The inaccuracy in dental implant impression is a vast and unsolved problem. It is so serious that the high rate of osteointegration of the majority of implants is absolutely meaningless. Knowing that traditional transfer impression techniques seldom deliver a passive fit of a framework means that most bridges will end up with a failure (Fig. 1).

What is wrong in the transfer impression?
The first problem is that the transfer, which is mechanically caught in the impression material (such as PVS), does not become an integral part of the impression. In fact, it can be easily moved. However, due to the friction between the surfaces of the transfer and the impression material, it does not return back to its original position (Figs. 2a, 2b, 2c). That displacement cannot be avoided when the technician engages analogs into the impression. In other words, forces in the impression, such as pressure or dislocate and mobilize irreversibly the imbedded implant parts.

Fastening in the screw into the analog should be done avoiding any contact with the tray. however, that cannot be always guaranteed. The shift of the transfer can take place even due to the gravity forces of the impression tray, especially in the molar areas. A tray that weighs 100 grams generates in the molar area a torque of 8 Ncm by only its own weight; that's enough to rotate the transfer. The polyether impression materials are characterized by a serious amount of expansion, making the transfers lose and mobile in the impression (Figs. 3a, 3b, 3c). The implant manufacturers should indicate that polyether impression materials are not suitable for the techniques using impression transfers.

Splitting transfers with acrylic resins may lead to displacement of the transfers due to the shrinkage of the acrylic materials. Even a splinted complex of impression transfers does not become an integral part of the impression. The second problem, is due to the uneven amount of the stone around the analog. The expansion of the dental stone during its setting causes a serious inclination of the abutment from its original position. The third problem is also related to the dental stone expansion. Unlike the stone, the analog does not have any expansion. The analog becomes lose and mobile. Gripping firmly a one-piece analog with a hemostat, one can see with a naked eye how it rotates in the model around its own axis (Fig. 4a, 4b).

Almost always, sectioning of an implant stone model is very difficult to perform because of the presence of the hard steel analogs in the body of the model. Additionally, a small amount of the dental stone around the analogs often leads to breakage of the die and doubt about either a part of the dental model or working on an unsecioned model. These difficult working conditions prevent precise fabrication of the restoration.

Implant manufacturers have invested a lot of resources in the implant improvement but very little in the improvement of the impression accuracy. Many dentists become so frustrated by the results of the implant restoration that they stop restoring implants and refer the clients to prosthodontists.

Finally, more and more dentists today have come to the conclusion that a simple direct impression of the abutment is much better than the traditional transfer impression. The accuracy of the PVS material is very high, it has high volumetric stability and a good resistance for tearing. Additionally the PVS by its slight rate of shrinkage can partially compensate the expansion of the dental stone and with aid of a rigid impression tray provides fabrication of accurate restoration. The main concern with the direct impression is the abutment's sub gingival area registration. In 2008 IADA Dr. Vincent Bennani published a review called Gingival retraction techniques for implants versus teeth. Bennani covered most gingival retraction means for natural teeth and discussed the possibility of applying them in the impression of the implant restoration. His conclusion was that there is no existing device or method for gingival retraction that practically can be used for direct impression of the implant abutment.

Aluminum Chloride Expany™ was recently tested for use with the titanium endosseous implants and was found as a harmful material for the polished surfaces of the implant and implant parts. Bicon Implants™ uses oversized healing abutments or custom oversized temporary abutments to expand the surrounding tissue. This method has little predictability because the rebound of the tissue varies from patient to patient.

Recently, a Canadian company, StomatoTech, came up with a simple idea to retract the gingival tissue using a disposable plastic collar that is inserted on the apical end of the abutment before the abutment is engaged to the implant (Fig. 5). Following the abutment’s engagement to the implant, the plastic collar is found between the apical part of the abutment and the gingival soft tissue (Fig. 6). Shortly after the removal of the impression from the mouth, the plastic collar is pulled out and removed permanently.

The plastic collar creates a perfect gingival retraction with a valve factor preventing the liquids from contaminating the area of the finish line of the abutment. It is undeniable that the plastic collar eliminates the need of the impression transfer and the analog. However, the main advantage of that device is the fact that it does not impact the accuracy of the final restoration (Fig. 7).

> See IMPRESSION page A13.