



Malpositioned implants in the anterior maxilla: a novel restorative approach to reestablish peri-implant tissue health and acceptable esthetics. Part I. Case presentation and treatment options

Oswaldo D. Moráquez, DDS, DMD, MAS

Lecturer, Division of Fixed Prosthodontics and Biomaterials,
University Clinics of Dental Medicine, University of Geneva, Switzerland

Francesca Vailati, MD, DMD, MSc

Private practice (genevadentalteam.com)
Senior Lecturer, Division of Fixed Prosthodontics and Biomaterials,
University Clinics of Dental Medicine, University of Geneva, Switzerland

Urs C. Belser, DMD, Prof Dr med dent

Chairman Emeritus, Division of Fixed Prosthodontics and Biomaterials,
University Clinics of Dental Medicine, University of Geneva, Switzerland



Correspondence to: Oswaldo Moráquez, DDS, DMD, MAS

Division of Fixed Prosthodontics and Biomaterials, University Clinics of Dental Medicine, University of Geneva,
Rue Barthélemy-Menn 19, CH-1205 Geneva, Switzerland;

Tel: +41 022 379 40 88; Fax: +41 022 379 40 52; E-mail: osvaldo.moraguez@unige.ch



Abstract

This two-part case presentation describes the prosthetic challenge of managing complications after inadequate esthetic risk assessment, treatment planning, and implant positioning in the anterior maxilla. Here, the case report of a 50-year-old woman, referred after inappropriate execution of immediate implant placement, is presented. Different restorative treatment alternatives are proposed, excluding major surgical

procedures. In the next part of the article, the advantages and shortcomings of the various prosthetic options will be discussed and the selected treatment revealed. The aim of this part of the article is to illustrate the importance of treatment planning, emphasizing that the correction of esthetic implant failures consistently leads to compromised results when compared to what could have been achieved first time round.

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Introduction

The paradigm shift that has occurred in recent years regarding implant treatment concepts has led to a more immediate approach, compared to the implant treatment protocols that were widely used a decade ago. This can be primarily attributed to: 1) the advancement in surgical protocols; 2) the implementation of newly developed biomaterials; 3) an increased interest in reducing treatment time; and 4) the multitude of prosthetic options currently available.^{1,2} However, immediate implant placement still has a guarded prognosis, particularly in association with improper case selection (high smile line, thin gingival biotype), insufficient treatment planning, and inexperienced clinicians.^{3,4}

Modern-day treatment concepts for the management of a compromised anterior dentition widely advocate the use of dental implants. As a consequence, implant placement in the anterior maxilla has become a frequent procedure in contemporary daily practice. Treatment planning in this highly sensitive zone focuses on the achievement of predictable long-term esthetics.^{5,6} Implant therapy in the anterior maxilla for single-tooth replacement, adhering to the concepts of early implant placement in conjunction with simultaneous contour augmentation using guided bone regeneration (GBR), has evolved to become a highly predictable treatment modality.⁷⁻⁹ In contrast, immediate implant placement has commonly been associated with an increased risk of esthetic complications, namely facial mucosal recession.¹⁰⁻¹³ Hence, limiting this treatment option to

ideal clinical situations and/or skilled clinicians is advisable.

When implementing a definitive implant-based protocol for the replacement of multiple missing adjacent maxillary anterior teeth, clinicians still debate questions related to the ideal number, dimension, and localization of the implants because reports in the literature are inconclusive on the esthetic outcomes, particularly with regard to the inter-implant soft tissue contours.^{14,15}

Well-formulated guidelines have been established over the years to achieve long-term success in the esthetic zone, which include detailed esthetic risk assessment,¹⁶ correct 3D planning of the implant position,¹⁷ and facial contour augmentation, if indicated.¹⁸ Particularly, immediate implant placement therapy in the esthetic zone requires both meticulous planning and careful execution. If these principles are not respected, the results can be disappointing and the entire outcome compromised.

Objectives

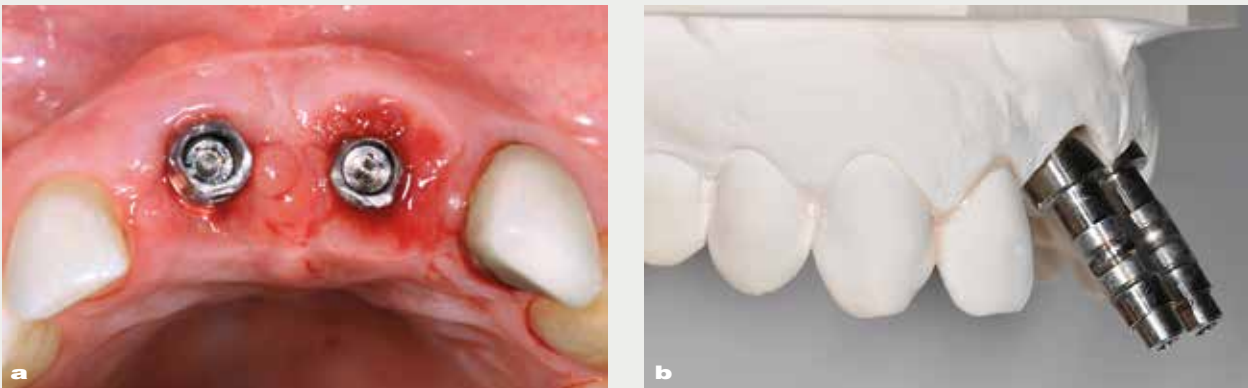
In this part of the article, the case is presented of a 50-year-old woman referred after inadequate execution of immediate implant placement, which led to an esthetic failure. Different restorative options are proposed to correct major axis-related problems and spatial discrepancies.

Case presentation

A 50-year-old Caucasian female patient presented to the Division of Fixed Prosthodontics and Biomaterials with an



Figs 1a to 1c Patient presented with a provisional FDP, cemented on two implants in positions 11 and 21. Although the patient has a high smile line, she adapted her smile in this first picture, ie, trying to hide the compromised cervical area of the provisional. The thin facial mucosa and the presence of scars related to multiple previous surgeries represented a particular challenge for the restorative clinician. Note the poor marginal adaptation of the prosthesis, probably the result of numerous repairs and recementation procedures.



Figs 2a and 2b After the removal of the provisional FDP, highly inflamed peri-implant soft tissue became apparent. The implants, which had been placed *alio loco* immediately after tooth extraction, had an extreme facial inclination.

implant-supported fixed prosthesis in the anterior maxilla that had failed in its esthetic outcome (Fig 1). The treatment history revealed extraction of both maxillary central incisors, followed by immediate implant placement and restoration with a cemented provisional. The patient expressed a strong desire for a permanent solution with a notable improvement of the esthetic dimension. Intraoral examination showed an extreme facial inclination of implants 11 and 21, and the presence of severe chronic peri-implant mucosal inflammation (Fig 2).

Further, the intraoral and radiological examination revealed an endodontically compromised maxillary left lateral incisor (Fig 3), exhibiting deep pockets and tenderness to percussion and palpation. There were no significant findings in the medical history. The patient insisted on a conservative treatment option to avoid major surgical procedures, which might have included implant removal and re-implantation, in conjunction with hard and soft tissue grafting.

Based on the patient's desires and the existing clinical situation, various

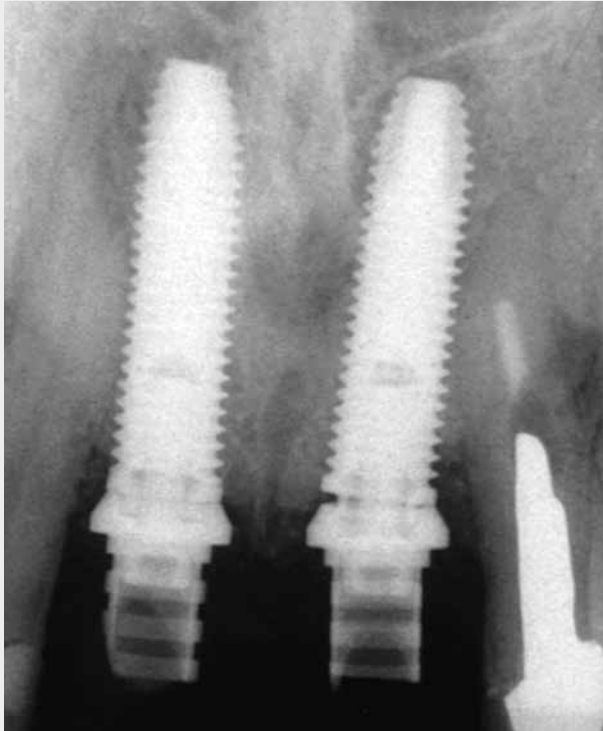


Fig 3 Periapical radiograph illustrating the incorrect seating of the abutment of the provisional prosthesis at the level of implant 21. In addition, the left lateral incisor exhibited a large post and an incomplete root canal filling. A periradicular radiolucency was noticed. The patient reported pain at the level of this tooth, and the presence of a root fissure was suspected.

treatment alternatives were discussed (Fig 4). Further aspects that were taken into consideration in the planning related to the patient's high smile line and thin gingival biotype. The treatment objec-

Freestanding vs splinted crowns
Cement-retained FDP vs screw-retained FDP
Straight vs angulated vs custom abutments
Metal-ceramic vs all-ceramic FDP

Fig 4 Treatment options to reestablish peri-implant tissue health and acceptable esthetics.

tives outlined for this patient included elimination of any existing local inflammation and the reestablishment of adequate oral hygiene, followed by the insertion of a definitive implant-supported fixed dental prosthesis (FDP) compensating the facial inclination of the implants.

The thorough clinical examination clearly spoke for implant removal, considering the labial malposition of the implants and their major facial inclination, the thin mucosal biotype, and the presence of severe chronic peri-implant mucosal inflammation, in association with an endodontically compromised left lateral maxillary incisor and a pronounced gummy smile. However, this option was strongly rejected by the patient, who was very keen to avoid any type of surgical intervention, if possible, including connective tissue grafting. Under these specific restrictions, therefore, treatment alternatives had to focus exclusively on finding the most adequate restorative solution.

Summary

An implant placed in the esthetic zone needs to be positioned in a three-dimensional spatial relationship that is in harmony with its surrounding structures in order to provide a predictable esthetic result. Therefore, a thorough preoperative analysis and prosthetic treatment planning are warranted. The comfort zones for optimal implant placement in the anterior region are defined in three dimensions: mesiodistal, orofacial, and coronoapical. The esthetic outcome of the present case was a failure mainly due to the inadequate execution of an immediate implant-placement approach.



The result of these guidelines not being adhered to was an improper position in the orofacial direction. Another important factor that caused this failure was probably inappropriate case selection for immediate placement. In the next part of the article, different treatments

options will be discussed and the definitive prosthetic decision presented.

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