CLINICAL MANAGEMENT OF FRACTURED MAXILLARY CENTRAL INCISORS WITH REVERSE OVERJET MALOCCLUSION - A CASE REPORT

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Introduction

A reverse overjet is defined as the lower incisor edge occluding anterior to the upper incisors [1]. The prevalence of reverse overjet ranges from 3 percent for British [2] to 14 percent for Chinese [3] populations and 5.93% globally [4]. It may be caused by skeletal and/or dental factors. [5] The management of any malocclusion should be patient oriented keeping in mind the treatment objectives. The current case highlights the fact that judicious use of the treatment options leads to satisfactory treatment results. Traumatic dental injuries are the most common injuries afflicting maxillary anterior teeth.

Case Report

A 33-year-old male presented with concerns about the appearance of his anterior teeth that had fractured 10 years back. History revealed repeated dislodgment of aesthetic restorations of these fractured upper central incisors. This patient presented with competent lips, average lip line, normal TMJ's, and class III incisor relation (Figure 1, and 2). There was attrition of mandibular incisors with dentine exposure. The crown height of upper central incisors was reduced to 5 mm. This resulted in reduced visible crown height and a reverse smile line (Figure 2). The gingival level of the upper central incisors was in level with the lateral incisors and below that of the upper canines. Teeth 11, and 21 gave delayed response on the use of electric pulp testing.

The two possible treatment options presented to the patient for the aesthetic and functional rehabilitation of fractured and malaligned teeth were the correction of the misalignment by orthodontic treatment followed by placement of porcelain laminate veneer, all ceramic or porcelain fused metal (PFM) crown and the second option was to correct the coronal alignment by the fabrication of post–core followed by PFM or Zirconia crown. The patient chose the second option because of his unwillingness for orthodontic treatment.

After explaining the treatment plan to the patient, consent was obtained. Upper and lower impressions were recorded using irreversible hydrocolloid (Zelgan 2002, Densply). Impressions were poured using Dental plaster to obtain casts. Mock-up was performed using green wax representing metal core and white wax representing PFM crown (Figure 3).

Endodontic treatment for the upper right and left central incisors was initiated. The canals were cleaned and shaped using K files in a step-back manner. An interappointment calcium hydroxide dressing was given. A week later root was obturated with gutta percha cones and AH plus sealer.

After one weeks, the patient was recalled for review. Since the tooth was asymptomatic, post endodontic restoration was initiated. Post and core was planned to change the angulation of 11, and 21. Maintaining the apical seal, peeso reamers were used to prepare the postspace. The remaining tooth structure was prepared with shoulder finish line on labial side and chamfer on the palatal side.

Post and Core pattern was fabricated using pattern wax (Figure 4). Finally the whole post–core pattern was cast. The fit of the cast post and core was first assessed and then it was luted with glass ionomer cement (Figures 5, and 6). Figures 7, 8, 9 and 110 also show the drastic change in labiopalatal inclination created by custom cast post and core without orthodontic consideration. Figure 7 shows the aesthetic restoration by placement of PFM crown over the cast core.

OUTCOME AND FOLLOW-UP

The maxillary central incisors were aesthetically and functionally restored with change in angulation with custom cast post and core followed by cementation of porcelain fused to metal crown. The patient reported no discomfort and was satisfied with the outcome.

DISCUSSION

Orthodontic therapy is the first choice treatment for the aesthetic correction of reverse overjet [6] but in some rare cases where patients are not ready for any orthodontic treatment, the only other option for the satisfactory aesthetic restoration of such teeth is the change in angulation of the coronal portion of the tooth with post and core followed by the placement of the crown. Custom cast post and core is usually preferred for the change in mesiodistal and labiopalatal angulation of the proclined, retroclined or rotated teeth as compared with the prefabricated post. Custom cast post and core is a single assembly in which core can be shaped until satisfactory aesthetic is achieved, although the core might not be in the same axis as the post or the root [7]. But in prefabricated post–core system, the core is build around the post after postcementation in the prepared canal so that if tooth is rotated or more labially inclined, the post will remain in the direction of the long axis of that tooth [8]. So any change in angulation, performed by shaping of the core around the prefabricated post, usually results in loss of coronal extended post during preparation resulting in unsupported core. The functional loading of the crown might result in fracture of the unsupported core making the treatment complicated. So only the treatment option in such cases is the change in angulation with custom cast metal or zirconia post and core followed by fabrication of PFM or Zirconia-based crown.

CONCLUSION

The aesthetic rehabilitation of the reverse overjet maxillary teeth poses tough challenge to the dentist. The clinical results achieved in this case report shows that custom cast post and core followed by fabrication of PFM crown can be a reliable method for rehabilitation of fractured maxillary central incisors with reverse overjet malocclusion.

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Figure 1: Preoperative lateral views with teeth in centric occlusion.

Figure 2: Preoperative frontal view of fractured maxillary central incisors in reverse overjet position

Figure 3: Mock-up.

Figure 4: Wax pattern for cast post in relation to 11 and 21.

Figure 5: IOPA in relation to 11 and 21.

Figure 6: Cast post cemented in relation to 11 and 21.

Figure 7: Post-op after PFM crown cementation in relation to 11 and 21.

Figure 8: Pre-op and Post-op from right lateral view.

Figure 9: Pre-op and Post-op from left lateral view.

Figure 10: Pre-op and Post-op from frontal view.

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I / We certify that I/we have participated sufficiently in the intellectual content, conception and design of this work or the analysis and interpretation of the writing of the manuscript, to take public responsibility for it and have agreed to have my/our name listed as a contributor. I/we certify that all the data collected during the study is presented in this manuscript and no data from the case report has been or will be published by the editors, I/we will provide the data/information or will cooperate fully in obtaining and providing the data/information on which the manuscript is based, their assignees.

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(up to four authors for case report)