

Provisional Aesthetic Crowns on a Dowel/Post

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Summary

Provisional crowns are used as a means of protection for a tooth or teeth on which permanent prosthetic therapy is performed. Their function is multiple: biological, aesthetic and mechanical.

The paper presents the case of a female patient with insufficiently filled root canal of the upper middle incisor, and an incorrectly placed and erroneously indicated prefabricated dowel. After extraction of the dowel, three methods are presented for construction of an aesthetic crown on a dowel, serving as a provisional crown during endodontic and permanent prosthetic therapy.

The presented methods for construction of provisional work with intraradicular anchorage represent possible guidelines for an aesthetic approach to combined endodontic and prosthetic therapy of frontal teeth.

Key words: *provisional work, crown on a dowel, frontal teeth.*

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Introduction

Provisional crowns are used as a means of protecting a tooth or teeth during permanent prosthetic therapy. According to the method of construction they can be divided into direct and indirect. The importance of the application of a provisional crown, as a protective means for the abutment tooth of a partially or completely damaged clinical crown, is multiple: biological, aesthetic and mechanical (1-4).

Biological protection relates to the protection of the tooth and surrounding periodontium and ensures conditions for prevention of growth and inclination into the free space of the adjacent teeth (5-7). Aesthetically it conceals the poor appearance of a non-

vital stump? by imitating the fundamental properties of the natural teeth (colour, shape, size and position) (8). Mechanically, it is based on the principles of the best possible resistance to masticatory forces (9, 10).

The paper presents three methods for the construction of provisional aesthetic crowns on a dowel, which is less frequently applied in everyday clinical practice.

Case presentation

A female patient, aged 35 years, employed as a primary school teacher, was referred to the Department of Prosthodontics by her national health dentist for prosthetic therapy of the upper middle incisor.

A clinical examination disclosed a large filling involving 4/5 of the clinical crown, indicating a non-vital tooth. Non-vitality was confirmed by vitalometry and analysis of an intraoral radiograph showed an insufficiently filled root canal with an incorrectly placed prefabricated dowel (Figure 1). Extraction of the incorrectly placed dowel was indicated and revision of the root canal filling, after which construction of an individual restoration and permanent aesthetic crown were planned. The patient agreed to the procedure on the condition that she received a provisional prosthetic substitute.

Three methods of direct or indirect construction of provisional aesthetic crowns on a dowel will be presented, on a non-vital frontal tooth, without a preserved clinical crown.

Presentation of the first method for construction of a provisional crown

After impression with the rubber material in the prefabricated tray prior to grinding the tooth, the prefabricated dowel is extracted from the root canal. This operation must be carried out very precisely in order not to fracture the root in the gingival or middle third. By grinding the composite material in layers and releasing the dowel from the filling the extraradicular part is exposed (Figure 2). After which part of the composite is removed with a fine pointed bur at the entrance into the root canal. The intraradicular prefabricated dowel is extracted with flat forceps and luxational movements. A wooden dowel is adapted in the temporarily widened and isolated root canal (Figure 3). Acrylic in cartridges is pressed into the rubber impression in the prefabricated tray by means of a pistol with a cannula, and placed over the working part of the jaw with the wooden intraradicular dowel (Figure 4). After hardening of the material in the mouth the crown is finished, polished and fixed onto the tooth with temporary cement (Figure 5).

Presentation of the second method for construction of a provisional crown

The clinical procedure commences with reconstruction of the clinical crown in cases when the

therapist has forgotten to take an impression prior to grinding of the tooth or when the patient arrives in the dental surgery with a non-vital tooth, without a clinical crown. This can be achieved by adapting a ready-made pattern of the frontal upper tooth in styrofoam for example. The pattern is secured to the adjacent teeth by means of liquid composite and pressed to the working part of the jaw by rubber material (Figure 6). The further clinical procedure is the same as for the first method.

Presentation of the third method for construction of a provisional crown

In cases where there is no pattern or artificial teeth available which can serve as a faithful reproduction of the appearance of the clinical crown of the tooth, composite materials can be obtained on the market which are packed in the form of round sticks, 1 centimetre in diameter (Figure 7). A piece the size of the missing tooth crown is taken, placed in the dental arch where the clinical crown is missing and modelled with a Heideman instrument, directly in the mouth. Hardening is achieved by means of a halogen lamp, and the existing shape pressed by rubber material. The procedure continues as for the first method, with the advantage that this material can be pressed into the impression and thereby shape the final appearance of the extraradicular part of the provisional aesthetic crown on the dowel (Figure 8).

Discussion

In daily clinical practice one frequently come across patients with poorly treated endodontic tooth, predetermined for a fixed prosthetic replacement. The dental surgeon who performs prosthetic therapy on the untreated endodontium of a patient is responsible for the existing condition of the endodontium. In all cases where the root canal filling is not up to the apex revision is necessary, prior to the construction of restorations, particularly in cases with a periapical process. Relative contraindication for the construction of a restoration is cases where there is no periapical process, but where the root canal is not filled to the end. This is often the case in patients

with obliterated canals and/or older patients, where the root canal cannot be completely instrumented. The construction of a restoration on a non-vital tooth permanently determines the fate of the tooth and stabilises the existing condition. Thus for example in many cases, as in this patient, it is impossible to extract incorrectly placed restorations on endodontically poorly treated teeth. In such cases the dental surgeon can only extract the tooth, which eliminates the iatrogenic error and extension of the therapeutic procedure.

The methods presented for construction of provisional restorations with intraradicular anchorage represent possible guidelines for an aesthetic approach to combined endodontic and prosthetic therapy of the patient with poorly constructed and

wrongly indicated type of restoration on untreated endodontium.

Conclusion

Patients with non-vital teeth are frequently liable to fracture of the whole clinical crown, particularly of the frontal teeth, which, depending on the size of the remaining part of the clinical crown, can occur while biting a piece of solid food. Because of the aesthetic, psychological and social aspect for the patient, the construction of a provisional aesthetic crown on a dowel can alleviate the situation until the construction of the permanent prosthetic work, particularly if endodontic therapy is necessary.