

Prosthodontics and Orthodontics interdisciplinary approach in single implant restoration at posterior region: A case report

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Abstract

Prolonged missing of single posterior tooth is often associated with drifting and tilting of adjacent teeth and/or over-eruption of opposing tooth. Restoration of such missing posterior tooth necessitates realignment of mal-positioned tooth/teeth and restoration of regular occlusal plane, otherwise secondary malocclusion with occlusal interference may result in poor functional outcomes and negative consequences. Close co-operation and collaboration between Prosthodontist and Orthodontist is of paramount importance for predictable and successful final restoration. A case report is discussed illustrating restoration of missing single mandibular first molar associated with grossly over-erupted opposing molar by interdisciplinary treatment between Prosthodontics and Orthodontics of the University of Dental Medicine, Mandalay, Myanmar.

Introduction

Dental implant treatment to restore one or more missing teeth becomes more and more popular and for the long-term

predictable success without complication, proper diagnosis, treatment planning, skillful surgical and prosthodontic works are major tasks which cannot be overlooked. The clinician should be aware of overall dental and occlusal conditions so that necessary treatment plan can be formulated systematically. Among the important factors contributing to long-term successful treatment with dental implants, occlusion is one of the most important aspects, yet often ignored by the clinician. Occlusal considerations in dental implant treatment should include overall stability of occlusion, presence or absence of occlusal stops, anterior guidance and regularity of occlusal plane.

Loss of posterior teeth is often associated with over-eruption of antagonist teeth [1] especially timely restoration has not been contemplated, which may complicate the prosthodontic replacement. Samanhakeen et al reported that unopposed posterior teeth are associated with over-eruption of antagonists with clinical and statistical significance (83.3%) [2]. Not only the over-eruption of opposing teeth limits proper restoration contour and strength of the tooth to be replaced, there is

also a high frequency of occlusal interferences with over-erupted teeth [3]. Craddock also pointed out that incidence and extent of the over-eruption is clinically significant both in treatment planning to prevent over-eruption, but also in the restoration of an edentulous space, and pre-treatment re-positioning of the over-erupted tooth [2].

To restore the proper occlusion for the posterior dentition and to maintain periodontal health, an interdisciplinary and comprehensive dental treatment is necessary. Correction of the over-erupted molar should be a first and essential step before other procedures are contemplated. The treatment strategies range from prosthodontic reduction with or without placing a crown, orthodontic intrusion, and surgical impaction to achieve a correct occlusal plane [4-9]. Although prosthodontic reduction may be as simple as reshaping the crown, it may require endodontic intervention and crown restoration at the expense of tooth vitality in severely over-erupted case, whereas surgical impaction involves an aggressive segmental operation [10]. Orthodontic intrusion is more or less conservative in terms of preserving original occlusal anatomy and less intervention. Various methods of orthodontic intrusion have been reported using micro-implants, mini-plates and removable bite plates [10-13].

In the present case report, the management of over-erupted tooth in the restoration of missing posterior tooth with dental implant supported fixed crown is outlined. A 30 yrs old female patient complained of masticatory inefficiency due to extracted 36. On examination, opposing molar was over-erupted and there was an occlusal interference. A dental implant restoration was planned and

the patient was referred to Department of Orthodontics where she received orthodontic intrusion of upper first molar using orthodontic mini-screws with the aim to create appropriate occlusal plane for restoration of mandibular first molar with implant-supported crown. Implant placement surgery was performed as soon as molar intrusion was started so that the time for achieving osseointegration would be simultaneous with molar intrusion (about 4 months). Finally, the intended occlusal plane regularity was restored and the missing 36 was optimally restored with implant restoration.



Figure 1. Image of diagnostic casts showing over-erupted 26



Figure 2. Panoramic radiographic image showing missing 36 and over-erupted 26



Figure 3. Intra-oral image showing orthodontic intrusion with mini-screws



Figure 4. Panoramic radiographic image showing miniscrews in maxilla and dental implant with healing abutment attached in mandible



Figure 5. Intra-oral image showing occlusal plane condition after removal of miniscrews and bracket



Figure 6. occlusal view of implant site before impression making



Figure 7. Intra-oral image showing implant restoration at 36 in proper occlusion and prosthetic crown morphology



Discussion

Over-eruption of maxillary molar because of loss of the opposing teeth creates occlusal interference and functional disturbances with high frequency [3]. More than 80% of unopposed teeth tends to over-erupt, and more than 50% of unopposed teeth are likely to be involved in RCP (retruded contact position) contacts or excursive interferences [2]. To provide proper prosthetic treatment of the missing teeth ensuring long-term predictable success, these over-erupted teeth need to be treated so that regular occlusal plane is restored. The presented case demonstrates successful treatment by inter-disciplinary collaboration between Orthodontics (for molar intrusion by use of TADs) and Prosthodontics (for implant prosthodontic restoration) in university setting.

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