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Research Article

**AN EVALUATION REPORT ON MANAGEMENT OF
DAMAGED POSTERIOR TOOTH WITH REDUCED
OCCLUSAL CLEARANCE THROUGH RICHMOND CROWN
INTERVENTION**¹Dr Nashrah Rehman Ansari, ²Dr Anum Zakir, ³Dr Fatima Abid¹DHQ Hospital South City Okara, ²RHC Noorshah Sahiwal, ³Guriki Hospital Lahore.**Article Received:** March 2019**Accepted:** April 2019**Published:** May 2019**Abstract:**

We came across a clinical report of twenty years of age patient at Services Hospital, Lahore in March 2018. The patient was suffering from a damaged posterior tooth with decreased occlusal clearance. We treated the patient through the single-unit restoration of post core crown method. We restored through cement (adhesive resin cement) and also made a radiographic and clinical assessment of the patient. Failure frequency was countered through the unification process of the crown, core and post which actually created an effect of the Monoblock. The late 19th century introduced a single piece post retained crown (Richmond Crown) with a facing of porcelain facing that acted as a bridge retainer. This Richmond Crown consisted of the tube in the canal with a crown having retained screw in it. After modification, it became one-piece crown and dowel after the elimination of threaded tube.

Keywords: Endodontic Treatment, Teeth, Richmond Crown, Cement, Resin, Posterior, Unification and Core.**Corresponding author:****Dr. Nashrah Rehman Ansari,**
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INTRODUCTION:

Fracture is very much common among endodontically managed teeth in comparison to the fracture of vital teeth. Posterior teeth face most of the fracture occurrences in comparison with anterior teeth because masticatory forces are very much high than the strength of teeth [1]. The late 19th century introduced a single piece post retained crown (Richmond Crown) with a facing of porcelain facing that acted as a bridge retainer [2]. This Richmond Crown consisted of the tube in the canal with a crown having retained screw in it. After modification, it became one-piece crown and dowel after the elimination of threaded tube [3]. Richmond Crowns were replaced with customized cast core and post back in 1930. This technique included two steps respectively core and post casting as a separate crown component. The technique was improved as it included marginal variation and adaptation in the crown insertion process [4]. There are various major causes behind the post-retained restorations failures such as endodontic failure,

recurrent caries, post dislodgement, periodontal disease, post-core separation, cement failure, loss of post retention, crown-core separation, crown retention loss, core fracture, post fracture, post distortion, root fracture and tooth fracture [5 – 7]. Moreover, the corroded metallic posts also attribute in the major cause of the fracture of the root [7]. Some scholars also advice that dentin bonding agents with resin cement are useful with reduced post space length if it is less than the ideal length or in case of unrounded holes. It also helps to solve retention issues and fill spaces. It also eliminates the cast post requirements [8, 9].

CASE REPORT:

We came across a clinical case report of twenty years of age patient at Services Hospital, Lahore in March 2018. The patient was suffering from a damaged posterior tooth with decreased occlusal clearance. We treated the patient through the single-unit restoration of post core crown method.



Figure – I: Damaged Posterior Tooth

The patient presented no previous record of such complaints. It was known through clinical examination that there was a short clinical crown on the tooth along with a deep bite. Moreover, the radiographic assessment also revealed an intact obstruction and asymptomatic tooth.



Figure – II: Radiographic assessment of damaged teeth

We planned one piece post, crown and core because of the deep bite. We also modified the coronal structure of the tooth through rotary tools in order to reduce the undermined cusps. Gutta-percha was removed for post space preparation from the chamber of the pulp with the help of a thin straight fissure. After that with the help of a 1 – 4 sized Peeso Reamers five-millimeter gutta-percha was removed by the distal canal. The removal of more than five millimetre inside the root canal may result in the crown insertion issues. We cleaned the prepared space through normal saline, post space impression was taken with the preparation of tooth by using the impression of vinyl polysiloxane material; where we injected light body inside of the arranged post space and also inserted plastic post for

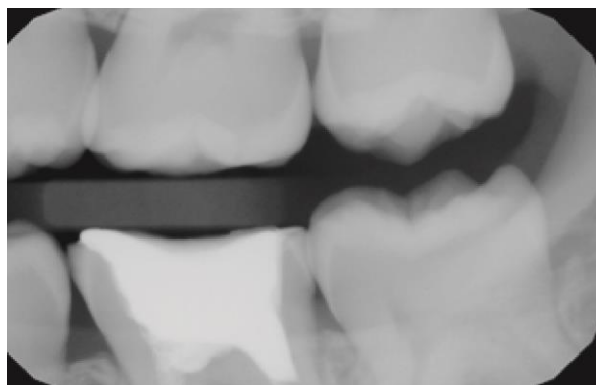
material support. Additional material of rubber base was also injected around the tray loaded and prepared with the impression of putty body material and positioned it on the light body. We poured the impression in the die material for mater case in the position of the making of wax pattern and marginal accuracy was assured through intraoral assessment. Metal try in obtained through sub sequential procedures of casting. Through porcelain, we assured the accuracy and retention of the casting. After finishing off the restoration an assessment of fit was also carried out and prior cementation occlusion. We also cemented the finished restoration with resin cement dual cured adhesive as shown in Figure – III.



Figure – III: Finished Restoration Cementation (Resin Cement Dural Cured Adhesive)

After completion of intervention the clinical assessment of cemented restoration was also carried out with the help of radiographic bitewing as shown in Figure – IV and CT (Computerized Tomography) radiograph as shown in Figure – V for final better

functional outcomes. Every three month follow-up was suggested which presented no onset of carries reoccurrence, no fracture, no dislodgement of the restoration and no onset of root fracture.



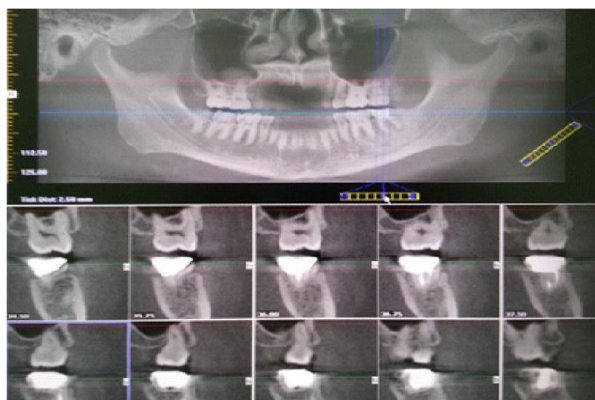


Figure – IV & V: Computed Topography of Bitewing

DISCUSSION:

Modern restorative dentistry is largely depending on the teeth restoration after endodontic management. This process has been reported with very much useful outcomes in dentistry. It is a fact that the successful management of the pulpal diseased broken tooth depends on both good tooth prosthetic restoration and good endodontic therapy [10]. Paramount criteria depend on the better selection of the patients in order to obtain desired clinical successful outcomes. One piece restoration highlights mutilated tooth management which requires the restoration of post-core in the presence of decreased occlusal clearance. There are various advantages of the single unit restoration of post core crown over 2 or 3 component units. When core and post are two different and separate parts; differing thermal expansion coefficients of different post crown restoration components may pose adverse and harmful effect on the bonds which exists between tooth post core cement and crown complex. In addition to that, the flexion of the post under functional force puts stresses on the interface of the post-core which results in core separation because of the permanent post-deformation [10]. With an increase in the interfaces lying between various components, the single restoration process is very much helpful in order to obtain the effect of Monoblock. Micro-etching restoration of fitted surfaces provide microscopic surface roughness and it, therefore, increases the resin cement bonding. Moreover, the dentin acid etching opens dentinal tubules with the removal of the smear layer and it renders inter-tubular rough dentin because of the selective inorganic substance demineralization. It increased the state of etched surface infiltration with resin primer that leads to hybrid layer formation. There exists a chemical bond between resin cement and formed hybrid layer. Therefore, it leads to restoration of the adhesive Monoblock. Failure to obtain the said

Monoblock effect may also result in the core breakdown, core fracture and core distortion along with carries or restoration dislodgement. Every three month follow-up was suggested which presented no onset of carries reoccurrence, no fracture, no dislodgement of the restoration and no onset of root fracture.

CONCLUSION:

Resin cement along with agents of dentin bonding have developed alternative and novel modalities of dentistry treatment for the restoration of the deep bite endodontic treatment. One piece post, crown and core is a considerable treatment option endodontically managed badly broken tooth without any further need of increasing the post space length. The conventional approach cannot produce similar outcomes.

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