



Post-extraction implant using custom-modified ceramic screw abutment. Case report

Implante postexodoncia y pilar cerámico personalizado atornillado modificado. Reporte de caso

Ángela María Lozano Sánchez,* Olga L Rodríguez E[§]

ABSTRACT

Greyish pigmentation of the mucosa around implants after abutment insertion and crown cementation is considered an esthetic failure. This pigmentation is due to use of metallic abutments or a thin periodontal biotype. The purpose of the present report was to improve gingival esthetic appearance of patients with thin biotype, by modifying color in the sub-mucosal region of a screwed-on, custom made, zirconium abutment, successfully improving gingival aesthetics in a right lateral incisor.

Key words: Zirconium, peri-implant mucosa, abutment.

Palabras clave: Zirconio, mucosa periimplantar, pilar.

INTRODUCTION

An implant-supported crown for a single tooth in the anterior section of the mouth represents an alternative with excellent results. Materials most used to achieve this are metallic abutments with a ceramic-metal restoration, or zirconium abutments with a fully ceramic crown. Nevertheless, use of metallic abutments is associated to aesthetic problems.

Due to its excellent mechanical retention,¹ for many years, titanium has been the material preferred by manufacturers to achieve standardized abutments for implants. Nevertheless, their grey hue becomes visible in the presence of a thin periodontal biotype, creating thus a gingival appearance different from the gingival tissue of adjoining teeth;² moreover, in case of a gingival recession occurring after the restoration, the titanium abutment results exposed, negatively affecting patient's aesthetics.^{3,4} Although viable from the prosthetic perspective, these restorations can become an aesthetic failure.⁵

Based on scientific evidence, periodontal biotype can be diagnosed through clinical inspection, observing periodontal probe transparency through the mucosa.^{6,7}

When mucosa measures over 1 mm in thickness, it is considered thick periodontal biotype; mucosa

RESUMEN

Se considera un fracaso estético la visible decoloración grisácea de la mucosa periimplantar, después de la inserción del pilar y la cementación de la corona, esto se debe al uso de pilares metálicos o a un biotipo periodontal delgado. El objetivo de este reporte de caso es mejorar la apariencia estética gingival en pacientes con biotipo delgado, modificando el color en la región submucosa de un pilar personalizado atornillado de zirconio en un incisivo lateral derecho.

with thickness lesser than 1 mm is defined as thin periodontal biotype, it exhibits a delicate, almost translucent appearance and is susceptible to gingival recession,^{7,8} generating a greyish, unaesthetic effect known as «shine through» underneath the mucosa located around the implant.⁹

To replicate appearance of a natural tooth is of the utmost importance, therefore, anatomy, color appearance and thickness of the mucosa surrounding the implant must be evaluated. These are decisive and determinant factors in order to achieve soft tissue aesthetics.¹⁰

* Oral Rehabilitation Specialist. Autonomous University of Manizales, Colombia. Professor at the Department of Oral Rehabilitation School of Dentistry, San Fernando Campus del Valle University, Cali, Colombia.

§ Oral Rehabilitation Specialist. Professor at the Oral Rehabilitation Department School of Dentistry, Autonomous University of Manizales, Colombia.

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There are other factors that influence restoration aesthetics such as implant position, shape, contour and color of the prosthetic abutment.¹¹

A study that assessed restorations on single tooth implant in aesthetic zone revealed that 60% of all cases exhibited color inequality between restoration soft tissue over implant when comparing it with the natural tooth. This represents one of the main problems found when performing implant-supported restorations.⁵

Zirconium abutments were introduced in implantology in an effort to improve this disadvantage. When compared to titanium-made devices, these abutments possess excellent biological advantages such as low bacterial adhesion and biocompatibility with soft tissue,¹⁰⁻¹³ thus, zirconium abutments provide highly aesthetic results.

The target of the present report was to show color modification in the sub-mucosa area of a custom-made screwed-on zirconium abutment, successfully improving gingival esthetics.

CLINICAL CASE REPORT

A 24 year old female, in apparent good general health, sought consultation due to marginal inflammation at the site of the right upper lateral incisor, with 8 mm vestibular probing depth as well as a ceramic crown restoration; patient lacked history of untoward functional habits (*Figure 1*).

X-ray evaluation revealed one endodontically treated tooth, a lesion at the periapex and a fiber glass post (*Figure 2*).

Based on clinical and radiographic examination a diagnosis of longitudinal root fracture with poor prognosis was emitted.

Indications that prompted tooth extraction and immediate implant placement were the following: root

fracture, advanced bone support loss, retained primary tooth, endodontic failures, non-restorable crown and dento-alveolar trauma.

After discussing different treatment options and with the patient's consent it was decided to substitute the tooth for an implant supported crown.

Requested studies such as panoramic and periapical X rays, photographs, study models and computerized axial tomography (CAT), allowed identification of anatomical structures, bone quality and availability.

The patient was medicated with etoricoxib-type analgesic (100 mgs every 24 hours), antibiotic (clindamycin 300 mg every 6 hours), extra oral ice pack applications were recommended for the first day as well as 0.2% chlorhexidine rinses for eight days.

Local, infiltrative anesthesia was applied to the area (2% lidocaine hydrochloride roxicaine) was applied to



Figure 2. Initial X-ray.



Figure 1. Initial intra-oral view.



Figure 3. Extraction preserving socket.

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