

# Height Parallelism of Implants in the Treatment of the Edentulous Mandible with Ball-Retained Overdentures: A Technical Note

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*The objective of this report is to present a device to achieve equal platform height in the vertical axis to allow the spherical abutments to work correctly in mandibular overdentures retained with 2 implants. The device is fabricated over plastic castable abutments, with a plate perpendicular to the implant platforms and located at the top of the platform height. Once implants are inserted, the device is screwed to an implant and allows evaluation of the height of the platforms. INT J ORAL MAXILLOFAC IMPLANTS 2008;23:953-954*

**Key words:** edentulous arch, overdenture, surgical template

Restoration with implant-retained overdentures of the edentulous mandible is a standardized and well-proven treatment approach over the last 3 decades.<sup>1,2</sup> To ensure optimal outcome and long-term survival of dental implants, it is usually recommended that the implant axis be perpendicular to the occlusal plane and simulate the axis of natural teeth.<sup>3-5</sup> In cases where 2 implants are placed to retain an implant-retained overdenture, it is also recommended that the implants be placed parallel with respect to the frontal plane.<sup>6,7</sup>

Sagittal deviations may result in an increased rate of prosthetic complication,<sup>6</sup> because when single spherical abutments are used, their positions are crucial. Utilization of a surgical guide is recommended to facilitate and optimize the surgical placement of dental implants.<sup>8-10</sup> However, final adjustment in the vertical axis to achieve same implant-platform height is always in the eyes of the surgeon.

This article describes a simple device for surgical adjustment of vertical height of implant platforms to achieve parallelism in the vertical plane.

## TECHNICAL NOTE

The device is fabricated at waxup on a plate over a plastic castable non-hexed burn-out abutment. The plate must be perpendicular to the implant platform, and located at the top of the platform height, to give the surgeon an idea of the desired vertical position. It is cast in type IV titanium in an inert argon atmosphere, polished and finished as any metal framework (Fig 1). It is a multiple-use device and can be sterilized with standard procedures.

When implants are inserted in the correct position and angulation following the parameters of the surgical guide, the device is screwed directly to the implant considered less amenable with respect to position modification (Fig 2). The device must not be completely tightened, allowing it to rotate toward the other implant to evaluate whether the height of the platforms is equal. Modifications in the vertical position of the implant can be made until the 2 platforms are at the same height (Fig 3).

## DISCUSSION AND CONCLUSION

When indicated, an implant-retained overdenture in the edentulous mandible is an excellent treatment approach, and the device described offers a simple and effective solution to improve retention. For ensuring a successful long-term implant prognosis, clinicians are advised to place the implants parallel

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**Fig 1** The device proposed.



**Fig 2** Intraoperative use of the screwed guide. Note the different heights of the implant platforms.



**Fig 3** Vertical parallelism achieved after modification of implant height guided by the proposed device.

to each other and perpendicular to the occlusal plane. Although there is a paucity of clinical investigations on this topic, the importance of the implant angles/inclinations has been emphasized in a few studies.<sup>6,7,11</sup> The position in the vertical axis is important for implant-retained overdentures to achieve enough space to house abutments and acrylic resin (6 to 10 mm with spherical individual abutments, depending on the system).<sup>12</sup> Optimal vertical parallelism of implant platforms is supposed to allow better retention of spherical individual abutments, allowing implants to retain the overdentures and oral mucosa to provide support and stability.

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