Rehabilitation of a toothless patient with a mandibular implant-retained overdenture using a Long Click pillar system

Clinical case carried out by professionals from URJC: Prf. Fernández Pascual M., Prf. Gómez Costa D., Prf. Cascos Sánchez R., Prf. Rivas Martín N., Prf. Romero Alcalá J, Dr. Antonaya JL.

Introduction

Currently, many edentulous patients with complete mucosal prostheses suffer from aesthetical and functional limitations, which greatly affects their quality of life.

Implant-retained overdentures are an option evaluated in the Toronto Treaty as favorable choice for totally edentulous patients. They are removable prostheses, whose support and stability are granted by the residual alveolar flange, where its retention is achieved form the retentive system anchored to osseointegrated dental implants.

Different studies have shown that the 10 years success rate of implant-retained mandibular overdentures is higher than the results of a full-arch rehabilitation, fixed partial dentures and even unit crowns on implants. [1], [2], [3], [4]

Lower implant-retained and tissue supported overdentures are recommended in mandibles that have enough alveolar ridge to provide the necessary support. Otherwise, it should be consider making an implant-supported prosthesis in order to avoid problems in short, medium or long-term. [5]

Nowadays, implant-retained treatments can be carried out by two retention systems (Figure 1): by a bar system, and axial or individual anchor system.

Figure 1. Systems implemented in implant-retained treatments: bar system and individual system.

The bars splint the implants, allowing a rotation movement, which is essential for when the patient performs opening movements. This is why the bars are more indicated in the upper jaw. In the lower mandible is recommended to use individual systems of o-rings, malls or snap-on, always ensuring their high resilience, since otherwise, the implants would suffer from overloads not absorbed by these elements. [6], [7], [8], [9]

In the following clinical case, the process and follow-up of the implantation of a complete inferior mucosoported prostheses over two mandibular implants is exposed, where Long Click abutment system provided by Reiner Medical have been used.

Presentation of the Clinical Case

A rehabilitation with implant-retained and mucosal supported overdenture is applied in a 79-year-old edentulous patient.

After the case study, it has been chosen to use the system based on an individual axial retention, placing two interforaminal implants of external hexagon platform 4.1 (Lance Mis), in positions 3.3 and 4.3.

The selected pillar is the Long Click commercialized by Reiner Medical (Figure 2). It is a pillar based on the snap-on system; whose differential characteristic is the Diamond Like Carbon (DLC) coating applied on its surface. This coating considerably improves the resistance of the abutment against wear, since its non-sticky properties and low friction coefficient, minimizes its abrasion.

Figure 2. Pilar Long Click pillar with DLC Surface treatment.

Once the implant osseointegration protocol has been complied, the Long Click abutments are placed following the guidelines prescribed by the manufacturer (Figure 3):

- Tighten torque 30Nx/cm.
- Use of corresponding screwdriver form Reiner Medical.
- Use of the corresponding torque wrench form Reiner Medical.

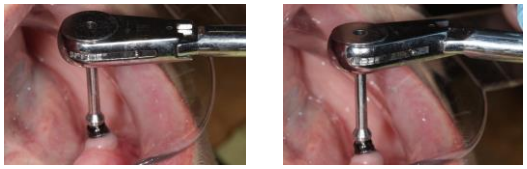

Figure 3. In Situ photography of torque application with the screwdriver tip and torque wrench at 30 Nw/cm².

Next, the processing set for the Long Click system has been prepared, which consists of a metal female, definitive Teflon that provides different retention ranges, and a white washer to prevent the overflow material from entering between retentive parts of the system Figure 4).

Figure 4. Processing set of Long Click system commercialized by Reiner Medical.

The white washer is placed on top of the Long Click abutment, which have been pre-threaded to the implant. On top of it, the processed Teflon and the metallic female are settled. Afterwards, the positioning of these pillars is taken with respect to the prosthesis that the patient was carrying (Figure 5).

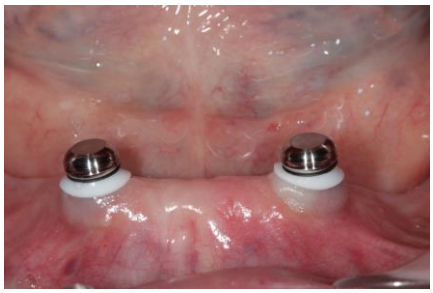

Figura 5. Fotografía In Situ de la colocación de la arandela de teflón y sobre ellas, las hembras metálicas.

To copy the position of the abutments in the dental prosthesis, an ink pencil will be used, with which the metallic female will be marked, and when the prosthesis is placed over it the position of pillars is copied on it.

When the beds in the dental prosthesis are correctly created and positioned, it is ensured that the prostheses is settled correctly on the abutments, and that it does not tilt, assuring an optimal occlusal stability (Figure 6).

Figure 6. In Situ photography of the phases of checking the correct positioning and and setting of the prosthesis..

Once the system has been validated, the holes on the prosthetic parts are definitely conditioned. For this case, sandblasting with aluminum oxide of 30-50 µm has been applied to increase mechanical retention in the system.

The clinician proceeds with overrunning the settles with commercial materials such as Chairside (Ancladen) and the Quick Up (voco). However, it is also possible to use acrylic hard materials.

In the overrunning process, it is important to place a small amount of material in each hole, since everything not needed will go into areas of the flange, being able to alter the support of the prosthesis (Figure 7).

Figure 7. Overrunning process in the prostheses holes.

Once with the overrunning finished, the prosthetic part is placed in the mouth, assuring its correct positioning. For that, the patient should keep the mouth closed without applying pressure over few minutes as it is indicated in the IFUs of overrunning materials.

After the setting time has elapsed, the overdenture is removed for eliminating the remnants of the overrunning material applied.

The black Teflon is removed and the definitive minimum retention Teflon is placed. It is recommended to start with blue Teflon that has a minimal retention (6,67N), followed by roses (13,34N) and transparent ones (22,24N). The definitive retention is decided in accordance to the patient's needs. In the case where the implants have a disparallelization of more than 20 degrees, Teflon with only external retention should be used (Figure 8).

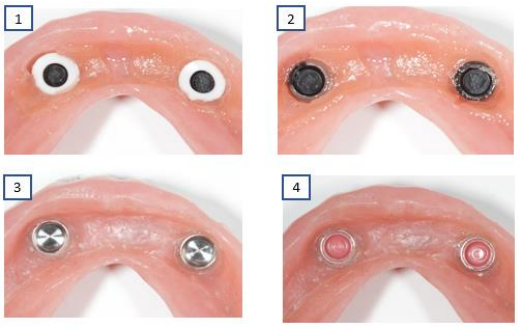

Figure 8. Definitive adaptation of the prosthetic part. 1 Removal of White washers. 2 removal of black Teflon. 3 bed machining. 4 placement of definitive retainers.

Finally, the prosthesis is placed, definitively adjusting its occlusion (Figure9).

Figure 9. In Situ photography of the final placement in mouth, assuring an occlusal adjustment.

For the succed of the treatment, it will be necessary top give hygiene and maintenance guidelines to the patient.

Discussion

The use of axial anchorage overdentures is a well-documented technique with a long-term success rate that can be defined as adequate for the rehabilitation of edentulous patients.

The Long Click system commercialized by Reiner Medical offers high wear resistance and proper adaptability to patient needs.

Conclusion

In this clinical case, the use of the Long Click System commercialized by Reiner Medical showed good stability and high wear resistance.

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