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# Proceeding



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# Root canal retreatment challenge of abscess periapical in maxillary central incisors by aesthetic approach

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## **ABSTRACT**

**Background** Endodontic retreatment commonly correlated with the failure in initial endodontic therapy. Many factors causes failures in endodontic therapy, these include incomplete cleaning and shaping root canal and inadequate obturation. If the obturation of the root canal under filled, the root canal system could have become re-infected. **Purpose** of this case report is to present the challenge of a root canal retreatment of maxillary central incisors with periapical abscess.

**Case management** A male, 23 years old patient came with the problem of discomfort feeling associated tooth 11 and 21. Patient felt pain of his tooth and tooth was tenderness to percussion, but palpation and mobility were normal. Patient also reported a history of previous endodontic therapy approximately 1 year ago. The clinical examination showed there was a restoration acrylic crown on tooth 11 and 21. Radiological examination showed the root canal under filled with radiolucency in the periapical area. Root canal retreatment that followed by the post fiber and zirconia crown as the final restoration.

**Conclusion** Root canal re-treatment can be successful through complete re-cleaning and re-shaping the canal. The result of the root canal retreatment is favorable and the patient feels comfortable.

**Key words** : Root canal retreatment, under filling, aesthetic approach

## **INTRODUCTION**

Most of the root canal treatment failures are caused by the diagnose mistake, case selection, and the treatment procedures. 1 These three steps are related each other; the mistake on one step can cause failure. However, this failure can be handled by retreatment, apex surgery, or pull out the tooth.1,2

In some countries including in United States, the periodontal abnormalities such as chronic apical and apical abscess are found on more than 30% teeth which have been experienced the root canal treatment. The abnormality found is mainly caused by the infection on the root canal system. The infection happens because there are microorganisms which are persistent or enter the obturated root canal because of restoration leakage. Therefore, it can be concluded that the success of the root canal treatment depends on the quality of the root canal obturation and the final restoration.

Persistent Microorganism is the main

cause of infection on the post root canal treatment. On the root canal treatment which is under filled, the part of unprepared root canal can be suitable place for microorganism to multiply. Some species of microorganism can survive in the bad environment with the lack of nutrition.3.

Some species such as *Streptococci*, *Lactobacilli*, *Actinomyces Sp.*, *Peptostreptococci* has ability to multiply with or without oxygen and they can survive in the environment with extreme alkali acidity. 3.

This case report will discuss about conventional endodontic retreatment on maxillary central incisors with periapical lesion because of underfilling obturation and inadequate restoration

## **CASE REPORT**

A twenty three year old male patient came to the PPDGS Clinic RSGMP dental conservation of Airlangga University with a

problem his two incisors ere frequently painful while eating and getting pressure. He also complained his crown was yellowish and he was not esthetically satisfied.

On the thorough anamnesis was found that the patient had endodontic treatment on his incisors 1, 5 year ago. Moreover, he told that he got root canal treatment and crowned by the previous dentist. However, one year later his incisors were painful every time he ate. The patient also complained that his gum was frequently abscess. He wanted his two incisors got retreatment.

(Picture 1)

On the subjective examination, it was found percussion on the 21<sup>st</sup> and 12<sup>th</sup> teeth. However, the tooth palpation and mobility were normal. Visually, there was redness on the 11<sup>th</sup> tooth and the patient felt discomfort when it pressed too hard. The acrylic crown on the patient's tooth had been yellowish and uncover on the cervical lingual. (Picture 2)

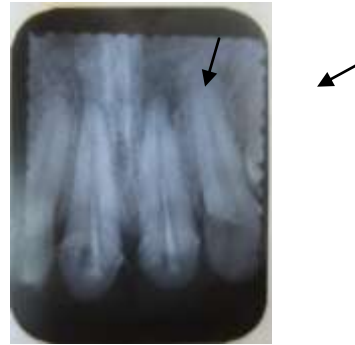


**Picture 1: the clinical view of the 11<sup>th</sup> and 12<sup>th</sup> teeth, seen from Labial.**



**Picture 2: the clinical view of the 11<sup>th</sup> and 12<sup>th</sup> teeth, seen from Palatal.**

On the radiology examination was seen that the root canal was under filled with clear bordered radiolucency in the periapical area



**Picture 3: X-ray picture of 11<sup>th</sup> and 21<sup>th</sup> teeth**

Clinical diagnose of 21<sup>st</sup> and 12<sup>th</sup> teeth were pulp necrosis with endodontic post treatment periapical lesion. The Prognosis was good because of the patient's oral hygiene is good. Moreover, the patient was really cooperative and he didn't have systemic abnormality.

## **THE CASE MANAGEMENT**

### **THE FIRST VISIT**

On the first visit, the acrylic crown was holed on the palatal side, then lining cement was also opened using ultrasonic tip until the gutta percha exposed. The tip of seen gutta percha was tendered by DMS IV and waited for a while. The gutta percha was thrown away using certain rotary instrument for retreatment (Protaper, Densply), based on its sequence, that was DX, then continued by D1. For D2 and D3 files were not used because the obturation only one third of root.



**Picture 3: Opening Acces of 11<sup>th</sup> and 22<sup>nd</sup> teeth**



After the gutta percha was removed from the root, the next step was radiology confirmation to see whether there was remain of the gutta percha.

The next step was re-preparation on the root canal conventionally. Begin with the measurement of the length working using apex locator (Raypex 6, VDW). It was got the length working 21 mm and it was confirmed by radiology. After that the preparation of root canal was done using file rotary instrument reciprocal file R50 with lubricant (MD ChelCream) and irrigation used NaOCl 2,5% and sterile aquades.

After the irrigation was dried using sterile paper point, the root canal obturated by a syringe using calcium hydroxide as dressing material ( metapaste ). After that, the teeth were temporarily filled. The patient was asked to return a week later.

### THE SECOND VISIT

On the second visit, a week later, the patient didn't feel hurt. The temporary filling was good and the cotton pellet was still clean; there was no exudates percussion and the pressure was negative. Moreover, there was no fistula on the soft tissues. Then the teeth were irrigated using NaOCL 2,5 % and sterile aquades. After that, the root canal was cleaned for the filling preparation.

The picture trial was done using gutta percha R50 before the obturation step was done. Then, the result was confirmed by radiology. The working length which was suitable with the root canal was gotten. Then it was dried and isolated as the first step of obturation.

The obturation using lateral condensation with master cone gutta percha R50 and 2 gutta percha no 25 ( red) using calcium hydroxide sealer ( top seal, Densply ). After that the cavity was temporarily filled before the radiology examination was done. On the radiology examination was seen hermetic filling. Patient instructed to return one week later.



Picture 4: X-Ray of obturation

### THE THIRD VISIT

On the third visit, the root canal check up was done. There was no complaint from the patient so the pin preparation could be fitted. The prefabricated pin ( Fiber post, Densply ). was used, then gutta percha was thrown away according to the length of pin using Gidden Drill ( Maillefer, Densply ). Then preparation was done using peso reamer ( Maillefer, Densply ), continued by precision drill for pin fiber.

After that, the dressing trial was done and continued by the radiology confirmation to know whether the length of the pin was suitable or not. After the suitable length of the pin was gotten, the resin cement was put. After that, core built up to form the pin core using multi core. The fiber cutting was done after the core making using diamond bur was finished



Picture 5 : insertion of post fiber pin on the 21<sup>st</sup> and 12<sup>th</sup> teeth.

Then the formation of pin core based on the crown jacket preparation. The Insisal was lessening using wheel diamond bur with the height 2/3 of the clinical crown. The axial then was rounded using long fissure flat end to get

shoulder finishing on the cervical line. Afterward it was furnished using fine finishing to avoid undercut.

Next, the teeth was dried using cotton pellet and the teeth retraction using retraction thread on sulcus gingival teeth 21 and 12 before molded using elastomeric. After the teeth were ready, the molding was done using the half jaw molding spoon with double impression technique.

Antagonist teeth were molded using alginate. Then, the biting decision using two pieces of dental waxes which had been heated before was done. Previously, the patient had been instructed to bite based on normal occlusion. Then, the color calibration was done. The patient involved in taking the decision in this step.



**Picture 9: The process of color choice.**

After that, the temporary crown was fitted using luthing cement (Picture 10). The tooth besides it was casted using red gips and then planted on the oxcludator before sending for making the zirconian crown.

#### **THE FOURTH VISIT**

On the fourth visit, the dressing trial of the zirconian crown was done (picture 12 ). The occlusion check up using articulating paper was held to know whether there was premature contact or not. The tooth anatomy and the color were adjusted. Then, the cervical area was checked up to see whether there was opened part or not.



**Picture 10 the zirconian crown before it was fitted on patient, A. labial view B. Palatal view**

Then the patient were asked whether the crown was suitable with what he wanted, in term of color and the form. After the patient agreed, the crown was fixed using resin cement. He was asked for check up one week later (Picture 13).



**Picture 11 the fitting of Zirconian Crown on the 21<sup>st</sup> and 12<sup>th</sup> teeth**



**Picture 12 X-ray picture after 1 year evaluation**

## THE FIFTH VISIT

A follow up evaluation was done a week after the fitting of zirconian crown. Based on anamnesis, the patient felt satisfied with the crown and he didn't complain about aesthetic or subjective. On the clinical examination, gingival area was normal, the color was stable, and there were not occlusion contact and the tooth mobility.

## DISCUSSION

In this case report, the patient complained about his painful teeth and the bad aesthetic after the root canal treatment. Therefore, the treatment for this case was retreatment the root canal on the 11<sup>th</sup> and 12<sup>th</sup> teeth and restoration using zirconian crown.

The root canal treatment failures in this case because the underfilling oburation. It was proven by the radiography picture; there were the teeth which were under filed so that the unfulfilled root canal became the breeding place of the persistent microorganism. It made the patient complained subjectively.

Besides, the patient felt not satisfied with the existing restoration because the previous restoration used acrylic whose color easily changed. Moreover, there was cervical adaptation which was not strong enough on the lingual so that it was supposed to be the cause of the entrance of microorganism or bacteria on the root canal.

Retreatment on this root canal purposed to vanish the number of microorganisms and inadequate of the previous root canal filling material. With an appropriate conventional retreatment was hoped could fix the failures on the previous treatment. The main principle was reshaping and recleaning the root canal and filling which was hermetic based on the working length and the strong restoration.1.

The pin was fitted on the 21<sup>st</sup> and 11<sup>th</sup> teeth after the endodontic retreatment was done. This step was done to give additional retention on the teeth after the endodontic treatment. 3.

The main purpose of the restoration on the teeth which were got endodontic treatment

was to return the function and aesthetic. Moreover, it divided the chew burden so that both the teeth and the crown jacket could stay longer on the mouth cavity. The teeth which had got endodontic treatment were likely to snap and easily broken than the healthy teeth. It was because of the organic and biology processes, the death of the pulp and the weak joining dentin emailbecause of the root canal preparation. 4.5.

After endodontic retreatment zirconia crown was chosen because it was better in term of the aesthetic than the porcelain. The Zirconia crown has better in color, anatomical, and at the same time it looked more natural, considering the teeth in this case were anterior which needed beautiful aesthetic.

## CONCLUSION

From the case above, could be concluded that the patient felt satisfied with the result of the treatment given. There was no following complain both esthetically, subjectively, or functionally.

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