

Journal of

# Oral Science & Rehabilitation

**Journal for periodontology, implant dentistry,  
dental prosthodontics and maxillofacial surgery**

ISSN 2365-6123 (Print)

ISSN 2365-6891 (Online)

Volume 4 — Issue 2/2018



**dti** Dental  
Tribune  
International



# Redefine possibilities

## Trefoil™ – the next full-arch revolution

The new Trefoil system makes definitive teeth possible in just one day.\*

Discover groundbreaking engineering, created with the needs of the many in mind, that enables passive fit with a pre-manufactured bar and unique adjustable fixation mechanism.

[nobelbiocare.com/trefoil](http://nobelbiocare.com/trefoil)



\*Depending on clinician preference and close cooperation with the laboratory.  
GMT 53206. Disclaimer of liability: This product is part of an overall concept and may only be used in conjunction with the associated original products according to the instructions and recommendation of Nobel Biocare. Non-recommended use of products made by third parties in conjunction with Nobel Biocare products will void any warranty or other obligation, express or implied, of Nobel Biocare. The user of Nobel Biocare products has the duty to determine whether or not any product is suitable for the particular patient and circumstances. Nobel Biocare disclaims any liability, express or implied, and shall have no responsibility for any direct, indirect, punitive or other damages, arising out of or in connection with any errors in professional judgment or practice in the use of Nobel Biocare products. The user is also obliged to study the latest developments in regard to this Nobel Biocare product and its applications regularly. In cases of doubt, the user has to contact Nobel Biocare. Since the utilization of this product is under the control of the user, it is his/her responsibility. Nobel Biocare does not assume any liability whatsoever for damage arising thereof. Please note that some products detailed in this Instructions for Use may not be regulatory cleared, released or licensed for sale in all markets. As such, provided patient criteria are met and adequate primary stability is achieved, Nobel Biocare implants allow a fixed provisional restoration to be loaded on the day of surgery.

Journal of

# Oral Science & Rehabilitation

## Surface treatment of ceramics

In modern prosthodontic dentistry, metal-free ceramics are widely used materials, and knowledge of their unique cementation procedures is paramount for a modern dentist. In order to achieve optimal adhesion between teeth and ceramics, knowing the composition and properties of adhesives is not enough. It is important to know how dental tissue and the different ceramics interact with them, and how these substrates can be treated beforehand in order to achieve optimal results.

As technology has progressed, different types of ceramics have been introduced, such as feldspathic porcelain, leucite-reinforced ceramics, lithium disilicate and zirconia. These materials have similar esthetic properties, but different mechanical and chemical properties. The difference in properties between ceramics is directly related to their structural differences: The presence or absence of leucite crystals, the radically different shape of lithium disilicate crystals and zirconium oxide particles, and other features of ceramics directly influence the type of surface treatment needed to obtain an optimal chemical adhesion. Each material needs to be treated in a certain way before cementation, and knowing this could yield overall better clinical results.

Nowadays, sandblasting glass-ceramic surfaces (feldspathic, leucite and lithium disilicate) is not advised, because this kind of treatment could flatten them and create microfractures in the glossy matrix, leading to future failure of the restoration. A tribochemical treatment on zirconia using aluminum oxide particles, however, is advised; it increases surface roughness and augments chemical adhesion owing to the particles embedded in the zirconia's surface.

The gold standard for treating glass-ceramic surfaces is etching; however, for different ceramics, different etching times must be applied:

- For feldspathic ceramics, etching with 5% hydrofluoric acid for 120 s is advised.
- For leucite-reinforced ceramics, etching with 5% hydrofluoric acid for 60 s is advised.
- For lithium disilicate, etching with 5% hydrofluoric acid for 20 s is advised.

For zirconia, etching is not advised, as it has been demonstrated that its surface is rendered chemically inert by this treatment.

In conclusion, clinicians should feel compelled to research and study this subject in order to combine their knowledge of adhesive materials with the knowledge of chemical characteristics and best surface treatments for both the dental substrate and the restoration substrate.

Dr. Giacomo Derchi  
Board of reviewers

Dr. Vincenzo Marchio

**3**

**Editorial**

Dr. Giacomo Derchi

**6**

**About the Journal of Oral Science & Rehabilitation**

**8**

**Amparo Aloy Prósper et al.**

Guided bone regeneration around 1-stage nonsubmerged dental implants with periimplant bone defects: A retrospective case series study

**16**

**Marco Tallarico et al.**

Extraoral chairside digitalization: Clinical reports on a new digital protocol for surgical and prosthetic treatment of completely edentulous patients

**22**

**Christian Brenes et al.**

Digital face-bow transfer technique using the dentofacial analyzer for dental esthetics and 2-D, 3-D smile design: A clinical report

**32**

**Yi Man et al.**

Low implant insertion torque allows minimal bone loss: A multicenter 2-year prospective study

**40**

**Eriberto Bressan et al.**

Implant-supported mandibular complete fixed prosthesis with conometric retention after 3 years of functional loading

**46**

**Elizabeth Maria Costa de Carvalho et al.**

Evaluation of the incidence and prevalence of temporomandibular joint dysfunction in psychiatric patients using typical antipsychotic drugs

**54**

**Industry news**

**56**

**Guidelines for authors**

**58**

**Imprint— about the publisher**



# Monaco, 18-19 October

2018 REGIONAL EUROPEAN CONGRESS

## Future Implantology

The Convergence of Evidence  
and Digital Innovation



**Prof. Patrick Missika**

Inputs on Digital Planification  
in the Process of Extraction and  
Immediate Loading of Implants



**Prof. Virginie Monnet-Corti**

Think Pink in Esthetics  
of the Smile



**Dr. Ioana Datcu**

From the Virtual Planification  
to the Implant Surgery:  
The Digital Workflow



**Dr. Patrick Simonet**

Parafunction and Implant  
Prosthodontics:  
The Times They Are A-Changin'



**Tech. Dent. Uli Hauschild**

Guided Esthetics:  
Switching Between Virtual  
Planning and Reality



**Dr. Carlo Poggio**

Trends and Challenges in  
Contemporary Prosthodontics



**Dr. Borja Diaz Oliver**

3D Planning Based on DSD  
for Placement of Implants and  
Immediate Loading Prosthesis



**Dr. Attila Bodrogi**

Bio-Hacking and Tissue  
Engineering. The Missing Link  
in Digital Implant Dentistry?

## About the *Journal of Oral Science & Rehabilitation*

The aim of the *Journal of Oral Science & Rehabilitation* is to promote rapid communication of scientific information between academia, industry and dental practitioners, thereby influencing the decision-making in clinical practice on an international level.

The *Journal of Oral Science & Rehabilitation* publishes original and high-quality research and clinical papers in the fields of periodontology, implant dentistry, prosthodontics and maxillofacial surgery. Priority is given to papers focusing on clinical techniques and with a direct impact on clinical decision-making and outcomes in the above-mentioned fields. Furthermore, book reviews, summaries and abstracts of scientific meetings are published in the journal.

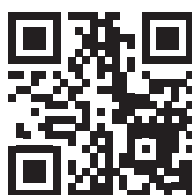
Papers submitted to the *Journal of Oral Science & Rehabilitation* are subject to rigorous double-blind peer review. Papers are initially screened for relevance to the scope of the journal, as well as for scientific content and quality. Once accepted, the manuscript is sent to the relevant associate editors and reviewers of the journal for peer review. It is then returned to the author for revision and thereafter submitted for copy editing. The decision of the Editor-in-chief is made after the review process and is considered final.

## About Dental Tribune Science

Dental Tribune Science (DT Science) is an online open-access publishing platform ([www.dtscience.com](http://www.dtscience.com)) on which the *Journal of Oral Science & Rehabilitation* is hosted and published.

DT Science is a project of the Dental Tribune International Publishing Group (DTI). DTI is composed of the leading dental trade publishers around the world. For more, visit

[www.dental-tribune.com](http://www.dental-tribune.com)



## **Benefits of publishing in the journal for authors**

There are numerous advantages of publishing in the *Journal of Oral Science & Rehabilitation*:

- Accepted papers are published in print and as e-papers on [www.dtscience.com](http://www.dtscience.com).
- Authors' work is granted exposure to a wide readership, ensuring increased impact of their research through open-access publishing on [www.dtscience.com](http://www.dtscience.com).
- Authors have the opportunity to present and promote their research by way of interviews and articles published on both [www.dtscience.com](http://www.dtscience.com) and [www.dental-tribune.com](http://www.dental-tribune.com).
- Authors can also post videos relating to their research, present a webinar and blog on [www.dtscience.com](http://www.dtscience.com).

## **Subscription price**

€50.00 per issue, including VAT and shipping costs.

## **Information for subscribers**

The journal is published quarterly. Each issue is published as both a print version and an e-paper on [www.dtscience.com](http://www.dtscience.com).

## **Terms of delivery**

The subscription price includes delivery of print journals to the recipient's address. The terms of delivery are delivered at place (DAP); the recipient is responsible for any import duty or taxes.

Copyright © Dental Tribune International GmbH. Published by Dental Tribune International GmbH. All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without prior permission in writing from the copyright holder.

# Guided bone regeneration around 1-stage nonsubmerged dental implants with periimplant bone defects: A retrospective case series study

## Abstract

### Objective

The aim was to evaluate the 3-year outcome of nonsubmerged dental implants with buccal periimplant defects treated with a guided bone regeneration technique in a 1-stage approach.

### Method and materials

A retrospective chart review of consecutive patients treated with dental implants and bone regeneration at the time of implant placement, left nonsubmerged, and with a minimum follow-up of 3 years after implant loading was performed. Patients were treated between January 2005 and December 2009 at the Oral Surgery Unit of the University of Valencia, Valencia, Spain. The following variables were assessed: complications with the healing procedure, implant success (based on Buser et al.<sup>22</sup>), and periimplant marginal bone loss. Statistical analysis was performed applying Chi2 test, Spearman's test and the Mann-Whitney test, using alpha set at 0.05.

### Results

A total of 50 patients (26 women, 24 men) with a mean age of  $54.8 \pm 13.6$  years (range: 25–79) and 75 implants were included. Seventy-one dehiscences (average height:  $1.97 \pm 1.06$  mm) and 4 fenestrations (average height:  $2.75 \pm 0.95$  mm) were treated. Five membrane exposures were recorded (10%). After 3 years post-loading, the implant success rate was 94% and mean marginal bone loss was  $0.50 \pm 0.27$  mm.

### Conclusion

Despite the limitations of this study, a nonsubmerged approach in connection with guided bone regeneration to treat periimplant bone defects is a feasible option with few healing complications and a good prognosis.

### Keywords

Guided bone regeneration; periimplant defects; dental implants; marginal bone loss; success rate; nonsubmerged.

Amparo Aloy Prósper,<sup>a</sup> David Peñarrocha Oltra,<sup>a</sup>  
Hilario Pellicer Chóver,<sup>a</sup> Maria Peñarrocha Diago<sup>a</sup>  
& Miguel Peñarrocha Diago<sup>a</sup>

<sup>a</sup> Stomatology Department, Faculty of Medicine and  
Dentistry, University of Valencia, Valencia, Spain

### Corresponding author:

**Dr. Amparo Aloy Prósper**  
Clínicas odontológicas  
Gascó Oliag, 1  
46021 Valencia  
Spain

amparo.aloyprosper@gmail.com  
T +34 963 864 139

### How to cite this article:

Aloy Prósper A, Peñarrocha Oltra D, Pellicer Chóver H,  
Peñarrocha Diago M, Peñarrocha Diago M. Guided bone  
regeneration around 1-stage nonsubmerged dental  
implants with periimplant bone defects: A retrospective  
case series study.  
J Oral Science Rehabilitation. 2018 Jun;4(2):08–14.

## Introduction

The application of guided bone regeneration (GBR) provides clinicians with the ability to place implants in areas of insufficient amounts of bone.<sup>1</sup> The 1-stage approach, using grafting material with or without membranes at the time of implant placement, has the advantage of shortening the total treatment time.<sup>2</sup> GBR utilizing a 1-stage procedure around submerged implants has been widely documented in humans<sup>1, 3, 4</sup> and animals.<sup>5-7</sup> Several experimental studies in animals on nonsubmerged immediate implants placed in extraction sockets with GBR indicated that bone regeneration around these implants was possible;<sup>8-10</sup> and clinical studies on humans confirmed these results with good long-term outcomes.<sup>11, 12</sup>

Defects from fresh extraction sockets are characterized by the maintenance of intact surrounding bone walls, which offer favorable conditions for regenerative processes. However, when dental implants are placed in narrow ridges, the lack of 1 or more walls leads to open defects, which are less favorable for the regenerative process, since the blood clot is less protected, grafted bone particles are more subject to displacement, and a membrane placed to cover the defect may collapse.<sup>13</sup> Despite the 1-stage approach having the advantage of shortening the total treatment time, different systematic reviews on clinical outcomes of GBR procedures to correct periimplant dehiscences and fenestrations show that in most of the included studies dental implants were left submerged. There are few studies on GBR around nonsubmerged implants for treating periimplant bone defects in narrow alveolar ridges.<sup>14-19</sup> The purpose of the present study was to evaluate the 3-year outcome of 1-stage nonsubmerged dental implants with buccal periimplant defects treated with a GBR technique and resorbable membranes.

## Materials and methods

### Patient selection

A retrospective clinical study was conducted of patients with a minimum of 1 dental implant demonstrating a dehiscence or fenestration bony defect with an exposed implant surface during implant placement and thus undergoing

simultaneous particulate bone grafting with resorbable membranes and left nonsubmerged. Patients were treated between January 2005 and December 2009 at the Oral Surgery Unit of the University of Valencia, Valencia, Spain, and were monitored annually for a minimum of 3 years post-loading. The study was performed following the guidelines of the Declaration of Helsinki for human research. Surgical procedures were performed by the same surgeon with extensive experience in regenerative procedures. Patients were given full information about the surgical procedures and duly signed informed consent forms. Preoperative analysis included registering complete medical histories and performing clinical and radiographic examinations.

Subject and site inclusion criteria:

- Dental implant with a dehiscence or fenestration bony defect during implant placement treated with particulate bone graft and resorbable membranes.
- Nonsubmerged dental implants.
- Tooth/teeth at implant site extracted > 6 months previously.
- Rehabilitation with a fixed or removable implant-supported prosthesis.
- Age > 18 years.
- No relevant medical conditions.
- Nonsmoking or smoking ≤ 20 cigarettes/day (all pipe or cigar smokers were excluded).
- Follow-up for at least three years after prosthetic loading.

Subject and site exclusion criteria:

- Patients with systemic or local conditions contraindicating implant therapy (previous chemotherapy, previous irradiation of the head and neck region, active progressive periodontitis and/or immunosuppression).
- Pregnant or lactating patients.
- Sites with acute infection.
- Poor oral hygiene.
- Implants with sinus augmentation.
- Immediate implants or placed in bone with a recent extraction (< 6 months).
- Reimplantation.
- Implants placed in bone previously regenerated with bone grafting.
- Patients failing to attend follow-up visits.

The present study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology statement.<sup>20</sup>