

Prosthodontic Management of Dental Implants in Severely Proclined Anterior Maxilla

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Received: April 04, 2024; **Published:** May 02, 2024

Abstract

The treatment modalities for missing anterior teeth are fixed dental prosthesis, removable dental prosthesis, or dental implant. The treatment of choice is dental implant. The esthetic and functional result are more predictable and desirable by the patients. The choice of retaining the prosthesis to the implant are by cement or screw. The selection should be made based on the knowledge of the advantages and disadvantages of each type. For example, screw retained implant prosthesis has the advantages of being retrievable, and the risk of potentially retained subgingival cement is eliminated. On the other hand, in cases of angulated implant or anterior implants the screw hole might be placed facial which will interfere with the esthetic outcome. Therefore, in some cases cement retained implant prosthesis can be used. This case report presents the treatment of a patient with missing three maxillary anterior teeth using dental implant. The treatment modalities for missing anterior teeth are fixed dental prosthesis, removable dental prosthesis, or dental implant. The treatment of choice is dental implant. The esthetic and functional result are more predictable and desirable by the patients. The choice of retaining the prosthesis to the implant are by cement or screw. The selection should be made based on the knowledge of the advantages and disadvantages of each type. For example, screw retained implant prosthesis has the advantages of being retrievable, and the risk of potentially retained subgingival cement is eliminated. On the other hand, in cases of angulated implant or anterior implants the screw hole might be placed facial which will interfere with the esthetic outcome. Therefore, in some cases cement retained implant prosthesis can be used. This case report presents the treatment of a patient with missing three maxillary anterior teeth using dental implant.

Keywords: Cement Retained Implant Prosthesis; Dental Implants; Implant Prosthesis; Screw Retained Implant Prosthesis

Introduction

The primary reasons for multiple teeth loss in the maxillary anterior region are traumatic injuries, extensive caries lesion, severe periodontal diseases, or periapical pathosis leading to extended partially edentulous area [1,2]. The traditional treatment for these cases is a conventional fixed dental prosthesis (FDP) or a removable dental prosthesis (RDP), however, it is not the favorable option due to long span which leads to multiple complications, and it depends on the patient's use. Therefore, the replacement of multiple adjacent teeth in the maxilla is considered one of the most challenging situations, as the restorations required to be functional and highly aesthetic. This case report presents the treatment of a patient with missing three maxillary anterior teeth using dental implants.

Case Description

A 34-year-old male patient presented to the Dental center at King Abdulaziz Medical city, Ministry of National Guard with missing maxillary central incisors and right lateral incisor, due to severe external root resorption following substandard orthodontic treatment. During clinical examination, Periapical, panoramic radiographs, cone-beam computed tomography (CBCT), and preliminary impressions were taken for diagnostic evaluation (Figure 1a-1c). His medical and dental history were evaluated too.



Figure 1: (a) Patient presented with missing teeth 12, 11 and 21. (b) CBCT: Axial view of the maxilla. (c) CBCT: Sagittal view of the maxilla.

CBCT showed buccally inclined alveolar ridge with sizable incisal foramen. After evaluation, conventional prosthesis was deemed unsuitable and thus, Implant prosthesis was considered. Diagnostic wax up was done to establish the desired tooth position, alignment, and inclination. Transitional removable partial denture (RPD) was fabricated for the patient to restore function and aesthetic (Figure 2)



Figure 2: Transitional RPD.

Surgical plan was explained to the patient to place three dental implants, implant position was planned according to the available bone and to avoid incisal foramen. Therefore, distance between implants at #11 and 21 is wider than the distance between #11 and 12 (Figure 3a and 3b)

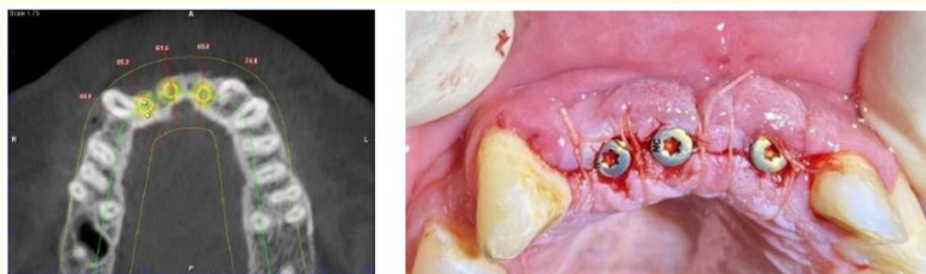


Figure 3: (a) Implants position in the CBCT, (b) Implant position after the surgery.

A surgical guide stent was utilized during the surgical placement of implants, the procedure was uneventful. Due to the Labial inclination of the implants and labial screw access, a cement retained prosthesis was fabricated (Figure 4a and 4b).

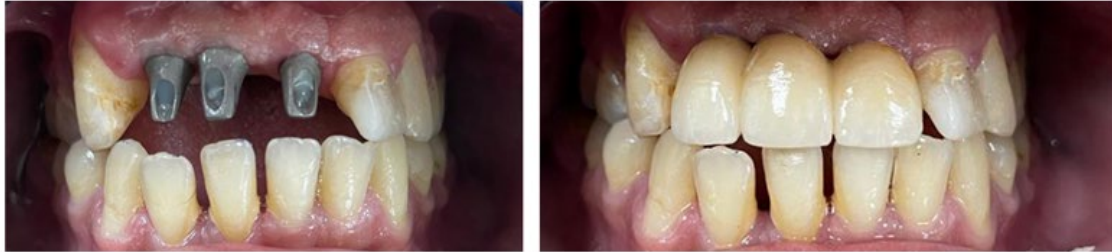


Figure 4: (a) Cement retained abutments, (b) Final prostheses after cementation.

Results and Discussion

The consequent development of extended partially edentulous sites has an impact on the facial bone which leads to rapid loss of height and width of the alveolar bone [3]. According to this study, patients experience 30% to 60% horizontal resorption and 10% to 20% vertical bone loss after 3 to 12 months of tooth loss [4]. The traditional methods of restoring the anterior space are not suitable. The fabrication of fixed dental prosthesis (FDP) for maxillary anterior teeth is contraindicated since it is a long span prosthesis and subjected to high occlusal forces. On the other hand, the removable partial denture is not the patient's favorable option due to low aesthetic results.

The use of dental implants in the maxillary anterior region provides a more natural result, therefore, it is more desirable than other treatment options. The challenges of placing implants in the anterior region, from the surgical and restorative point of view, should be considered during planning due to numerous anatomical factors and bone availability [5]. In some cases, extensive resorption of the ridge leads to enlargement of the incisive canal which interferes with the path of ideal implant position [6]. The placement of implant fixture near to or in direct contact to the incisive canal can jeopardize the success of the treatment leading to a nasopalatine duct cyst or implant failure [7,8].

The methods to retain implant prosthesis are by using either screw or dental cement. According to the literature, both methods have advantages and disadvantages. Retrievability is the main advantage of screw retained implant prosthesis because it facilitates the prosthesis maintenance in case of screw loosening or repair of the coronal structure [9]. However, in case of unfavorable angulation of the implant fixture, the access hole can be visible and affect the aesthetic result. Therefore, cement-retained implant-supported prosthesis is superior aesthetically for maxillary anterior teeth [10,11]. On the other hand, the complications of cement retained restoration in comparison to screw retained are difficulty in retrieving the restoration and chances of residual excess cement.

Conclusion

Many factors must be considered when treatment planning for implant in the anterior maxilla. Collaboration between the dental team, including surgeon and restoring dentist, to place the implants to provide the optimum function and aesthetic. Anatomical structures should be intact during placement to prevent complications. High aesthetic result can be achieved by using cement retained implant prosthesis in labially inclined implants.

Conflict of Interest

No conflict of interest.

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Volume 23 Issue 5 May 2024

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