How to Use a Stone Index to Check in the Mouth the Accuracy of the Position of the Implants

Analucia Gebler Philippi*, Gabriela Panca Sabatini, Franciele Floriani, Tarla Thaynara Oliveira dos Santos and Luís André Mezzomo

Department of Dentistry, Federal University of Santa Catarina, Federal University of Santa Catarina, Florianópolis, Brazil

Short Communication

ABSTRACT

The verification index is indicated to confirm the accuracy of the implant position. To construct a stone index, place the transfers in the master model, add wax to the model to promote adequate spacing between the index and the mucosal tissue. Make a wall with wax, in order to allow pouring of the high-precision stone inside the space. After the crystallization of the stone, remove the index and try it in the patient's mouth. The index of stone should be adapted and screwed into the mouth accurately.

CLINICAL SIGNIFICANCE

Report a stone index technique to confirm the accuracy of the implant position.

INTRODUCTION

Nowadays, digital resources provide the clinician and dental technician the possibility to work with high precision and accuracy. However, to avail these benefits, it is essential to perform clinical procedures with excellence [1]. These procedures include implant impression and final model fabrication, important steps that require precision during completion to achieve the perfect adaptation of the work. The passive adaptation of the prostheses on the implants is an important step, in order to generate an adequate distribution of the masticatory forces without stress or tensions for the assembly prosthesis-implant-bone [2].

Therefore, to achieve this passivity, it is necessary to record the position of the implants and adjacent structures accurately to avoid possible mechanical complications such as loosening or fixation screw fracture, intermediate screw fracture, and biological complications, such as marginal bone loss, generated due to the tension/slack that will occur due to lack of adaptation of the rod of metal, which can lead to implant loss [3].

To confirm the accuracy of the implant position, the verification index is indicated [4]. It can be fabricated in different materials as auto or heat polymerizing acrylic resin, light polymerizing acrylic resin, composite resin and stone [5].

Therefore, the purpose of this article is to demonstrate the manufacture of a stone index.

Construction the Stone Index

The step by step construction of the stone index begins with the adaptation of the transfers in the master model, with the installation torque. The next step is to add wax on the model to promote the space needed to avoid contact with the soft tissues as shown **Figure 1**.

After the wax has been adapted to the stone, make a wall with wax to allow pouring of the high-precision stone (FujiRock, GC Europe) inside the space determined by the wax wall as shown in **Figure 2**.

Finished the crystallization of the stone, remove the index as shown in **Figure 3** and try in the mouth [6]. This procedure should ideally be performed 24 hours after the final crystallization of the stone as shown in **Figure 4**.

Adaptation of the Index to the Implants in the Mouth

Remove the index from the model and place it in the mouth. In this step it is very important to evaluate the accuracy of index adaptation. The index of stone should be adapted and screwed into the mouth accurately [7]. If this does not happen, or if the stone ruptures, there is a failure in the transferred implant position as shown in in **Figures 5 and 6**.

DISCUSSION

The verification index is a popular technique to assess the accuracy of fit of the implant-supported prostheses. Although many materials have been reported for this purpose, the authors chose the stone index, for its precision and accuracy. An in vitro investigation using three different materials to compare which one achieves superior 3D accuracy in the fabrication of the index: GC Pattern resin, Fixpeed Pattern resin, and Triad gel resin; Dentsply International Inc. concluded that there were no statistically significant differences between the three materials. On the other hand, other authors state that is required to develop and try alternative techniques to the resin index to verify the precision of the master cast.

The use of the stone verification index proposed in this article, has the same advantages as the impression with stone to edentulous cases, such as: speed, precision and rigid impression that does not bend or distort, besides easy manipulation, low cost and insignificant isothermal reaction. Dual acrylic resin has a major disadvantage when compared to stone, which due to its shrinkage of polymerizing creates tensions between the coping interface and the acrylic resin, in addition to incomplete polymerization of the resin which continues to react after 24 hours.

CONCLUSION

The success of treatments that include a rigid connection between implants depends on a correct transfer of the position of the implants, with the use of appropriate impression techniques and the verification of the positioning of the implants with a rigid reference. This increases the predictability of the treatment and decreases the need for repetitions and corrections.

Figure 1: Master model with transfers installed and wax.

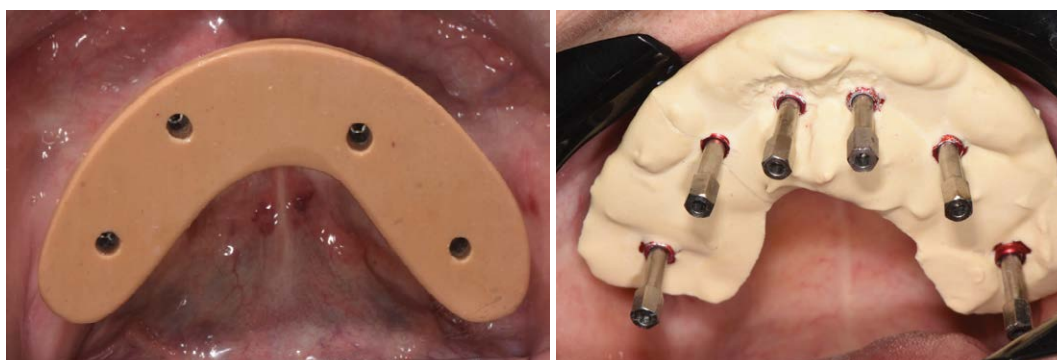**Figure 2:** Master cast with a wall made of wax

Figure 3: Index made with stone, with transfers in position

Figure 4: Finalized index made with stone, ready to be tried in the mouth

Figure 5: Adapted stone index in the mouth.

Figure 6: Index of stone in the mouth. Observe the rupture of the structure due to disaptation of the index.

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