

Maxillary anterior implant restoration with orthodontic treatment for esthetics: A case report of two cases

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Esthetics is important for implant restoration in maxillary anterior teeth. The clinician must accurately identify the patient's needs before treatment because perception of esthetics is subjective, and conduct a thorough intraoral/extraoral examination. For esthetic restoration, not only the placement of the implant but also its relationship with adjacent structures is important. Sometimes a team approach is needed to successfully meet the challenges. In this case report, we collaborated with an orthodontist for satisfying the patient's needs. An appropriate space for the implant was prepared and the implant was placed. After functional and esthetic evaluation with temporary prosthesis, definitive prosthesis was restored. Satisfactory results were obtained through maxillary anterior implant restoration with orthodontic treatment. (THE JOURNAL OF KOREAN ACADEMY OF OSSEOINTEGRATION 2022;14(1):25-29)

Key words: Maxillary anterior, Dental implant, Esthetics

INTRODUCTION

Implant treatment in maxillary anterior region is challenging for clinicians because of the esthetic demands of patients and difficult pre-existing anatomy¹. In order to maintain esthetic stability in the long term, it is important to place the implant in an ideal position and also consider the harmony between the soft tissue and the prosthesis²⁻⁵. For harmonious esthetic results, careful analyses including patient's facial analysis, tooth- gingival analysis, tooth ratio and symmetry, and shape and ratio analysis of teeth are needed⁶. And also for aesthetically predictive treatment, it is necessary to understand the needs of the patient and esthetic perception level in the treatment planning stage before implant placement and to consider the relationship between maxillary edentulous area and the adjacent teeth. To successfully meet the challenges of esthetic anterior implant restoration, a team approach is advantageous and highly important if needed^{1,7}.

This case report describes esthetic implant restorations on anterior maxilla collaborated with orthodontists. Orthodontic treatment was first performed to improve alignment and to form appropriate space for missing space then an implant was placed and restored after osseointegration.

CASE 1

A 81-year-old female presented to the Department of Prosthodontics, Seoul St. Mary's Hospital in Seoul Korea with the following chief complaint : "I want an esthetic implant restoration on upper anterior edentulous area. My original teeth were snaggleteeth." She was referred from the department of endodontics after extraction of #21 and #22 for severe caries.

Intraoral and extraoral examination reveal anterior crowding, especially biased #11 to the left based on the facial midline, labial transposition of #23, and the narrower width of edentulous area (#21, 22) than the width of opposite teeth (#11, 12) (Figure 1). In order to resolve the crowding of anterior maxillary dentition and restore esthetic implant prostheses, alignment of anterior maxilla and implant treatment were planned in collaboration with the orthodontist. Because the missing space was narrow, we decided to restore only one implant (#21) closing the space of #22. Orthodontic treatment was performed for 6 months (Figure 2). After 3months of starting the orthodontic treatment, the position and the angle of the implants were carefully determined with CBCT radiographic examination (Figure 3).

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The Osstem TSIII SA 4.0×10.0 mm fixture was placed on #21 area (Figure 4). After completion of orthodontic treatment, 3 months of osseointegration period, temporary restoration was



Figure 1. Pretreatment intraoral photographs. (A) Frontal view. (B) Occlusal view of maxilla.



Figure 2. Intraoral photograph taken under orthodontic treatment on anterior maxilla. (A) Frontal view. (B) Occlusal view of maxilla.

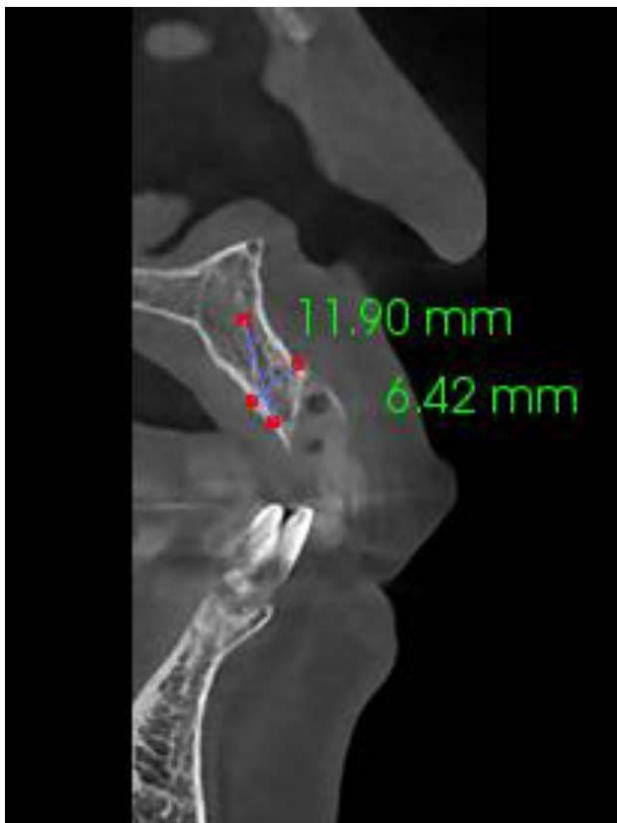


Figure 3. CBCT scan image for implant placement planning.

fabricated and restored (Figure 5). The esthetic and function were evaluated for 3 months (Figure 6). With the consent of the patient, the final prosthesis of #21 implant was fabricated with a porcelain fused to metal crown. Considering the installed angle of the fixture, it was decided to make implant crown with UCLA type (Figure 7, 8). And finally, the prosthesis was delivered after minor adjustment of contour (Figure 9). Although the left and right sides were not perfectly symmetrical, the patient's smile line was low and the width of #11 and #21 implant prosthesis was similar. After the restoration of definitive prosthesis, the patient showed satisfaction with esthetics and function of implant prosthesis.



Figure 4. Post-surgical periapical radiograph.



Figure 5. Fabrication of #21 implant temporary restoration.



Figure 6. The implant temporary prosthesis delivery.



Figure 7. Photographs for metal frame and shade check. (A) Metal frame check for UCLA type prosthesis. (B) Shade check.

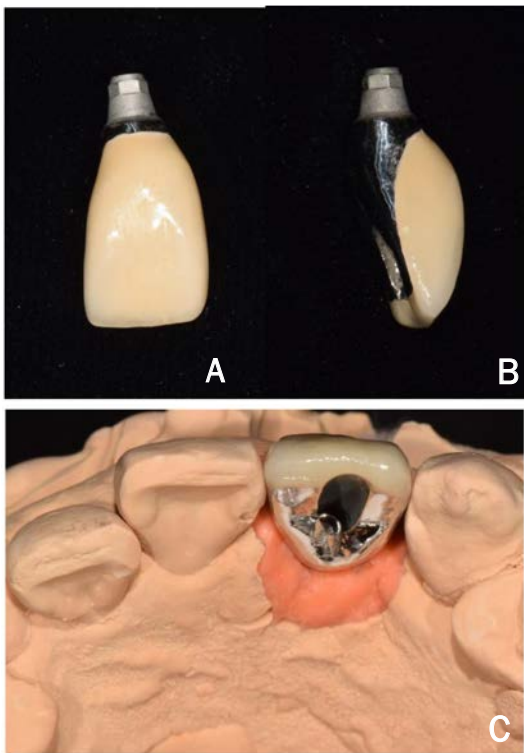


Figure 8. Fabrication of definitive prosthesis. (A) Frontal view. (B) Lateral view. (C) Occlusal view.

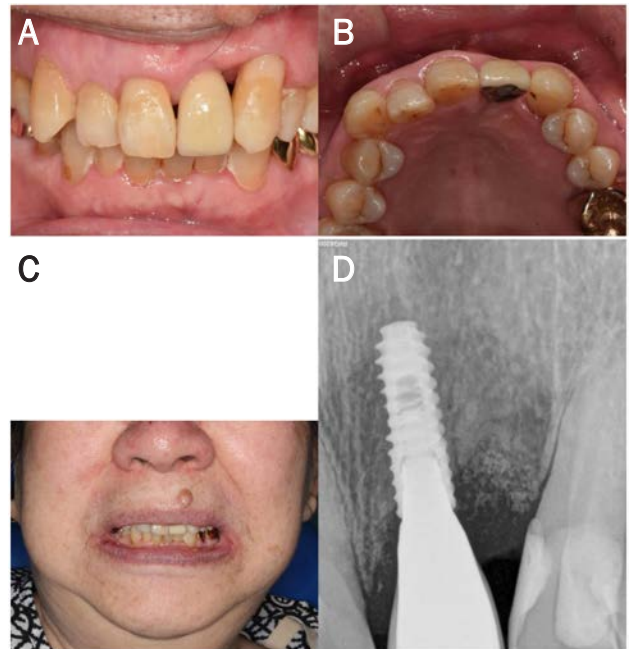


Figure 9. Post-operative photographs. (A) Frontal view. (B) Occlusal view of maxilla. (C) Smile view. (D) Periapical radiograph.

CASE 2

A 53-year-old female patient presented Prosthodontics clinic in Seoul St' Mary's Hospital of Catholic University of Korea with the wish to restore the missing space of #11 and improve the overall aesthetics of the anterior region after extraction #11 due to trauma. In oral examination, crowding and labioversion of the maxillary anterior teeth were observed (Figure 10). The mesiodistal width of missing space was narrower than that of #21. In order to resolve the crowding and esthetically restore missing teeth, implant treatment with orthodontic treatment was planned. The space was thoroughly evaluated and determined through collaboration with the department of orthodontics. During orthodontic treatment, temporary crown was attached with orthodontic appliances for esthetics (Figure 11). Before 3months of orthodontic treatment completion, CBCT was taken. After thorough examination of the radiographs, the position and the angulation of the implant were determined with the aid of radiographic stent (Figure 12). The Astra OsseoSpeed 3.5 × 11.0 mm fixture was placed on #11 area with the aid of prepared surgical stent (Figure 13). And after 4months of osseointegration period, finishing of orthodontic treatment, a temporary restoration was fabricated and delivered (Figure 14). The esthetic and function were eval-

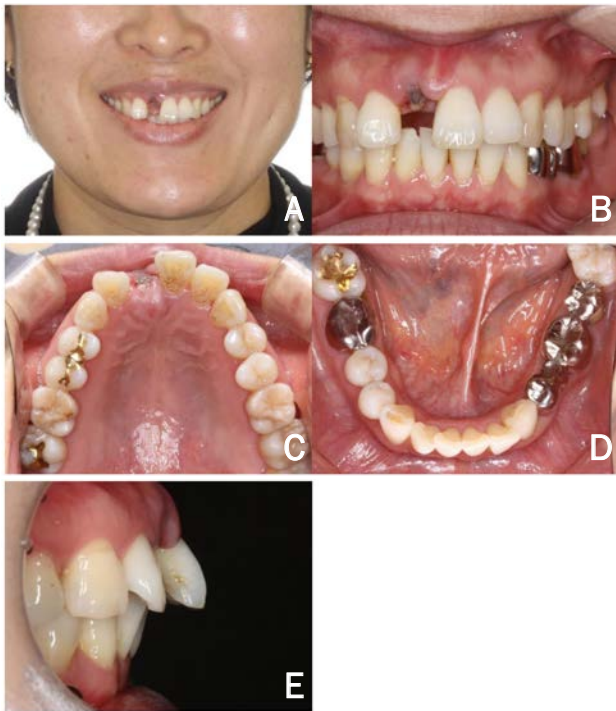


Figure 10. Pre-operative photographs. (A) Facial photographs. (B) Frontal view. (C) Occlusal view of maxilla. (D) Occlusal view of mandible. (E) Lateral view.



Figure 12. CBCT scan images for implant placement planning.



Figure 11. Temporary restoration of #11 with fixed orthodontic appliances.

uated for 3 months. With the consent of the patient, the definitive prosthesis of the #11 implant made of porcelain fused to precious metal was restored (Figure 15, 16). In consideration of the angle of fixture and direction of loading, it was decided to make UCLA type prosthesis. And After definitive restoration, patient was satisfied with the results.

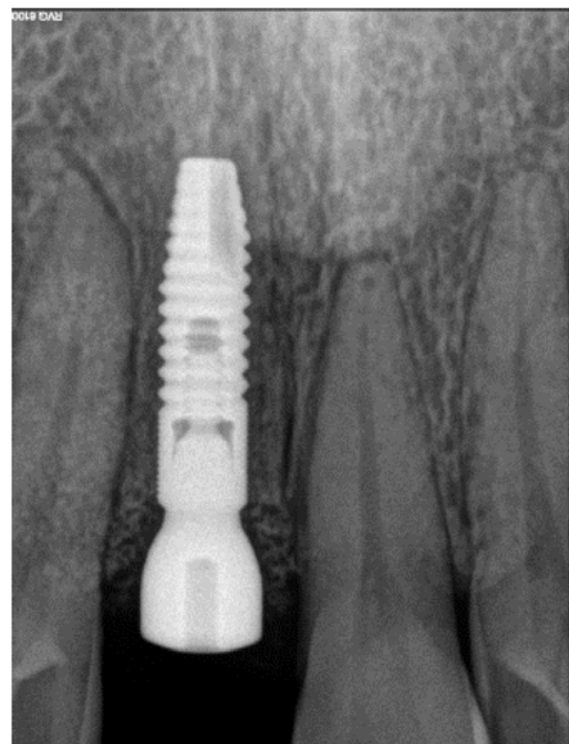


Figure 13. Post-surgical periapical radiograph.

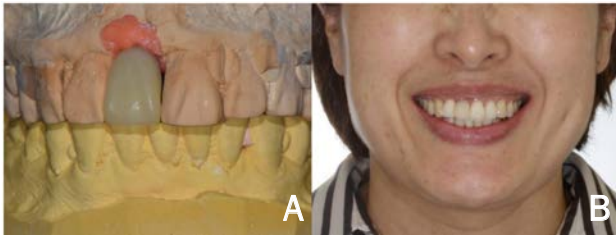


Figure 14. Fabrication and delivery of temporary prosthesis. (A) Fabrication of temporary restoration. (B) Smile view after delivery of temporary prosthesis.



Figure 15. Definitive prosthesis of implant supported fixed prosthesis.

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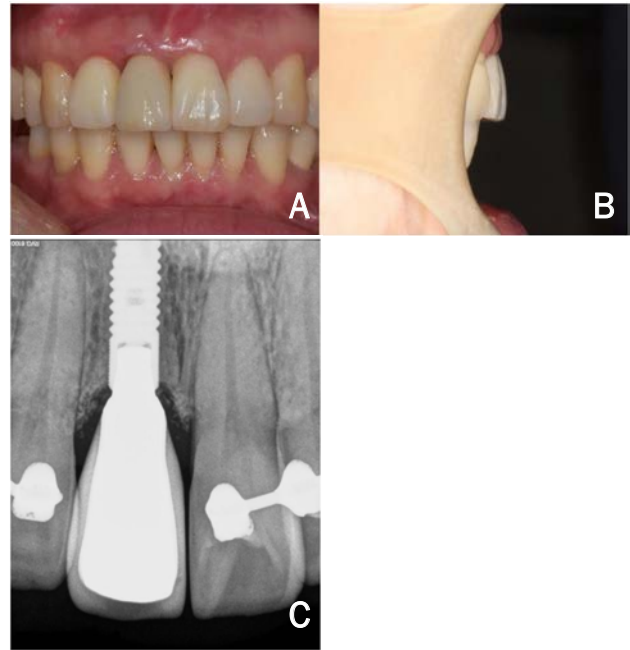


Figure 16. Post-operative photographs. (A) Frontal view. (B) Lateral view. (C) Periapical radiograph.

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