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Getting to The Roots of Endodontic
Towards Asean Economic
Community

BUKU PROSIDING

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DIASTEMA CLOSURE USING POST CORE CROWN RESTORATION

(A Case Report)

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ABSTRACT

Anterior diastema closure influence individual appearance. Missing teeth is one of several etiology of tooth migration. Correction of diastema depends on inclination, occlusion, shape and size of tooth. In this case, diastema caused by missing several maxillary posterior teeth. In result, diastema happened between central and lateral maxillary incisive. Correction of diastema in this case using post core crown, by manipulating the core more mesial. Manipulated core inclination established diastema closure by post core crown restoration. In addition, the restoration gave aesthetic value and patient satisfaction.

Key Words: Diastema Closure, Post Core Crown

INTRODUCTION

Diastema is a space of more than 0.5 mm between two adjacent teeth1; this space is generally interfere the patient’s appearance so patients seeking a treatment to close the diastema. Factors causing diastema will determine the treatment option2. etiology of Diastema are multifactorial heredity/ethnicity, parafungi, dentoalveolar discrepancies, pressure of orthodontic appliance, tooth loss, tooth migration, ect.

Orthodontic correction often results in a sensible esthetic improvement but in some case with excessive space postorthodontic restorative and procedures are also necessary.1 diastema caused by tooth loss can be treated by orthodontic and or reconstruct with fixed denture, removable denture or implant 2,3.

In this case report will discuss about the diastema closure using a core post crown by manipulating the crown inclination over to mesial

PURPOSE

The purpose of this study is to how to solved a problem of diastema using post core crown restoration in a maxillary lateral incisor with of minimum tooth structure.

CASE AND MANAGEMENT

A 68 years old male patient came to
the conservative dentistry clinic UI with main complaint to close his anterior diastema and replace his previous fillings because it feels uncomfortable for esthetic. In the last 10 years the tooth has been treated of endodontic, but the crown was fracture 3 years ago. The patient has been using a removable denture. Clinical examination revealed a tooth with 2 mm remaining above the cervical, no vitality test, tender to percussion. on periodontal probing showed 5mm periodontal pocket on mesial, the diastema was closed by removable denture.

(fig 1a,b) Radiograf examination showed visible a radiolucen irregular with diameter 2mm in the apex of the tooth #12, visible a not hermetic obturation in root canal and decreased bone the middle third of the mesial tooth. (fig 1c) Diagnosis #21 is chronic apical periodontitis with inadequate root canal treatment (underfild obturation). Retreatment of endodontic and a dowel crown restoration.

First, removal of caries in the pulp chamber was performed using round diamond bur and operator using dental loupe (Perioptics, Ubovct) with 3 times magnification. Determining working length using radiograf the result 2mm. Gutta perca was removed using headstrom file #25 and irrigated using NaOCl 2,5%. After the gutta perca was removed, the root canal preparation performed until working length using ProTaper Next (Dentply, Maillefeer, Switzerland). Root canal were irrigated using 2,5% NaOCL and 2% CHX solution. Calcium Hydroxide (Calcipex®, Nippon Sika- Yakuhin, Shimonoseki, Japan) used as intracanal medicament and cavity was filled using temporary restoration (Caviton, GC Corporation, Japan).

One week after first visit, patient came to the clinic. Patient did not feel any pain during biting. At this time, root canal obturation using AHPlus sealer (Dentply, Maillefer, Switzerland) was performed and evaluated by radiographic. (Fig 2) Radiographic evaluation showed no void and obturation fitted to the working length. Then cavity filled with temporary restoration (Caviton, GC Corporation, Japan).
Figure 2. Obturation

1 week follow up after second visit, the patient did not feel any pain on objective examination there was negative result after percussion and palpation tests. After removing the gutta-percha root canal filling, Custom made post core was made (Duralay, reliance). The post space preparation was made by removing gutta-percha in the root canal using a peeso reamer #5. The post core was made by acrylic resin(Duralay, reliance), the inclination of the resin acrylic core was made mesially and the preparation for the final restoration is completed with the dowel-core pattern in place.

1 week follow up after third visit. After the metal post core was ready, the tooth was repaired for re insertion of metal post core. The cementation using Glass Ionomer Cement(GIC) material (Fuji 1, GC). (fig.3) an impression procedure for fixed restoration which provide an accurate registration using putty technic with polyvinyl siloxane material (Exaflex-GC).

Figure 3 Cementation of metal post core

1 week after fourth visit, metal-porcelain was ready to be inserted and cementation using GIC luting cement. (Fig 4)

Figure 4. (a) clinical photo preoperative (b) post operative photo (c) post operative radiograph

DISCUSSION

In this case retreatment endodontic was made because the patient complained of pain in the tooth, in clinical finding there was no restoration on the tooth, the pulp chamber was open and in radiograph was found a radiolucent 2mm on the apical.

The etiology of diastema in the maxillary anterior is multifactorial. Tooth extraction can caused migration and rotation. Diastema due to missing teeth may be reconstructed with orthodontic treatment, fixed dentures, removable dentures or implants. In this case, diastema was caused by the loss of adjacent tooth which is up-
per right canines, the missing tooth causing lateral incisor tooth migration distally and length of the clinical crown 2mm from the coronal therefore the treatment of this case is the core post crown.5,9

Restoration after endodontic treatment on a tooth with extensive loss of coronal tooth structure, are commonly restored with a dowel, core, and crown.10-12 The purpose of the core with or without post is to replace a missing dentin, providing internal support and retention for the crown and to ensure the resistance to fracture cervical.10,13 The principle of retention dowel are diameter, surface, geometric configuration and the type of material.10 Criteria for the post and core is post length and height of anatomic crown or 2/3 the length of root, 5mm of gutta-percha on apical, the minimum of the tooth is 2mm.10,12

The use of post and core is to improve retention for the crown, protecting the crown margin of deformation under pressure from chewing, so that can to prevent the leakage. The principle of preparation post and core are ferrul (minimal 2.3mm), the walls must surround the teeth properly, the borders of the tooth have to be healthy, restorat General consideration as a foundation of the restoration.1 More tooth structure that remains the better long-term prognosis of a restoration. The structure of the tooth above the gingival corona forming ferrule. Ferrule formed by the walls and crown of 2.3mm margin of healthy tooth structure.10,11 The purpose of ferrule are to increases resistance to fracture, Improve lateral pressure resistance of post, improve retention and resistance of restoration.3

Cast post and core was base-metal alloy and high-noble alloy.9 Noble alloy had a characteristic high stiffness, high strength and high hardness to corrosion. The advantages of cast post and core are core is a single and entity with the post so it can not interchangeable regardless the remaining tooth structure minimal.11 The disadvantages of cast post and core are extensive tooth structure should be taken to make way for the insertion of casting post, the procedure is more costly and time because it requires two visits and lab fees are more expensive, Technique sensitive.3

Post was made of metal (gold, titanium, stainless steel), ceramic, or fiber-reinforced resin.9 Retention of post is ability of the tooth / post to withstand a vertical load.14 The Resistance of post are ability of the tooth / post to resist lateral loads and rotation.5,13,14 The resistance was influenced by the presence of ferrule length of the post and stiffness and an antirotational device.2 Indication of full crowns are a large number of lost tooth structure due to caries, restorative and endodontic procedures.1

The crowns of teeth in “nonorthodontic normal occlusion,” from a study of 120 casts of subjects who had not received orthodontic treatment and did not need it, were angled so that the incisal portions of the long axes of the crowns were more metal than the gingival segments.20 In this case operator modified the inclination of
the core and crown to facilitate diastema closure.

CONCLUSION
The successful management of the diastema closure with post core crown in maxillary lateral incisor with minimum residual structure depend on tooth strength and size, residual tooth structure above the crown margin, post length, adequate ferrule effect, and post core and crown material.

REFERENCES