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Management of Peg Shaped Maxillary Lateral Incisor during orthodontic treatment by esthetical approach: a case report

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ABSTRACT
Background: *Peg shaped is one of dental anomalies, in which the tooth has smaller size from the normal one. This mostly found on maxillary lateral incisor and this condition raises aesthetic problems for the patient. Veneer Indirect is one of the treatment solutions for lateral peg shaped teeth.* ***Purpose :*** *Veener Indirect management treatment for the patient with peg shaped on maxillary lateral incisor .* ***Case Management:*** *20 years old female patient came to the Dental Hospital Faculty of Dentistry Airlangga University on the reference from PPDGS Orthodontic Clinic of Airlangga University to repair her tooth which is smaller than her other teeth. The patient had been doing orthodontic for 1.5 years and her treatment had reached retention phase. The patient was referred to get her tooth better in shape and size.* ***Conclusion : I****ndirect porcelen veneer can be used to repair non caries damage like peg shaped. It can be one of solutions because it is better from the aesthetic point of view, more resistant to the abrasion, and the color changing. Moreover, it has good biocompability to the gum.*

Keyword : Ae*sthetic treatment, Indirect Porcelain Veneer, Peg Shaped.*

Introduction

Teeth are a part of body which give more aesthetic value for someone's performance. The good color, shape, and composition of the teeth will increase someone's confidence. It also plays an important role in someone's success in this competitive environment nowadays.

Peg shaped is one of the tooth anatomy disorders, in which the tooth has smaller size than the normal one and its shape is sharp. *Peg shaped* tooth mainly found on maxillary lateral incisor and the third molar. Peg shaped on lateral incisor frequently raises aesthetic problem because it is anterior. [2]

Veneer is one of tooth treatments which aim to repair the disorder or tooth damage which is related to aesthetic. Composite resin or porcelain is the material used to make veneer. Porcelain v*eneer* is better than others because it has good aesthetic, stabile color, and good resistant to high abration.

Veneer means to cover (anything) with a layer of something else to give an appearance of superior quality[1.] Porcelain Veneer is a thin layer with the preparation depth ranging from 0.5 to 0.7 mm. it covers the labial of anterior and posterior surfaces. [2]

The materials used to make veneer are composite resin and porcelain. Porcelain v*eneer* has more advantages than composite veneer such as good aesthetic, stabile color, and resistance to the high abrasion, to biology, chemical, and mechanic effects. Moreover, the color of the porcelain veneer can be made to match your natural teeth very closely. [4]

According to Touti (1999), veneer's advantages are resistant to plaques and can protect the dental structure because of limited preparation on the tooth enamel. [5]

The indication of the porcelain Veneer according to Victor (1995) is 1. To restore the diastema, 2. To repair the tooth discoloration because of fluorosis, or tetracycline 3. To close the defects on the tooth enamel 4. To restore peg-shaped tooth 5. To Repair the tooth damage which endure tooth fracturer.[3] while the contraindication from the porcelain veneer are parafunctional habits (clenching, bruxism), the

teeth with insufficient enamel for bonding, severe tooth fractures, excessive interdental spacing, moderate to severe malposition or crowding.[3]

In this case report explains about indirect porcelain veneer treatment on Peg shaped laterals. Peg shaped is one of dental anomalies, in which the tooth has smaller size and more conical shape from the normal ones.

This happens mostly on the maxillary incisor both lateral unilateral and the third molar. Most of peg shaped lateral incisor patients have aesthetic problem since its position is in the anterior and is easily seen when the patient do his or her activities.

Indirect Porcelain Veneer is chosen in this case because of some reasons, such as veneer has better aesthetic value, it is durable to the high abrasion an color changing. Besides, according to Roberson and Heymann, the porcelain veneer is proven having better biocompability to the gum tissues than the composite veneer.[3]

Case Report

20 years old female patient came to the Dental Hospital Faculty of Dentistry Airlangga University on the reference from PPDGS Orthodontic Clinic of Airlangga University to repair her tooth which was smaller and sharper than her other teeth.

She previously had got orthodontic treatment for 1.5 years. Her treatment had reached retention phase. Based on the reference letter, the lateral incisor tooth (12) needed to treat in order to repair her small tooth shape so that it would be as normal and good as other teeth

The clinical condition of the tooth 12 is smaller and more conical than the 22 tooth. The patient wanted the best treatment to get good aesthetic value for her tooth. (Picture 1). Based on The objective examination on the tooth 12 Both percussion and the pressure were negative. An on the vitality examination using etil chlor, the tooth reacted to the cold water.

The operator had given some choices of treatment to the patient. She also advised patient to indirect porcelain veneer because it has some advantages such as it has natural looking result, it was very to the high abrasion and color changing, it also required the removal of less tooth structure than a full crown so its resistance was stronger. The patient finally agreed with the operator's advice.

Picture 1: Peg shaped on tooth 12

Case Management

After conducting a complete anamnesis about the patient's complaint and need, also about the needed treatment, the next step was planning the treatment steps and explaining as clearly as possible to the patient about the steps.

Inform consent, the clinical photo, and matching the color with the real one was done after the patient agreed with the treatment steps.

The first step of preparation began with reducing labial around 0.5-0.7 mm using deep cutting or marking bur as the mark to control the preparation depth. Then, the labial was polished using long fissure flat end to get shoulder ending on the tooth cervical. Preparation on the tooth interproximal used long fissure on the contact point and formed the window to the tooth proximal. The incisor was cut around 1 mm up to the tip of incisor (Picture 2).

Picture 2 Preparation indirect porcelain veneer on tooth 12

To get the best result, the prepared tooth was polished using fine finishing bur so there was no undercut part. Then, the tooth was cleaned by pumice powder and water using rotary brush (picture 3).

Picture 3 the clinical condition of the tooth after being prepared and polished.

After the preparation finished, the next step was molding. On this step was rather difficult because patient wore bracket. Therefore, on the 11th and 13th teeth were put the red dental wax to get a precise molding result. It was done by cutting the red dental wax in square about 5 mm then it was stuck on the bracket of the 11th and 13th teeth. (Picture 4).

Picture 4 : The fitting of red dental wax on the bracket of the 11th and 13th teeth

However, before the red dental wax stuck on the bracket, it was heated first. Then, it was shaped and polished (Picture 5).

Picture 5 : the step before the molding process

Then the tooth was dried using cotton pellet. After the tooth had been retracted using the retraction thread on tooth 12 gingival sulcus, the molding was done using elastomer. The molding process used half mouth guard and double impression with one step technique (Picture 6). The antagonist tooth was molded using alginate and the half mouth guard.

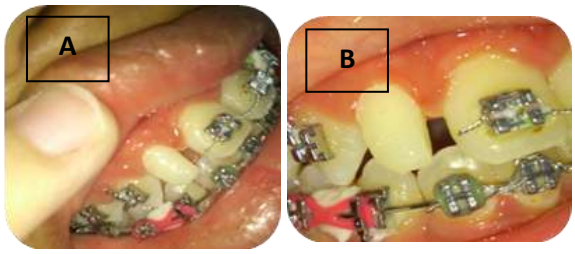
Picture 6 : the molding result using double impression

After the molding step finished, the prepared tooth was covered with *light curing composite*, which used a temporary filling. The tooth cavity was dried then etsa was applied to a point of labial in order to cast the temporary veneer easily when the real veneer fitted. (picture 7).

Picture 7 : Etsa application on a point of labial.

Etsa material was rinsed with water and dried sterile cotton pellet. Then the composite was applied based on the real tooth crown of tooth 12. After that it was lighted cured for 20 second. (Picture 8A and 8B).

Patient was instructed not to bite solid food and brush her teeth too hard.



Picture 8 A. the teeth after bonding and being dried. B. the teeth after *light-curing composite* was applied as the temporary veneer.

The next step was the determination of bite using two pieces of red dental wax which had been heated. Previously the patient was given the explanation to bite based on normal occlusion. Then the red dental wax was heated

and patient was instructed to bite as the previous instruction.

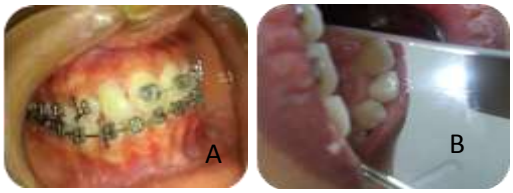
Then the molding result was planted in the oxcludator before sending to laboratory for making the porcelain veneer. (picture 10).

Picture 10 the tooth model after planting in the oxcludator

On the next meeting, the temporary filling was removed then the tooth was cleaned by pumice dan brush. Then the dressing trial on the Porcelain veneer tooth 12, to match the anatomy, proximal edge, the curvature of the tooth, and color. Venner which had dressed trial shown to the patient before it was fitted permanently.

Then tooth 21 was etsa using phosporic acid 37 % for 15 second, then washed, and dried. After that, dentin bonding was applied and light curing was done for 20 second. Porcelain veneer was cleaned from the trial material using cotton pellet then resin dual cured was applied onto the veneer. Veneer was applied to the tooth with light pressure then was lighted-curing for 4 second. . the residue of resin dual cured was cleaned using sonde (Gambar 11A dan 11B). The patient was instructed to keep her oral hygine and she returned two weeks later for checking up.

On the check up, veneer was in a good condition, percussion was negative, the tooth was vital, the gingiva tissue was normal, and the color didn't change. The patient felt satisfied with her new tooth shape and and color.



Picture 11 the clinical condition on tooth 12 after being inserted veneer porcelain (a) labial view (b) palatal view

Picture 12 the teeth condition after two weeks.

Discussion

Porcelain v*eneer* was chosen on the tooth 12 because it had more advantages than composite veneer such as good aesthetic, stabile color, and resistance to the high abrasion, to biology, chemical, and mechanic effects. Moreover, the color of the porcelain veneer can be made to match your natural teeth very closely. [4] Besides, veneer preparation was more conservative than crown because it sacrificed less tissue than the crown.

On this case, the anatomy of tooth 12 was peg shaped, and this condition really influence the patient's aesthetic and confidence. Therefore, the patient wanted the best treatment to reshape her tooth. Porcelain veneer was indicated to repair her tooth shape. It was also indicated to repair her tooth anatomy, discoloration, mall position, and malformation at once.

The usage of indirect porcelen veneer on tooth 22 was given to solve the patient's aesthetic problem. Technique and the material used in porcelain veneer were proven could give the satisfaction and long lasting result to the patient [5.] Moreover, the most important advantage of veneer preparation was it was really conservative in reducing the tooth. The minimal reduction of the tooth could less the pulp exposure. The porcelain shiny surface could avoid plaque accumulation and it had good respond to periodontic tissues. The good aesthetic would support the patient's performance.[6]

In this case, patient still got an orthodontic treatment. Therefore, there was difficulty especially in the molding, fitting, and removing the bracket on the veneer surface. To solve this problem, before molding tooth 12, the neighbor teeth were covered by red dental wax.

It was done to get the precise molding result. The bracket on tooth 13 and 11 can cause an undercut when the molding material was removed from the tooth. It was because the bracket surface was not flat so that it would be difficult when the molding result was removed.

The red dental wax which was applied to cover the bracket on tooth 11 and 13 functioned to get the best result of molding.

The other difficulty was the process of fitting and removing the orthodontic bracket on the veneer surface. To fit the orthodontic bracket a certain glue was used to bond the bracket onto the porcelain RMO (picture 13). When bracket was removed, it must be done carefully so that the veneer surface was not broken or released. The dentist whose specialization was conservation should accompany when the bracket was removed. Therefore, when the veneer was accidentally released it could be fitted soon

Picture 13: orthodontic bond for bonding orthodontic bracet in porcelain surface

Indirect veneer on the patient who was on the orthodontic treatment could be done as long as she had been in the retention phase. The purpose was to avoid the color changing and the damage of veneer.

Using composite to replace veneer temporarily was better than using the acrylic because it needed less money and time. This material was also easy to apply and could be used directly after the cavity preparation. [7]

The resin dual-cured usage on the 12th veneer 12 could give a good unification limit as porcelain crown when the veneer was pressed. Self-adesive cementing agent could reach adhesive dentin well although only happened superficially contact. This material caused less hybrid or resin tag.

Conclusion

From the case review above, it could be concluded that veneer restoration with porcelain material on the 12th tooth which had peg shaped anatomy gave a better result both aesthetically and functionally. The chosen of veneer restoration was based on the case indication. The use of Porcelain veneer was also beneficial because it was better in aesthetic and Porcelain veneers were stronger and more durable than composite veneers. It had more minimal intervention than crown

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