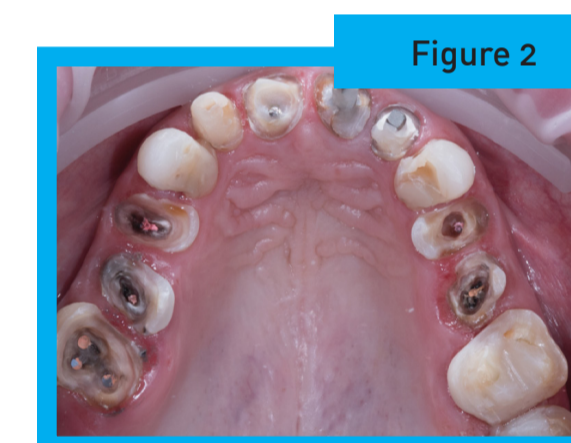


Figure 2

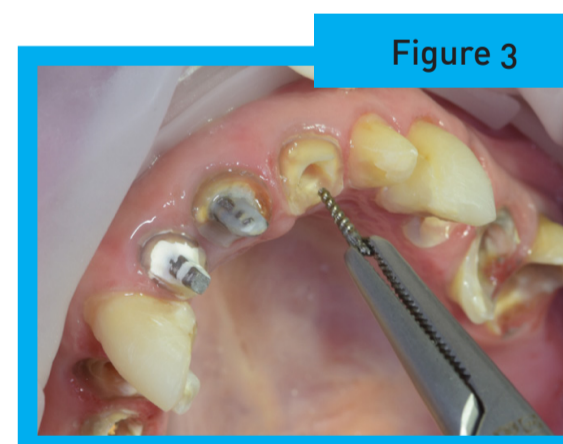


Figure 3

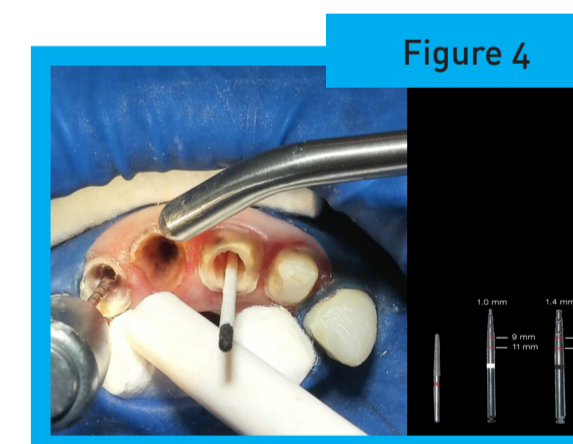


Figure 4

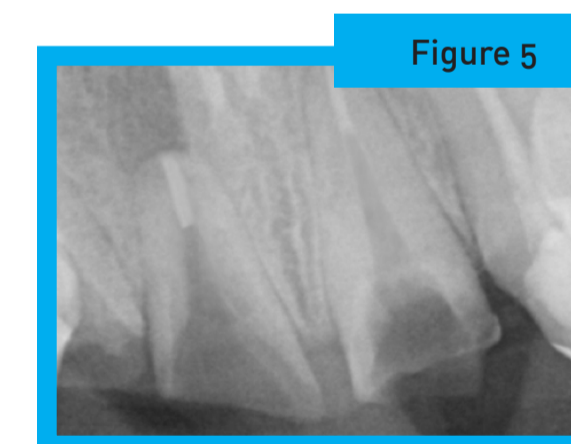


Figure 5



Figure 6

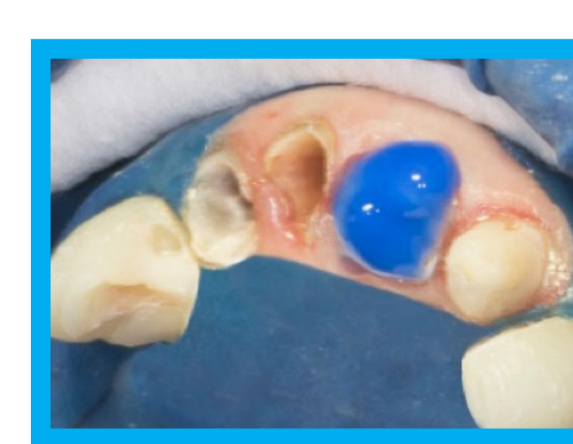


Figure 7

