

Case Report

The aesthetic treatment for anterior teeth with lost crown by endorestitution

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ABSTRACT

Background: The aesthetic has an important role in social life, especially the anterior teeth. The aesthetic abnormality of anterior teeth i.e. discoloration, malposition or the anterior teeth with crown damage for more than one third or all part of crown is lost due to caries or other causes, will influence its appearance especially during smile. **Purpose:** The aim of this case report, therefore, is to show how teeth with clinical crown lost or only the root left still can be treated by endorestitution treatment in order to reconstruct the shape and function of the teeth similar to the original ones. **Case:** Female 52 years old with the lost crown of anterior teeth. The patient did not want her teeth to be extracted. **Case Management:** The abnormality of these teeth are still able to be reconstructed by endorestitution i.e. endodontic treatment with post and core insertion in the root canal will increase its retention and recovery by the porcelain crown fused to metal to recover the original formation and aesthetic and thus has the normal refunction. The treatment, it improve the confidence of the patient, and also can function normally. The patient did not feel pain. Ronsenography showed the periapical lesion diminished, the neighbor gingival was going better in both function and color. **Conclusion:** Endorestitution treatment on the anterior teeth with lost crown could recover the normal function, dental aesthetic and self confidence.

Key words: endorestitution, aesthetic, anterior teeth

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INTRODUCTION

Aesthetics and beauty can not be separated from social life. Everyone even can enjoy the aesthetics anytime since the aesthetics is part of human life. Many patients, thus, are really concerned with their anterior teeth because of aesthetic reason. Unfortunately, some of them ignore the chewing function, and more concern with the appearance.^{1,2}

The natural and harmonious appearance, furthermore, is one of aesthetic elements that all patients wish. The basic principles of the treatment in dentistry are actually including power, good function, and satisfying aesthetics. However, the good aesthetics without being supported by the good function and optimal power still can make the patients feel difficult in doing their daily chewing activity. On the other hand, though without being supported by good aesthetics, good function and optimal power can make the patients

comfortable in doing their activities, they will still be lack of confidence.^{3,4}

Being able to smile with full of confidence, moreover, is a strong indicator that indicates the person is satisfied with himself. This condition then can improve his social relation and support him to reach any success in business or professional life.³ Specifically, the anterior teeth are important element during laughing. Thus, all abnormalities in the terms of discoloration, malposition, or the anterior teeth with crown damage for more than one third or all part of crown lost due to caries or other causes are the most significant element disturbing the appearance. However, the abnormal teeth still can be treated by endorestitution treatment.^{1,5}

Endorestitution treatment actually consists of endodontic treatment and restoration. The determining process of the restoration after endodontic treatment requires some factors to be considered i.e: the degree of tooth damage; the quality

of dental supporting tissue; the present of antagonist tooth or not; and the capacity of chewing power.^{5,6} The success of a restoration, moreover, was determined by retention, stability, and aesthetics of the teeth. Thus, the improving process of the appearance, especially in the term of aesthetics, is getting more important in dentistry in this modern era.⁷

The aim of this case report, therefore, is to show how teeth with clinical crown lost or only the root left still can be treated by endorestoration treatment in order to reconstruct the shape and function of the teeth similar to the original ones.

The following report is about a case of anterior teeth with crown damage for more than one third or all part of crown lost due to caries after being treated with aesthetic treatment by endorestoration.

CASE 1

The patient is a fifty two year old woman. The clinical crown of her anterior teeth was lost, or only the root of the teeth was left due to carries. Nevertheless, the patient did not want to have an extraction for her teeth. The patient wanted a treatment for her anterior teeth so that she could get the normal shape and the dental aesthetics similar to her original ones.

During the intra oral examination on the teeth number 12, 11, 21, 22 and 23 (Figure 1), moreover, it was found that the clinical crown was lost or the root left was strongly inside socket and alveolar bone. Thus, for conducting diagnosis and treatment plan, panoramic and local radiographic photos must be taken first. The photo result showed radiolucency around periapical area on teeth number 12, 11, 21, 22 and 23. The condition of her teeth was also non vital with a clinical diagnosis of necrotic pulp followed by periapical lesion.



Figure 1. The condition of the teeth number 12, 11, 21, 22 and 23 before treatment.

This endorestoration treatment plan, moreover, consisted of intracanal endodontic treatment with restoration like porcelain jacket crown fused to metal. This treatment also needed retention like pin dowel and core.

CASE MANAGEMENT

Intracanal endodontic treatment was carried out on the teeth number 12, 11, 21, 22, and 23 with some visitation treatment. After that, the root canal of the teeth treated by endodontic treatment was duplicated with elastomers in order to make retention like pin dowel and core as well as to make restoration like a temporary jacket crown appropriate with the normal position in good dental curvature. The aim of the making of the temporary jacket crown was to protect posts and core inserted during the treatment and to describe the normal position of the anterior teeth appropriate with the good dental curvature with normal overbite and overjet.

The insertion of pin dowel and core was carried out one by one into the root canal of the teeth number 12, 11, 21, 22, and 23 (Figure 2). Afterwards, with phosphate zinc cements the preparation of pin dowel and core inserted was carried out to obtain appropriate position and parallel construction so that the setting of the porcelain jacket crown fused to metal could be done easily and created good dental curvature.



Figure 2. Insertion of posts and core into the teeth number 12, 11, 21, 22, and 23.

The next stage, the duplicating of the teeth number 12, 11, 21, 22, and 23 was carried out with double impression materials. The biting mold was also made in order to make the position of the teeth similar to the original position. The teeth were then set with the temporary jacket crown which was not only appropriate with the shape but also harmonious with the aesthetics. Afterwards, the duplicating result of upper and lower jaw models was sent to dental laboratories in order to make the porcelain jacket crown fused to metal.

The final stage of the treatment, the porcelain jacket crown fused to metal was set on the teeth number 12, 11, 21, 22 and 23. Since the condition of the initial fit was good, the shape and the color were normal, and there was no premature contact, the permanent insertion was carried out with glass ionomer cement, luting type (Figure 3). The patient was then asked to do 1 week, 3 months, 7 months, and 1 year visit treatment.



Figure 3. The condition of the teeth number 12, 11, 21, 22 and 23 after treatment.

CASE 2

The patient is thirty two year old woman. Her number 33 tooth crown was lost due to carries (Figure 1). Thus, the patient used to feel ashamed whenever she smiled. However, the patient did not want to have an extraction for her tooth. She wanted her tooth to be treated and kept. She wished that her tooth could have had normal function again similar to her original ones.

During the intra oral examination, it was found that the condition of the root left on 33 tooth was still strong inside socket and alveolar bone. The result of the roentgen photo showed that there was periapical lesion. The condition of the teeth was non vital with a clinical diagnosis of total necrotic pulp.



Figure 1. The condition of the 33rd tooth before treatment.

CASE MANAGEMENT

The tooth number 33 could be treated by intracanal endodontic treatment only with one visit treatment. Then, retention like pin dowel and core could be set. A temporary crown which must be fit with the normal position in the good dental curvature could also be made. This aim of these procedures was to protect the core post inserted during the treatment and to describe the position of the normal anterior teeth appropriate with the good dental curvature

with normal overbite and overjet. The making of pin dowel and core, thus, must be taken place in dental laboratory.

The next stage was insertion of pin dowel and core made of phosphate zinc cement (Figure 2). First, the preparation of post was carried out in order to obtain not only the appropriate position and parallel construction, but also the good and harmonious dental curvature, which then was duplicated with double impression materials. Afterwards, the insertion of temporary crown appropriate with the harmonious and aesthetic dental curvature was carried out. The duplicating result then was sent to dental laboratories in order to make the porcelain jacket crown fused to metal.



Figure 2. Insertion of post and core on the 33 tooth.

The final stage of the treatment was setting porcelain jacket crown fused to metal on the 33 tooth. Since the initial fit was good, the shape and the color were appropriate, and there was no premature contact, permanent insertion then was carried out with glass ionomer cements with luting type, insertion of porcelain jacket crown fused to metal (Figure 3). The patient then only needed some visits, 1 week, 3 months, 7 months, and 1 year visit treatment.



Figure 3. The condition of the 33 tooth after treatment.

DISCUSSION

In these cases, the patients needed an aesthetic treatment of anterior teeth since their anterior teeth have got crown

damage for more than one third or all part of the crown due to caries, which then have made the patient feel ashamed and less confident during their smiling. On teeth number 12, 11, 21, 22, and 23 (Case 1) and number 33 (Case 2), moreover, the tooth vitalities were non vital with a clinic diagnosis, necrotic pulp. Those teeth, however, still could be treated concerning with the condition of root left which was still appropriate in the terms of length, thickness, and depth of their rooting in the socket and alveolar bone. Thus, this condition could probably be treated by endorestitution treatment, which was by intracanal endodontic treatment with supporting pin dowel and core (Case 1) and (Case 2) in order to improve the tooth retention as well as to make restoration of porcelain jacket crown fused to metal. In other words, this condition is the same as Shillingburg's opinion⁶ which said that the condition of teeth with the crown damage or the heavy occlusal pressure has an indicator that the crown is with pin dowel.

Similarly, Tohiroh⁸ and Kamizar,⁹ also said that teeth with short clinic crown condition or without any clinic crown, but still having appropriate roots in the terms of length, thickness, and depth of their rooting in alveolar bone, can be treated well with posts. This treatment, however, is also depend on the condition of the teeth whether the comparison between root and crown follows the requirement, in which the length of posts inserted into root canal at least is the same as the length of the crown.

Therefore, the selection of post and core design as supporting in root canal must be appropriate with the size of the crown left concerning with the height of occlusal pressure (chewing power), diameter of root canal and tooth location as well as the health of periodontal tissue as supporting to post crown.¹⁰ It means that the consideration in selecting kind of post crown can not be separated with how the posts will be designed. The procedures of design selection and root canal preparation, furthermore, must carefully be carried out in order not to cause the weakening of the tooth tissue left and the removing of posts.¹¹

In case 1 (teeth number 12, 11, 21, 22, and 23) and case 2 (tooth number 33), for example, those teeth used pin dowel since the posts have some advantages, like that the posts and the core can not only become unity but can also follow the root canal preparation, so they can be retentive and stable and do not need additional retention like pin.⁸

Then, the setting of pin dowel and core on teeth 12, 11, 21, 22, and 23 (Case 1) was done in the same time but one by one. The aim of this procedure is to get an appropriate construction and size based on both the normal size of each and the curvature of the anterior teeth with normal overbite and overjet so that the good and harmonious aesthetics can be created.

The principle of the tooth treatment after the endodontic treatment, moreover, is to carry out the restoration of root and crown with post crown and core which is retentive and stable so that it can not only easily remove but can also be used for long in the mouth cavity like the original teeth.

However, it must be noticed that teeth which have been treated by the endodontic treatment are relatively more fragile and can easily fracture compared to the healthy teeth since there is an organic and biological changes because of the death of pulp, the reduction of dental internal tissue, and the weakening linkage between enamel and dentin due to the scraping of dentin tissue during the root canal preparation causing the change of the tooth color. For those reasons, comprehensive protection is needed by using supporting pins and core as well as by making restoration of porcelain jacket crown fused to metal in order to prevent the teeth from fracture.^{8,10}

The making of porcelain jacket crown fused to metal, thus, is a good treatment for reconstructing the esthetics, especially the anatomy construction and the color of the teeth which is appropriate with their original color and can function naturally. Similarly, Hume¹² also states that porcelain jacket crown is the best solution to carry out the restoration of the first sensitive tooth with optimal aesthetics. According to Qualthrough and Burke,¹³ moreover, from 956 patients there are only 63% who feel satisfied with their outlooks when one of their anterior teeth using dressing crown, and there are 79% who feel satisfied with their outlooks when four or more of their anterior teeth using porcelain jacket crown.

The final treatment result of Case 1 and 2, however, could be obtained with one week, three month, seven month, and one year visit treatment after the insertion of the porcelain jacket crown fused to metal.

Visit I (1 week after the treatment): The patients did not complain again about feeling painful (either shooting or sharp painful) on their treated teeth; they also got percussion and unpainful pressure; their gingiva color was still normal; they did not get any inflammation around the tissue; their radiographic photo result was good since their abnormal radiolucent image of periapical on the teeth number 12, 11, 21, 22 and 23 (Case 1) and number 33 (Case 2) was rather decreasing; and their recovery process was also good.

Visit II (3 months after insertion and treatment): The condition of porcelain crown jacket was good enough; there was no pain around the tissue; the color of the gingiva around was normal; and based on the roentgen photo the radiolucent image around periapical area was getting smaller either in Case 1 or Case 2.

Visit III (7 months after insertion): The patients did not feel painful, either hooting or sharp painful, or discomfortable around the teeth number 12, 11, 21, 22, and 23 (Case 1) and number 33 (Case 2) which had been set with the porcelain jacket crown fused to metal; the abnormality of periapical lesion on their teeth was getting smaller; the color of the gingival around was normal; and the patients were satisfied with their daily outlook as well as they could laugh without feeling lack of confidence anymore.

Visit IV (one year after treatment): The patients did not feel painful, either hooting or sharp painful, or discomfortable, so they could do their activities again with

full of confidence. The roentgen result even showed that the condition around the teeth was good and the color of them was also normal (either in Case 1 or Case 2).

Therefore, criteria used in determining the success of the endodontic treatment are not only based on radiograph of periapex tissue but based on the clinic condition of the teeth as well. In other words, a treatment can be determined whether it is successful or not based on the conditions that are no complaint from the patient about the treated teeth and the successful effort in treating the abnormality in the periapex tissue after one year treatment.¹⁴

In addition, Ingle¹⁵ reports that the success of the treatment in elderly group is better than that of the treatment in other age groups. The reason may be because one third of the apex area of other age groups has been completely closed since there is secondary cement or ramification of root canal which has been declined.

Based on those explanations above, it can be concluded that the anterior teeth either in upper jaw or lower jaw which hadlost their clinical crown due to caries or fracture does not need to have extraction since they still can probably be treated with endorestoration, intracanal endodontic treatment, by inserting posts inside root canal (intrapulp) and core, in order to make them retentive and stable as well as to make porcelain jacket crown fused to metal. Thus, they finally can reconstruct the shape and function of the teeth as well as the dental aesthetics, so the construction of the teeth can become normal again similar to the original construction of the teeth.

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