

A New Approach to the Use of Osseointegrated Implants in Palate Obturator

Laura Lago, DDS, PhD, Benito Rilo, MD, PhD, Noelia Fernández-Formoso, DDS, PhD, and Luis da Silva, MD, PhD

Abstract: Osseointegrated implants are regularly used for retention and stability of maxillofacial prosthesis, especially in palatal obturator with large defects and few remaining teeth. In these cases, loads that tissues receive from a prosthesis can cause bone resorption and thus enlarge the defect. Implants may help redistribute the loads on the perimplant bone crest and avoid exacerbating the defect. The authors present a case in which the palatal defect has increased overtime. After placement of a sealing prosthesis with implants, bone and mucosal tissues stability around the defect it is observed during 1 year of follow-up.

Key Words: Bone resorption, dental implant, maxillofacial prostheses, tissue preservation

(*J Craniofac Surg* 2016;27: 2162–2163)

A maxillary obturator prosthesis is the elective treatment of a palatal defect sealing the void between the oronasal cavity and mouth. The obturator should facilitate recovery of chewing and speech, provide lip support, and restore esthetics. The stability and retention of the prosthesis is a therapeutic challenge due to the size and shape of the defect and also depending on the bone and dental mucosal remnants. Implantology offers advantages and represents an important aid in the worst cases. In general, the remaining teeth should support the heavy loads transmitted by the prosthesis. Furthermore, if the patient has complete tooth loss, the situation is much more complicated, and the residual tissues must support the loads. This may negatively affect the remaining bone crest or the tissues adjacent to the surgical defect. The literature has already reported that continued use of a prosthesis can cause resorption of the underlying bone.¹ Using a conventional sealing prosthesis in an edentulous patient over the years may lead to progressive bone resorption at the edges of the surgical defect, thereby enlarging it.² The original indication of osseointegrated implant was provide retention, stability, and support for the prosthesis. Furthermore, implants can also reduce loads on the residual bone around the defect and, thus minimize resorption.^{3–6} The aim of this report was



FIGURE 1. (A) Initial dimensions of the defect. (B) Final dimensions of the defect. (C) Bar for retention of the obturator.

to describe the use of implants to eliminate or reduce the pressures on the surgical defect.

CLINICAL REPORT

A 65-year-old patient was operated on for a lymphoma 10 years ago, losing all his remaining maxillary teeth and leaving a large palatal defect the usual result of surgery. The patient was using a conventional obturator. At first, the prosthesis restored the functional aspects successfully, but after a few months, it required continual relining and adjusting for proper sealing off the communication. Resorption of the hard and soft tissues of the maxillary process with consequent enlargement of the defect was observed, from an initial size of 28 × 16 mm (Fig. 1A) to final dimensions of 33 × 21 mm (Fig. 1B).

The authors assumed that the progressive modification of the defect was due to the pressure carried by the tissues surrounding the defect. To minimize the load, 4 osseointegrated implants were placed (Fig. 1C). One year later, using the new prosthesis, the patient needed no further adjustment and was pleased with the swallowing and phonating aspects. An increase in the defect size was not observed.

DISCUSSION

The use of implants for supporting maxillofacial prostheses has been widely documented.⁷ Most of the work described in the literature on the influence of stress on the appliances' abutments, teeth, and implants has been directed toward studying the failure of the prosthesis or implants.⁸ No firm conclusions have been made about long-term changes in surgical defects under the intense loads transmitted by the maxillofacial prosthesis. Several studies using photoelasticity show changes in load distribution,⁹ so the use of implants in an overdenture increases the stress concentration on the peri-implant bone. Kim and Ghali¹⁰ stated that during the application of loads stress concentrates on supporting the mucosal tissues. In the patient with the prosthesis implant, this stress is transmitted to the peri-implant bone crest. In our case, the support, stability, and retention of the prosthesis were not the original purpose of placing the implants. The aim was to preserve the size of the defect so as to concentrate the stress directly on the implants. We assume that the loads on the patient's tissues were distributed over the osseointegrated implants, reducing the stress on the palatal defect. In restoring a palatal defect, the use of implants appears to divert the distribution of loads and forces away from the edges of

From the Department of Prosthodontics, Faculty of Medicine and Dentistry, Santiago de Compostela University, Santiago de Compostela, Spain.

Received June 09, 2016.

Accepted for publication July 29, 2016.

Address correspondence and reprint requests to Dr Laura Lago, DDS, PhD, Department of Prosthodontics, Faculty of Medicine and Dentistry, Santiago de Compostela University, Entrerrios, s/n, 15782 Santiago de Compostela, Spain; E-mail: lagogonzalezlaura@gmail.com

The authors report no conflicts of interest.
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ISSN: 1049-2275

DOI: 10.1097/SCS.0000000000003110

the defect and improve the peripheral seal and, therefore, swallowing and phonation.

Therefore our recommendation is that in an edentulous patient with a surgical defect in the maxilla, the most suitable treatment will be to use osseointegrated implants to improve retention of the prosthesis and to minimize loadings on the edges of the defect, which may be assumed by these implants.

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Bone Regeneration of the Maxillofacial Region Through the Use of Mesenchymal Cells Obtained by a Filtration Process of the Adipose Tissue: ERRATUM

In the article that appeared on page 558 of the May 2016 issue of the *Journal of Craniofacial Surgery*, the authors were listed in the incorrect order. The correct author list is as follows:

Valentina Pellacchia, MD, Giancarlo Renzi, MD, Roberto Becelli, PhD, and Fabio Socciarelli, MD

REFERENCE

Pellacchia V, Renzi G, Becelli R, et al. Bone regeneration of the maxillofacial region through the use of mesenchymal cells obtained by a filtration process of the adipose tissue. *J Craniofac Surg* 27;3:558-560