## COMMENTARY

## An Esthetic Solution to the Screw-Retained Implant Restoration: Introduction to the Implant Crown Adhesive Plug: Clinical Report

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Most dentists who restore implants are concerned with the retrievability of implant crowns, primarily because of the possibility of abutment screws coming loose and/or porcelain fractures (Figure I). Drilling through a cemented crown and inadvertently damaging the head of the screw preventing proper insertion of the driver, difficulty in finding the access and cutting into the abutment, or perhaps trying to cut off the crown and possibly gouging or scoring the implant head is something we have all experienced. With a better understanding of the concept of input torque, which requires using a calibrated torque wrench, a pristine implant driver, a new abutment screw and an exacting fit of the abutment to the mating surface of the implant, screw loosening should not be a concern any longer. Furthermore, friction or morse taper fits of abutments with implants with internal connections decreases implant-abutment micromotion, which in turn reduces the risk of the screw backing out.

The problem of porcelain breakage is another matter and it is something that is not necessarily going to go away in the near future. The design of an ideal substructure support for porcelain and the relative weakness of veneering ceramic has always been a dilemma, an issue perhaps even more so with an ankylosed implant "root," which is effectively unyielding and does not move or absorb forces as well as natural teeth (**Figure 2**). It is therefore logical to want retrievability, something we do not really have with restored natural teeth, since we permanently cement these crowns.



**FIGURE I.** Screw access holes sealed with composite resin and occupying a fair amount of the occlusal table. The second premolar composite seal has dislodged and sunk into the chimney area.



**FIGURE 2.** Retained cement lathering the crown-abutment junction. The screw head was accessed by drilling through the incisal portion of the crown.

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The problem with screw-retained implant restorations is that in the anterior region, we sometimes place implants too palatal for the sake of a screw hole access, and hence limit the possibility of developing a proper emergence profile on the facial aspect, especially where there is limited "running room." The result is an unnatural look to the way the crown relates to the facial tissues either because it reaches out from the palatal to engage the tissue or because a ridge-lap is required. Again this is accentuated when the distance between the head of the implant and the gingival crest of tissue is short. In the posterior regions the situation is quite different. Here we are most likely to seal the access holes with dental resin composites, which to some extent can compromise the anatomy of the occlusal table. Composites wear at a different rate than the surrounding porcelain, which potentially affects the strength of the restoration, the restoration does not necessarily look that good and the seal or composite can "sink" into the hole if improperly bonded to the walls of the chimney (**Figure 1**). Cementing implant crowns has become more attractive in recent years. Not surprisingly there are also problems with cemented restorations and retained cement can lead to peri-implant mucositis and in some cases, more destructive peri-implantitis (**Figure 2**).

The authors have come up with a technique that makes sense particularly for the posterior region. It uses a pressed etchable glass "plug" made from the identical porcelain as the crown, designed to be confluent with the morphology of the remaining occlusal porcelain. With a little ingenuity, though subtle, the plug perimeter can easily be identified in situations where the screw head needs to be accessed. The authors suggest that this is not technically difficult, and can be sprued and invested at the same time as the crown and probably adds a modest additional cost to the restoration. Certainly in cases where the access holes leave a challenging esthetic dilemma, this proposed method looks promising.

It would be interesting to try the plug where the access hole comes close to or even involves the incisal edge of an anterior implant crown. To avoid the potential of the plug dislodging and moving apically with the posterior teeth, it might be advantageous to design the plug with a slight taper. Otherwise any movement would necessitate either removing the plug or trying to bond composite on top of it.

## REFERENCES

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