Anatomic Post - Clinical Case Report

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Introduction

Endodontically treated teeth with significant coronal destruction have been a very common clinical procedure in the restorative clinical practice. Thus, when we are faced with this clinical situation, there will be an eminent need for use of intraradicular retainers to obtain greater stability and retention of the restoration to the remaining teeth (Torabi, 2009; Muncum, 2010).

The restorative technique known as an anatomical post is proposed for the rehabilitation of anterior teeth with extensively compromised root canal and with significant removal of dentin tissue (Clavijo, 2007).

In this restorative method, in addition to the fiberglass post, a compound resin is used to model the radicular conduit with the objective of reducing the space that would be filled by the resin cement. In this way, the combination of two restorative materials (compound resin and post) will serve and behave biomechanically as a replacement for the dentin structure lost (Martins, 2011).

The anatomical posts have an extremely favorable prognosis in cases of fragile roots due to loss of dentin structure and they contribute significantly to the rehabilitation of the tooth both in the aspect of the masticatory function and in aesthetics (Goyatá et al., 2009). In addition, the fiberglass posts have a more uniform distribution of tension in the occlusal and radicular region when compared with metal posts (Hattori, 2010).

Conditioning and silanization of the posts is of the utmost important for promoting an interfacial adherence, especially in the region for preparation of the core (Khanverdi, 2011; Sumitha, 2011).

This study aims to report a clinical case, demonstrating the technique of preparation of the anatomical post, using compound resin and fiberglass posts, on an upper central incisor with weakened root, with the objective of re-establishing the coronal portion of the tooth.

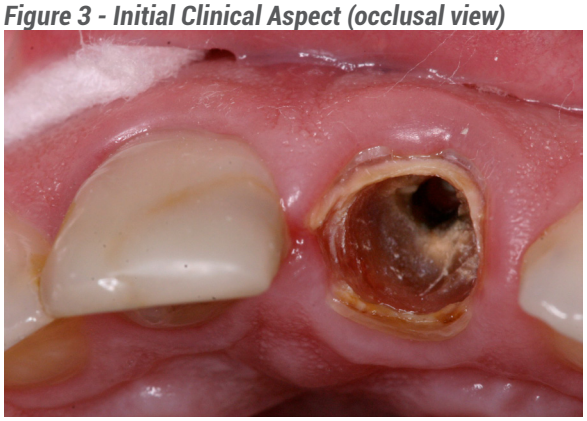
Clinical Case Report

A young male patient came into the Integrated Dentistry Clinic of Severino Sombra University needing restorative treatment on tooth 21. In the clinical and radiographic exam, significant coronal destruction and satisfactory endodontic treatment was noted (Figures 1, 2, and 3).

Figure 1 - Initial Clinical Aspect

Figure 2- Initial Clinical Aspect

Figure 3 - Initial Clinical Aspect (occlusal view)



Preparation of an anatomical post was proposed to the patient, in order to recover the function and aesthetics of the tooth and provide for future rehabilitation of the tooth with a full ceramic crown.

Initially, the decayed tissue was removed from the remaining tooth and the fiberglass post was selected (Exacto # 3, Angelus, Brazil) and accessory posts were also selected (Reforpin, Angelus, Brazil) (Figures 4).

Figure 4 - Fiberglass Pin #3 (Exacto) accessory pin (Reforpin) – Angelus, Brazil

The radicular conduit was isolated with mineral oil and the compound resin was inserted (Fill Magic NT Premiun, Coltene-Vigodent, Brazil) over the remaining tooth with the aid of a suprafill spatula #1/2 (Figures 5 and 6). After the filling of the conduit with resin, the Exacto post and the pre-silanized accessory post (Silane, Angelus, Brazil) were inserted with the application of the adhesive (Fusion Duralink, Angelus, Brazil) (Figures 7, 8, and 9). Next, the initial photoactivation was done on the post-resin for 20 seconds.

Figure 5 - Fill Magic NT Premium Resin, Coltenbe – Vigodent, Brazil

Figure 6 - Insertion of the resin in the dental remnant

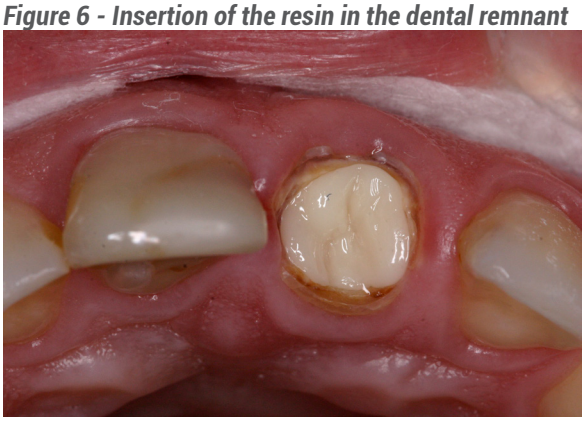


Figure 7 - Insertion of the Exacto pin in the resin

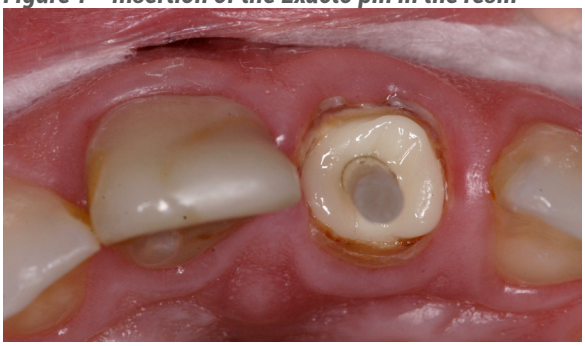


Figure 8 - Insertion of the accessory pins in the resin

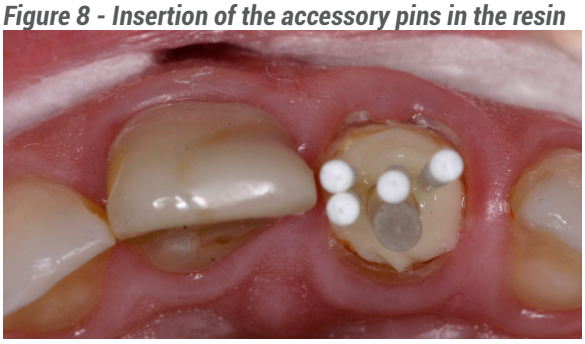


Figure 9 - Application of Silane (Angelus, Brazil) and adhesive (Fusion duralink - Angelus, Brazil) on the pin

Finally, the coronal reconstruction was done with the compound resin previously used in incremental portions and photoactivation was done (Figures 10 and 11).

A marking was made on the most incisal portion of the posts to guide the subsequent cropping of the posts (Figure 12). Then, the anatomic post was removed and the final photoactivation was done for 40 seconds (Figure 13). Soon after, the adaptation of the post to the remaining coronal (Figure 14).

Figure 10 - Reconstruction of the coronal portion with the same composite resin used in the conduit

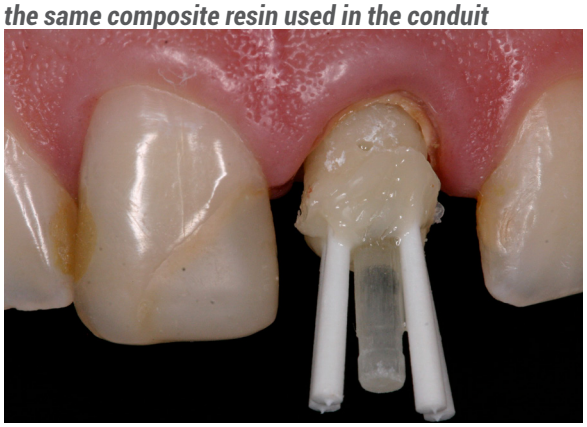


Figure 11 - Photopolymerization

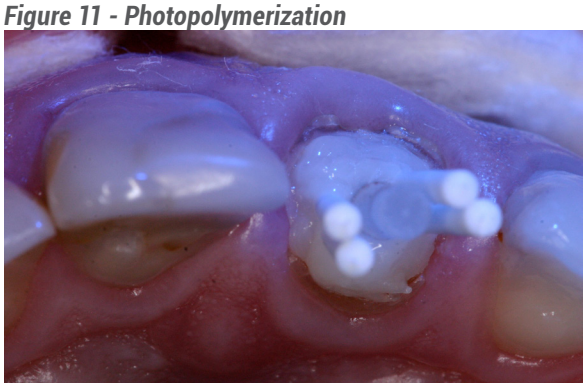


Figure 12 - Marking of the pins for subsequent cutting

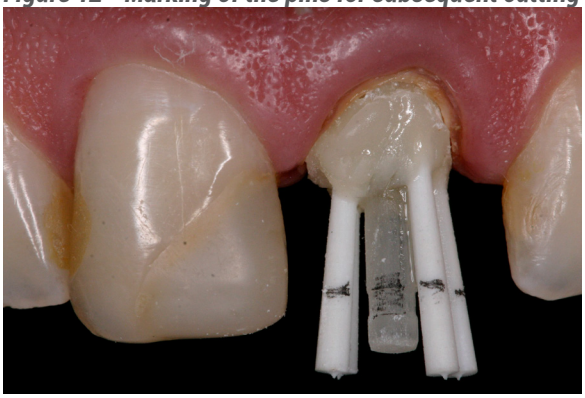


Figure 13 - Removal of the pin and final photoactivation

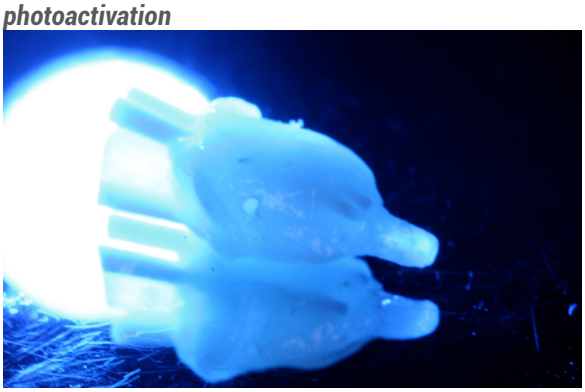
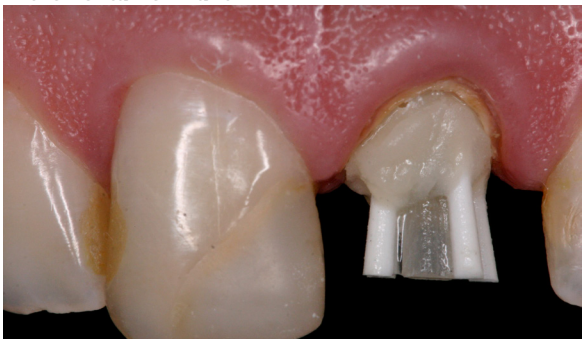


Figure 14 - Verification of the fit of the anatomic pin in the dental remnant



After the preparation phase of the anatomical post and coronal portion of the core with compound resin, preparation begins on it for adhesive cementation to the remaining tooth (Figure 15).

Acid conditioning was done on the post for 30 seconds, and then it was washed and dried. Then, the silane was applied (Silane, Angelus, Brazil) for 20 seconds, and the adhesive (Fusion Duralink, Angelus, Brazil) with subsequent photoactivation for 20 seconds (Figures 16, 17, and 18).

After the anatomical post was prepared, acid conditioning was done on the remaining tooth for 20 seconds, washing and drying it lightly to leave the dentin moist (Figure 19). The the dentin primer and the adhesive (Duralink Fusion System, Angelus, Brazil) were applied and the it was photoactivated for 20 seconds (Figure 20).

Figure 15 - Final aspect of the pin after photopolymerization

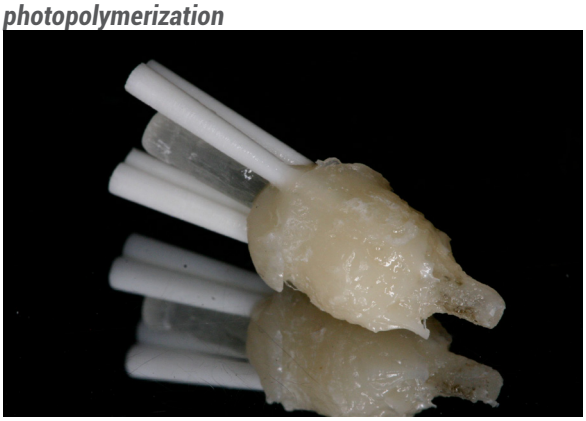


Figure 16 - Acid conditioning of the anatomic pin for 30 seconds

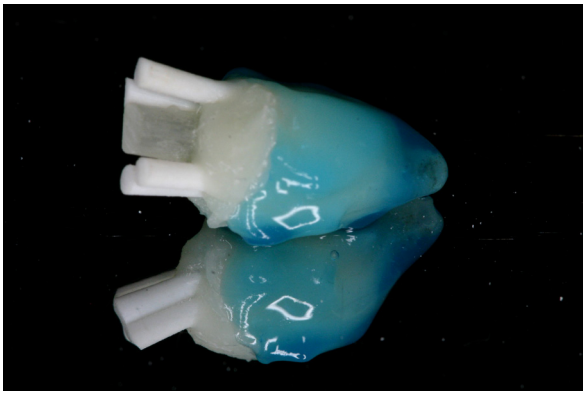


Figure 17 - Application of silane on the pin for 20 seconds

Figure 18 - Application of adhesive on the pin

Figure 19 - Acid conditioning on the dental remnant for 20 seconds

Figure 20 -Apply primer and adhesive to the remaining tooth (system Fusion Duralink - Angelus, brasil)

The cementation was done with auto-polymerizable resin cement, waiting a period of five minutes for the cement to chemically set (Figures 21 and 22).

Once the cementation of the anatomical post was finished, the adhesive was applied to the coronal portion and photoactivated for 20 seconds, and the compound resin was inserted in incremental portions for creation of the core (Figures 23 and 24).

To complete the restorative proposal, the prosthetic preparation of the core was done for future implementation of a full ceramic crown (Figure 25).

Figure 21 - Cementation of the pin with auto-polymerizable resin cement

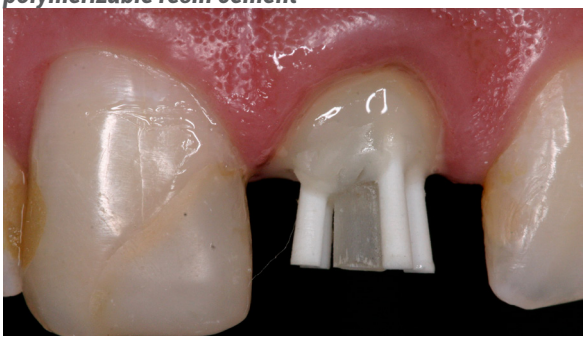


Figure 22 - Clinical aspect after cementation (time of 5 min.)

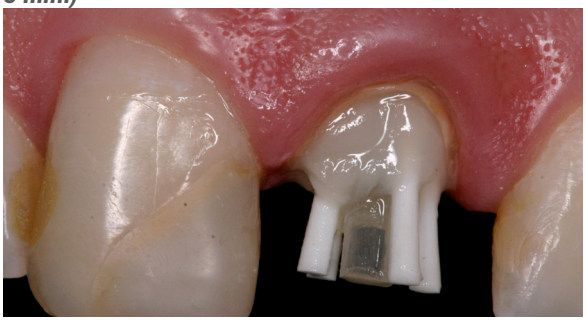


Figure 23 - Application of the adhesive on the coronal portion

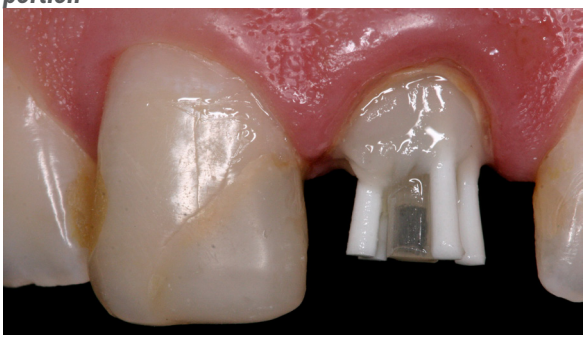
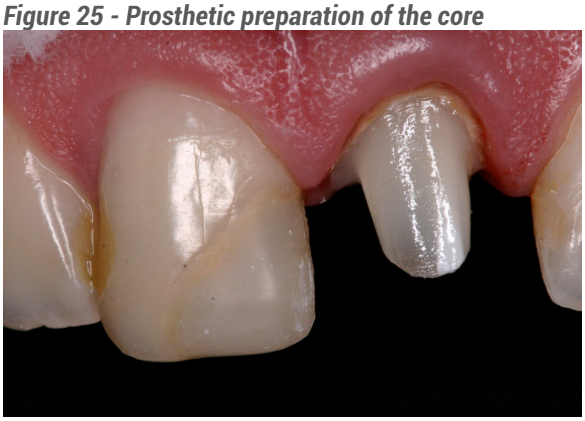


Figure 24 - Insertion of composite resin in incremental portions to create the core

Figure 25 - Prosthetic preparation of the core



Final Considerations

The anatomical post constituted a clinical alternative for coronal and radicular reconstruction on endodontically treated teeth with significant destruction of dentin tissue.

In addition to rehabilitating the tooth, this clinical proposal promotes a more balanced distribution of tensions from mastication without compromising the remaining tooth, minimizing the risks of radicular fracture.

One of the most important factors that this restorative alternative provides is the possibility for an aesthetic result with the use of a metal-free full crown.

References

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