

Renewal of old gold bars with new CAD/CAM bars; Feasibility with outdated implant systems

Joannis Katsoulis

Department of Reconstructive Dentistry and Gerodontology, University of Bern, Switzerland

zmk bern

Zahnmedizinische Kliniken
der Universität Bern

Background

Before CAD/CAM technology was available in dentistry some years ago, soldered gold bars were the standard approach for edentulous patients with two mandibular implants and an implant-overdenture (IOD). Today, when these gold bars fracture or the patient wishes better IOD stability CAD/CAM bars may replace them. However, digitization of older implant types for a straight connection to CAD/CAM bars is required prior to digital designing procedure.

Aim

To replace old gold bars that are supported by outdated implant types with new CAD/CAM titanium or CoCr bars.

Case 1

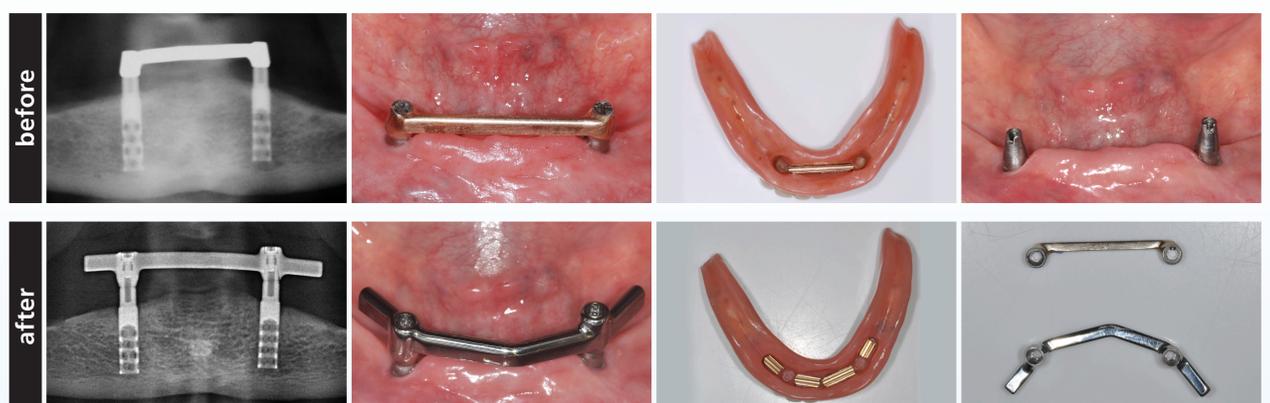
An elder patient with four HaTi implants placed 30 years ago recently suffered from pain at one implant and complained about the low IOD stability. One implant (42) had to be removed for biological (periimplantitis) and prosthodontic (vertical position) reasons. The old gold bar had very short interimplant segments with significant differences in level. The abutments and the gold bar were removed after a relining impression with the IOD (Impregum®) for fabrication of a new CAD/CAM titanium bar (allshape AG, Lengnau, Switzerland) that was screw retained directly on the implant (only one screw).

Digitization of the implant platform was done with a laboratory scanner (Imetric®) using the removed implant. Notice the straight and leveled segments (Dolder macro system, Cendres+Métaux SA, Biel/Bienne, Switzerland) between the 3 implants with bilateral extensions (Fig. 1a–k)



Case 2

The bar attachment in the IOD of an 82-year old patient with Straumann Type-F implants (one piece) was fractured after >25 years in use. The therapy comprised the removal of the gold bar after a relining impression with the IOD (Impregum®). Digitization of the implant platform was done with a laboratory scanner (Imetric®) using the master cast from a second impression over the one-piece implants. A new rigid (Dolder macro design) CAD/CAM titanium bar with bilateral extensions (allshape AG, Lengnau, Switzerland) was screw retained directly on the implant with new occlusal screws (Fig. 2a–g).



Case 3

Chronic pain and inflammation of the lateral mandibular mucosa were caused by mechanical irritation from the IOD in a woman with an extreme atrophy of the posterior ridge. Notice that the canalis mandibulae and the foramen were located cranially (no cortical bone). Although there was an older gold bar supported by two Replace Select implants (Nobel Biocare) in the anterior area, the extensions were not sufficiently long to avoid tilting of the IOD.

As described above, a new CAD/CAM bar was fabricated with extremely long bilateral extensions of 25 mm length. CoCr was chosen for its higher mechanical stability. Furthermore, the bar around the implant access holes was designed more stable to resist the increased forces from the long cantilevers (Fig. 3a–f)



Conclusions

If a digital file from a specific implant platform is not available, CAD/CAM production centers can digitize even oldest implant types using a laboratory scanner based on a physical model or an identical implant replica. CAD/CAM bars may be designed digitally fitting passively on outdated implant platforms with customized and longer extensions for an improved IOD stability with a good and predictable outcome. In future, the renewal of old gold bars with CAD/CAM bars made from titanium or CoCr may be required and demanded more often on old and new implant types.