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# Prosthesis screwed with transepithelial unit: Use of different prosthetic interfaces

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## KEYWORDS

*Abutment, Implant connection, Transepithelial unit.*

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## ABSTRACT

*Aim: Different interfaces are used for prosthetic connection, chosen depending on the specific clinical situations. The transepithelial abutment is a versatile option for screwed prostheses. The aim of this work is to show the clinical applications of this technique.*

*Case reports: In the present article two cases are reported in order to show the different types of interface with their clinical applications and usage. The use of the unit abutment with its interfaces for the preparation of a prosthesis can ensure correct adjustment and hermetic connection because the items are working separately and are not subjected to repeated cycles of heat. In addition, the numerous types of interfaces available allow to adapt the system to the different clinical situations.*

*Conclusion: The use of interfaces in screwed single-unit prostheses helps to face different clinical situations, including the immediate load.*

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## Introduction

Implant-supported dental prostheses can be fabricated with two fixations: screwed or cemented. The choice of one of these options is mainly based on the preference of the clinician and his/her clinical expertise and takes into account other prosthodontic factors such as inter-occlusal space, esthetics and inclination of the implant axis in relation to the crown (1-2).

For the construction of a prosthesis directly screwed to the implant, the prosthetic abutment preferred by the majority of dental practitioners is the UCLA abutment. This abutment needs a casting process with discrepancies in the abutment-implant interface.

With this procedure hermetic connection between abutment and implant is not possible and this may generate bacterial filtration in the gap and, eventually, peri-implantitis (3-5).

The use of intermediate (transepithelial) abutments in the construction of screwed prostheses ensures the correct connection at the implant-abutment interface and this guarantees no filtration and no bacterial colonization in the area (4-5). This intermediate abutment also allows to fabricate a prosthesis using two components: the castable abutment and the interface screwed directly on the transepithelial unit. With these components we can work the crown without the interface (and without thermal cycles)

and reduce the changes when adjusting the interface in the transepithelial component. Once the crown is finished and tried in the mouth of the patient, we can bond the interface to the crown (cold procedure with a specific cement).

Also, we can select two types of interface: expanded and universal. Each interface allows for one inclination of the screw in relation to the transepithelial unit. The universal interface allows tilted screws connections from 0 to 15° and the expanded interface allows tilted screws connections from 15 to 30° (Fig. 1). These two alternatives provide versatility for an optimal emergence of the screw and thus aesthetics in the final rehabilitation.

## Case reports

### Case 1: Universal interface

We present the case of a 43-year old woman who had tooth 4.4 extracted because of vertical root fracture occurred 9 months before the visit. Two months after the extraction, one implant was inserted in the tooth position and we waited three months to apply the final crown using transepithelial unit and universal interface. The first step is the fabrication of

the wax-up of the metal structure of the crown over the castable abutment.

Then, we separate the castable abutment from the universal interface and cast the piece in order to obtain the metal structure of the crown.

Once the metal structure of the crown is finished, we proceed to try the interface and the work model.

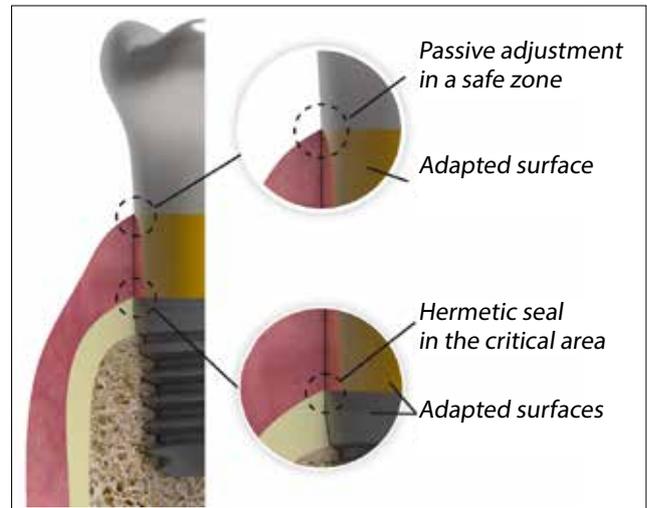


Figure 1 Unit abutment step by step

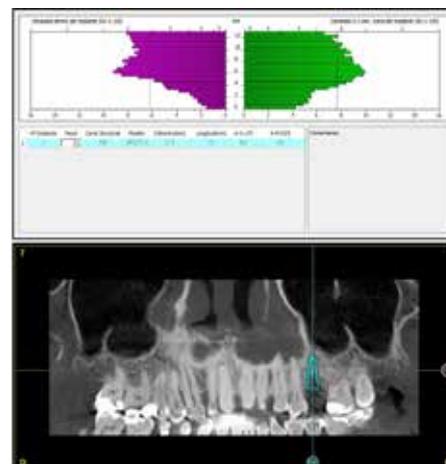


Figure 2 Planning Cone Beam



Figure 3, 4 X-ray and clinical picture of the prosthesis for immediate loading



**Figure 5** Diagnostic wax-up of the piece to rehabilitate after 6 months from the immediate loading



**Figure 6** Wax-up with the prosthetic interface with the two pieces separated



**Figure 7** Prepared for the injection cylinder of ceramics. The interface is not involved in these procedures and this is why the connection of the interface is not affected by temperature changes



**Figure 8** Ceramic crown injected, ready to be cemented to the interface



**Figure 9** Ceramic crown cemented to the interface ready to be inserted in the patient's mouth.



**Figure 10** Intraoral image of the patient once the permanent crown was inserted

Once the test is ok, we proceed to the try-in in the mouth of the patient.

Finally, we add the porcelain over the metal structure and when the crown is finished the interface is cemented to the crown.

#### *Case 2: Expanded interface*

In this case, the patient came to our clinic with a root fracture in tooth 2.1.

After the diagnosis, we planned the placement of an immediate post-extraction implant with immediate loading. This was achieved using unit abutment and universal interface and the load was placed 24 hours after implant insertion.

Six months after surgery the final prosthesis was fabricated. In this case, the inclination of the implant was up to 15° with respect to the crown position and therefore it was decided to use the expanded interface for the final prosthesis. With this abutment it is possible to change the inclination of the screw canal from 15 to 30° and the gingival emergence of the central incisor is more favorable with this abutment.

The prosthetic protocol as described above was followed for the preparation of the metallic structure of the crown without changing the unit abutment inserted during the first surgery. This avoids disrupting the connections existing between the gingival cells and the abutment.

In the design of the crown the only change to the model was planned by CAD-CAM design and in this case, the metal structure was made by drilling (not casting like in the previous case).

Finally, we added the porcelain over the metal structure and when the crown was finished we cemented the interface to the crown.

## Discussion

The most common complications generated by immediate implant loading are: loss of the retention of the prosthesis, changes in the rehabilitated area with exposure of prosthetic components and incorrect adjustment of the prosthesis. These problems can be solved in great part by the use of a transepithelial unit.

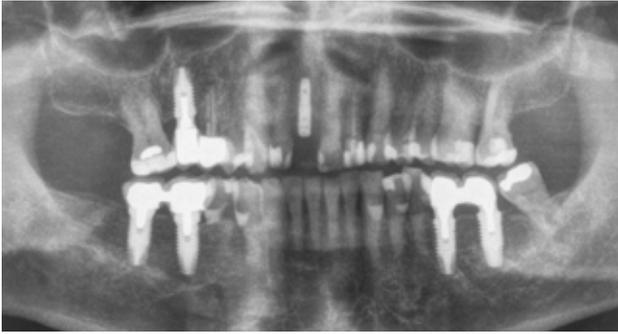


Figure 11, 12 X-ray and Cone-Beam after bone regeneration

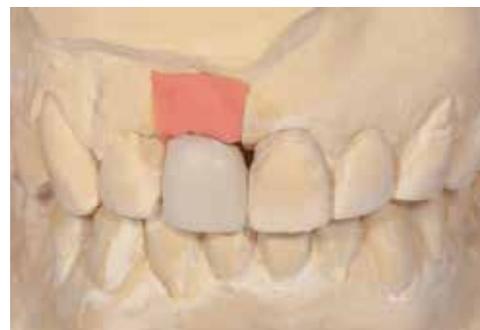
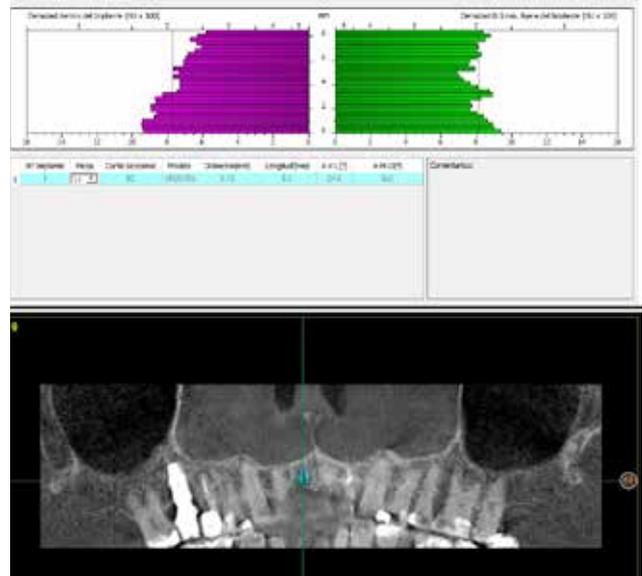


Figure 13, 14 Immediate loading of the crown with the expanded interface

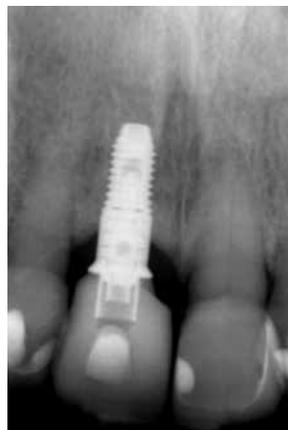


Figure 15 Rx of the final crown 6 months after immediate loading



Figure 16 Intraoral picture of the definitive crown and the veneers in the adjacent teeth

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The use of the intermediate abutment allows a better adjustment and minimizes the probability of mistakes.

In the cases without immediate loading the use of transepithelial units improves the adjustment in the implant-abutment area and make the prosthetic phase easier (7).

Abutments such as the transepithelial ones with surface modification to be adapted to soft tissues, as in the case of the transepithelial unit, give us the advantage of achieving durable and resistant epithelial connections which are kept over time, therefore preserving the gingival architecture level achieved (8).

## Conclusion

The use of interfaces in transepithelial unit abutments on screwed prostheses allows the clinician to adapt to the different clinical situations, including the immediate load, and solve most of the cases that we must face in our daily practice.

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