A fractured front tooth at gum level triggers significant changes in human physiognomy. If, in addition to this, a chronic apical lesion occurs, the aesthetic treatment is frequently postponed. One-appointment endodontic therapy in difficult cases is not always possible. Sometimes, for various reasons, including financial constraints, the patient refuses this solution. There are also situations where we are not allowed to apply this treatment, because of the health problems of some patients: e.g., a heart attack or a stroke suffered in the past months. [1] Temporization of extraction or performing an endodontic treatment means maintaining access to the root canal system.

Isolation of the pulp chamber can be a challenging task when the minimal coronal structure remains. A coronal bonded buildup will decrease the leakage risk during and after endodontic treatment. [2]

The aesthetic restoration during this period causes serious problems. A hollow post would be necessary to allow access to further root canal treatment, but such a device is not always available because of the narrow application area. [3]

This article describes the way in which we managed to temporarily restore the aesthetic aspect of some patients with fractured superior incisors and chronic apical lesions, making use of a hollow post made in the dental office.

MATERIALS AND METHOD

Recently, we have had two patients with chronic apical lesions of the upper lateral incisors with clinical and radiological diagnosis. One of them had a fractured tooth at the level of the gum, while the other presented a tooth fracture caused during removal of old fillings and cleaning of affected dentin.

Both patients asked for temporarily aesthetic reconstruction. Because of the lack of prefabricated hollow posts, we needed a perforated root device which had to be realized on the spot, to allow access to the root canal for further treatment. This had to meet several criteria: to be sufficiently resistant to bending, to resist corrosion, to have an internal diameter large enough to allow passing of large size needles for root canal treatment, and to have an external diameter comparable to the one of the burrs for root canal preparation. All these criteria are met by the large hypodermic needles.

For the preparation of root canals, we generally use the calibrated burrs kit Glassix posts of Nordin S.A. Switzerland. We chose the burr with the largest diameter (1.6 mm). Using this dimension as a reference, we needed a needle size (G16) to match the external dimensions of the burr. Such needles, frequently used for blood collection, are rare in a dental office. Searching however in the emergency kit, we found such
a needle, attached to a perfusion tube. We measured the external diameter with a micrometer, recording a value of 1.64 mm, the necessary length of the needle (at least 10 mm without bevelling) and the wall thickness of the needle < 0.2 mm.

Having the necessary materials, we started the tooth restoration work:

- we isolated the tooth with a rubber dam;
- we removed the debris from the root canal system, prepared the root canal with burr no 4 (1.6 mm) along approx. 5 mm; the length of 5 mm was chosen to ensure a minimum stability of the pin and easy access to it, if one wants to remove it from the root;
- the apical part of the preparation must be in sound dentin;
- after washing the canal, we blocked the root canal beyond the prepared area for the root device with a cotton pellet;
- we prepared the needle for root cementation: we cut the bevel and closed the needle lumen with a mandrel made from another needle, to prevent the ingress of the cementing material into the needle lumen used as a post. To this end, Castellucci used a gutta-percha cone which exceeds the top of the hollow post [3]. (Figure 1.a)
- we used zinc phosphate cement for post cementing, the cementing material being carefully applied only on the outer wall of the post and not on its tip; [3] (Figure 1.b) probing before cementation
- before hardening, while the cementing material was still partially soft, we removed the sealing mandrel from inside the needle, the cotton pellet and any scrap of cementing material, assuring the permeability of the root canal; we had to take care not to move the post from its position;
- we shortened the device cemented into the canal to the length required to support the aesthetic reconstruction, and filled the opening hole with a cotton pellet;
- the coronary superstructure can be restored in several ways: preformed polycarbonate crowns, lab-processed acrylic crowns, silicone key reconstruction technique, preformed matrices or direct reconstruction technique with composite materials. (Figure 1.c), 1.d) final aspects)

![Figure 1. Images of the most important steps: a) temporary hollow post with inner mandrel mounted; b) probing the post; c) final aspect: in the mirror it can be seen the opening of the hollow post; d) probing the access to the root canal with a 60 (blue) endodontic needle](image)

**DISCUSSION**

Nowadays, patients are highly concerned about their aesthetic appearance, especially if the dental lesion is situated in an area like that of the upper lateral incisors.

If aesthetic problems occurred due to the fracture of a tooth with chronic apical lesions, an endodontic treatment is first required. In case of a subgingival fracture, a buildup is required, to allow application of the rubber dam isolation. [1]
Coronal leakage is a major contributor to endodontic failure. A bonded core placed prior to the endodontic treatment can greatly diminish the leakage potential both during and after endodontic therapy. [2]

In order to maintain access to the root canal, internal matrices have been used in the form of silicone or plastic tubes, which allow insertion of the root canal needle during reconstruction. Projection of the root canals was applied in the same manner. [2, 4, 5]

The technique that we suggest relies on the controlled use of common materials which can replace costly prefabricated products for a short time, and provide sufficient mechanical strength to temporary aesthetic prosthetics.

CONCLUSIONS

The described technique allows a fast aesthetic restoration of fractured front teeth, while maintaining access to the root canal.

References