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# Final Implant Abutments: which is the best alternative?

**W**hen it is time to finalize an immediate post-extraction implant case, we need to decide what kind of restoration will be performed. We have two ways to do this: we can work with a screw retained crown, whether it is metal-ceramic or zirconia with ceramic coating application (Fig.1), or with a ceramic restoration on a standard or customized abutment.

The three-dimensional positioning of the implant platform will play a key role in this decision-making. If the installed implant platform is positioned with the long axis of the abutment screw having emergence on the palatine of the anterior teeth or the occlusal of the posterior teeth, we can choose between a screwed or cemented crown.

However, if this axis is exiting the incisal or buccal areas of the anterior teeth, or outside the occlusal table of the posterior ones, we will have to work with a cemented crown on the abutment. In metal-ceramic screw retained crowns, the most indicated abutment is the UCLA calculable. This type of abutment offers great versatility in design planning through a waxing and casting of the metal infrastructure, which will re-

ceive an feldspathic ceramic layer, resulting in a screw retained metal-ceramic crown. In this case, all the peri-implant tissue will be supported by the feldspathic covering ceramics (Fig. 2). We know that the most biological material for the peri-implant tissue is zirconia<sup>1</sup>. Thus, we can think of a screwed crown with a zirconia infrastructure and overlaying ceramic covering only in the area corresponding to the clinical crown. This type of restoration should be seated on a titanium base (Ti base), which will be screwed directly onto the implant platform.

The great advantages of the screwed crowns in relation to the cemented ones are: easy access to the fixing screw and the absence of direct cementing in the mouth. When we plan to make cemented crowns on implants, we must answer two basic questions: Will the abutment material be titanium, zirconia, or hybrid? Will the abutment be standard or customized? In a quick assessment of the aesthetic characteristics of the two materials, it is not difficult to conclude that zirconia is the best material. Several comparative studies conclude that zirconia is the material that less influences in the difference of the peri-implant tissue color, being the most indicated in the esthetic aspect.<sup>1</sup>

In the biocompatibility aspect, the researches show that zirconia presents better results when compared to metal and ceramic, presenting a less accumulation of plaque and a smaller inflammatory infiltrate of the peri-implant tissue.<sup>2</sup> Another important issue is the biological condition that the abutment will offer at the moment of the ceramic restoration cementation. Being clearer, where the cement line will be located. We know that the prosthetic emergence profile does not have a regular circumference in terms of distance from the edge of the soft tissue to the implant platform. In interproximal regions there is always a greater height of soft tissue (Fig. 3). Based on this reasoning, it is easy to understand that the standard or prefabricated abutments will not have their cementing line coincident with the anatomical perimeter of the prosthetic emergence profile presented by the patient. It means that at the moment of cementation of a ceramic crown, there will be areas where the cementation line will be deeper than the free edge of the gingiva, which will result in extreme difficulty or even impossibility to remove excess cement, which may result in damage to peri-implant soft tissue<sup>3</sup>. The



**Figure 1:**

Screw retained crowns. Metal-ceramic and Zirconia with over ceramic application.



customized abutments remedy this problem, since the seating edge is projected in order to be located 0.5 to 1 mm inside the free edge of the gingiva around its perimeter (Fig.4). Another issue to be evaluated, not less important than the aforementioned ones, is the abutments mechanical properties. This topic brings us two situations to be evaluated: the material fracture strength and the behavior of the chosen material in contact with the implant platform.

Regarding the fracture resistance, the literature concludes that the two-piece or hybrid abutments, present the best results when compared to the full zirconia abutments<sup>4</sup> (Fig. 5). In addition to being less resistant to fracture, such abutments, when screwed to the implant, produce significantly greater damage to titanium when compared to two-piece zirconia abutments, where the interface of connection is between the implant titanium and the titanium base<sup>5</sup> (Fig. 6). As a conclusion, I can say that traditional screwed crowns have a broad indication in prosthetic rehabilitation on implants, fulfilling a good long-term role. Being more demanding, we can work with zirconia screw retained crowns with a layer of feldspathic ceramic covering, which allow the contact of the peri-implant tissue directly with the zirconia, establishing a more favorable biological situation.

**Figure 2:**

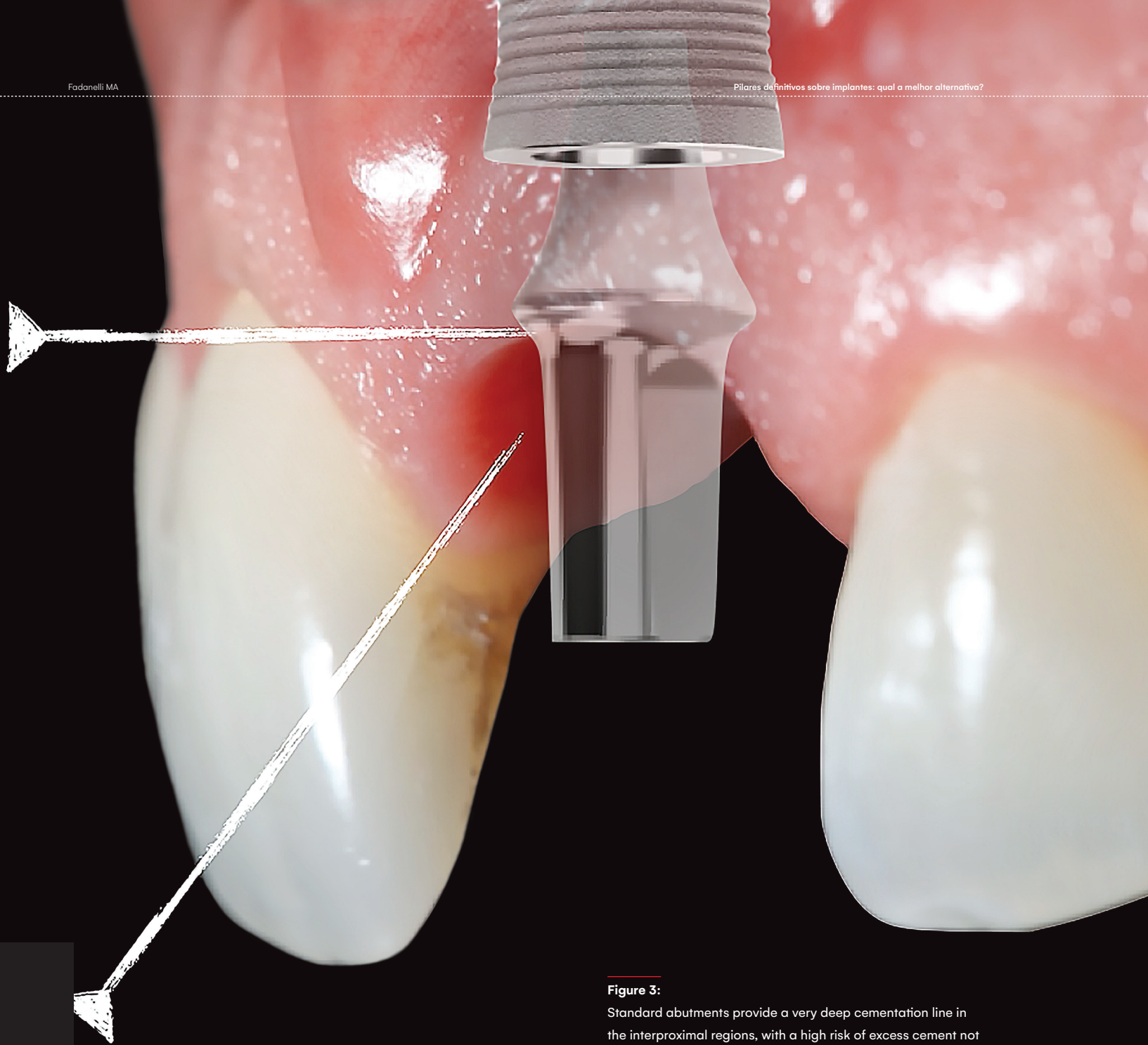
In the screw retained crowns, the region that will be in contact with the peri-implant tissue must have the same design as the temporary crown, regardless of the material that was made.





# Buccal gingival zenith

# Peri-implant tissue



**Figure 3:**  
Standard abutments provide a very deep cementation line in the interproximal regions, with a high risk of excess cement not being removed.

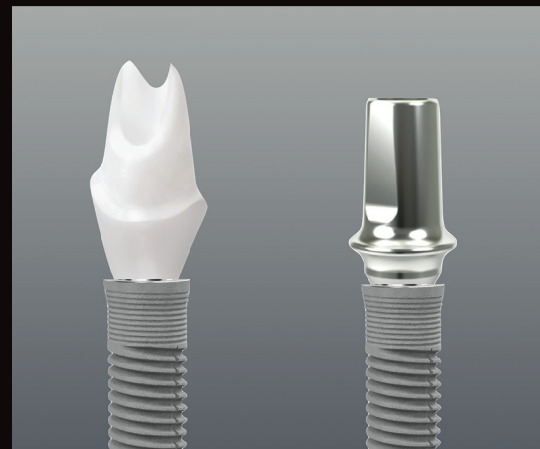


**Figure 4:**

Customized hybrid abutment showing an excellent condition for intrabuccal cementation. In addition, it promotes the support for the peri-implant tissue and assists in maintaining the the gingival tissue color.



**Figure 5:**  
Customized abutments: full zirconia and hybrid.



**Figure 6:**  
Connection zirconia / titanium and titanium / titanium. A titanium base should always be used for customized zirconia abutments.

Related to the abutments that will be the basis for ceramic crowns cementation, I can conclude that the standards do not provide a good condition for intrabuccal cementation, as it will result in excess cement undetected in contact with the peri-implant tissue. However, the customized abutments, when well designed, do not present this risk (Fig 7). The customized two-piece or hybrid abutments present the best behavior in the aesthetic, biology and mechanic issues. Well, now you can think better when choosing which type of abutment should be used in your post-extraction implant rehabilitation cases.



**Remember:** all steps in implant rehabilitation are very important. The abutment selection is one of them. If everything has gone well so far, it is not the time to put everything to waste.

See you soon!



**Figure 7:**

Emergence profile difference between standard and customized abutments. The customized ones faithfully copy the design of the patient's prosthetic emergence profile.

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