

## Front teeth replacement with implant-supported crowns: A case report

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### ABSTRACT

The use of dental implants to support fixed or removable restoration is widely used as treatment modality. The advantages are increased retention, chewing ability, and easy access to oral hygiene procedures. A missing tooth that needs to be replaced completely can be restored using an implant-supported crown. The aim of this study is to rehabilitate maxillary partial edentulous with implant supported crown. A 56-year-old female patient came to the clinic, wanted to replace partial edentulous after extraction of 11 and 21, needed fixed restoration in order to eat and chew well, and expected high aesthetic result as well. This patient had experienced using removable partial denture to replace her lost teeth. Patient wanted to have implant treatment with fixed restoration because she felt that her partial denture did not fit anymore, so the prosthodontic treatment option was using implant-supported crowns. Implant supported crown can be an option to replace partial edentulous.

**Keywords:** implant supported crown, fixed restoration, dental implant

### INTRODUCTION

Nowadays, dental implants represent a reliable treatment option in oral rehabilitation of partially or fully edentulous patients in order to secure various kinds of prostheses. Dental implants have become a standard procedure for single tooth replacement in the esthetic zone, providing many advantages but also challenges in sophisticated patients.<sup>1</sup>

Today, roughly 1300 different implant systems exist varying in shape, dimension, bulk and surface material, thread design, implant-abutment connection, surface topography, surface chemistry, wettability, and surface modification. The common implant shapes are cylindrical or tapered. Surface characteristics like topography, wettability, and coatings contribute to the biological processes during osseointegration by mediating the direct interaction to host osteoblasts in bone formation.<sup>1</sup>

Several techniques have been developed to eliminate bone deformities including bone grafting, guided bone regeneration, distraction osteogenesis, use of growth factors and stem cells.<sup>2</sup> Similar cases of bone defects can be treated differently according to the surgeon's preference.

The aim of this study is to report a case of rehabilitation a maxillary partial edentulous with implant-supported crowns.

### CASE

A 56-year-old female patient came to the clinic and wanted to replace her partial removable prostheses after extraction of 11 and 21 (Fig.1A). This patient wanted fixed restoration in order to eat and

chew well and expected high aesthetic result as well. In this case, patient lost her central maxillary incisives because of an accident. Patient had used a removable partial denture for six months after the extractions, and now the wound healing was completely done.



**Figure 1A** After extraction of tooth 11 and 21; **B** the X-ray panoramic

### MANAGEMENT

The first stage when the patient came for a consultation was taking X-ray, that shows a defect due to tooth extraction, 11 and 21, which was done by adding bone graft in the area (Fig. 1B). On the next visit, two implant placement  $\varnothing 3.3 \times 10$  mm (Straumann, Switzerland) was followed by bone grafting and membrane (Straumann, Switzerland) in areas of 11 and 21, then healing screw was placed to help guide the gingiva in the proper way to heal. Then, wound closure was performed by tension-free repositioning and suturing of the flap (Fig.2 and 3).

After 6 months, the healing screw was opened and a screw abutment was placed, which is the part that screws into the implant and will support the crowns (Fig.3). Once the abutment was placed, ano-

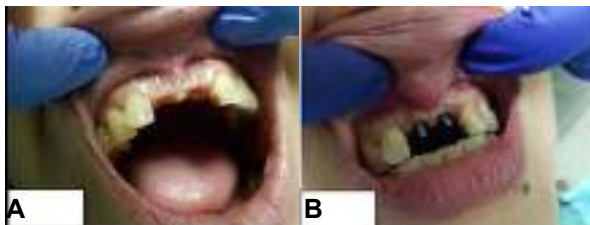


**Figure 2A** Two bone level implant fixture were inserted at region 11 and 21; **B** bone graft and membrane application; **C** wound closure by tension-free repositioning and suturing of the flap.

the impression of the abutment for each replacement tooth were taken (Fig.4), then the patient got a temporary crown while the tissues continued to heal and form around the artificial tooth as with the natural teeth. Patient wore the temporary crown for four to six weeks. During this time, the permanent crown would be made. Then, the final stage was placing the crown. The crowns were cemented into the abutment of this patient (Fig.5).



**Figure 3** Panoramic foto six-months after implants placement



**Figure 4A** Healing process six-months after implant insertion; **B** two cemented abutments were engaged to the implants.



**Figure 5** Two porcelain fused to metal crowns were chosen as final restorations

**DISCUSSION**

Teeth extraction is led by alveolar bone resorption which rapidly begins and continues for years. There are many different alveolar ridge pre-

servation techniques after tooth extraction. The main goal of the bone graft material is to serve as a scaffold and maintain a space for bone ingrowth, blood vessels formation, to support soft tissues and to improve the quality and quantity of regenerated bone.<sup>3</sup>

In this case, there is resorption of the edentulous ridge post extraction which makes socket preservation. These procedures involve filling the socket with bone graft and membrane. The aim of socket preservation is new bone formation or osteogenesis.

Autogenous bone graft in exposed threads of the implant was suggested as a golden standard. After autogenous bone graft, xenogenic bone and absorbable membrane were used for additional augmentation for long-term esthetic results. At least 1.5-2 mm of buccal bone is required for esthetic results in the anterior maxilla.<sup>4</sup>

In this case, bone grafting was decided because of the presence of thin labial plate in areas 11 and 21. The indications for (GBR) are dehiscence or fenestration wound or thin labial plate which was expected to resorb during healing. If the width of the residual alveolar bone in the anterior maxilla was less than 3 mm, BBG was performed. BBG was performed in the anterior maxilla most frequently than in any other sites.<sup>5</sup> During GBR procedures, xenogenic bone with/without autogenous bone was the most commonly used. The advantages of the xenogenic bone include slow bone resorption during the healing phase and its wide availability. Although there was no bone dehiscence, xenogenic bone was recommended to graft for the augmentation of the labial bone. In this study, absorbable membrane (Straumann, Switzerland) was used for GBR procedure.<sup>5</sup> In this case, the porcelain fused to metal was cemented as final restorations.

It was concluded that implant can replace missing teeth in order to restore masticatory function and aesthetic for the patient. Bone graft was neces-

sary given as augmentation to the defect areas during implant surgery. The success of the treatment was depended on the treatment planning, coope-

ration with the patient and the skillfull operator. Oral hygiene and routinely check-ups are the responsibility of the patient.

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