The easiest way to repair a framework

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Fig. 1: The "two faces" of the new phaser as2. At the front of the swivel screen we find the controls....

No laboratory is particularly fond of making repairs. More so if they have to be welded on a framework. Dental technician Joachim Mosch will demonstrate how these repairs can be performed in all simplicity with the Primotec phaser welders.

The phasers mx 2 and as2 from Primotec were developed to allow a wider circle of users to perform laser quality welding in dentistry with a negligible investment. The third generation, recently presented, of these devices working on high quality impulses with micro arc, has distinguished it self once again for its compact dimensions, the limited weight and low energy consumption. The excellent performance in turning and welding open up a wide spectrum of possible applications: of course primarily in complex restorations but certainly this welding technique offers many advantages also when working with repairs.

Regardless of what these are, it is clear from the example of a simple repair done on a partial denture. Differently of what happens with soldering, when welding with the phaser it is possible to work directly on the master model. It is not necessary to replicate the model for the welding, as well as no need to remove and seat in resin: the areas in the proximity of the welding carried out with the laser undergo minimal heating and thus it is possible to weld safely in the immediate vicinity of acrylic, resin and even ceramics.

The welding of these jobs does not present any complex features; but nevertheless we need to keep in mind a few particularities of the chrome-cobalt alloy.

For the welding it is necessary to use a chrome-cobalt wire free of carbon.

Generally chrome-cobalt alloys need to be welded "more slowly" (pausing in between the single impulses) to avoid a build up of heat that could cause deformation.

One should never weld on a pre-existing solder joint. This means that in case of repairs, it is necessary to remove beforehand with a bur the old solder. The soldering wire is unsuitable for this type of work, since it contains components with low melting temperature that burn easily during the welding with the phaser. In case of prolonged weldings, the welding points must always overlap one another and not to simply be positioned next to each other.

In addition to these characteristics of the alloy, there are also some typical aspects of work that require attention, so that the repair work of the partial with clasps be truly simple, fast and above all durable.

One thing of particular importance is to first of all understand why initially the bridge broke. In fact, if the clasp is simply welded without having identified

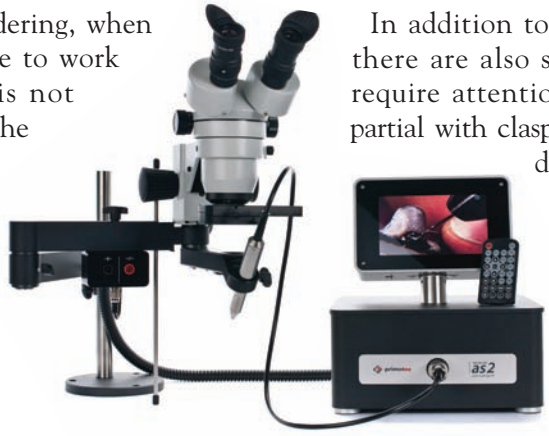

Fig. 2: ..... on the back a TFT monitor, which allows to view the short contained videos, that illustrate how to use the welder.

Fig. 3: After the excessive stress of the lingual arm of the clasp, it is necessary to repair element 31.

Fig. 4: The damaged microstructure must be removed with a bur until the healthy material suitable for fusion is reached.

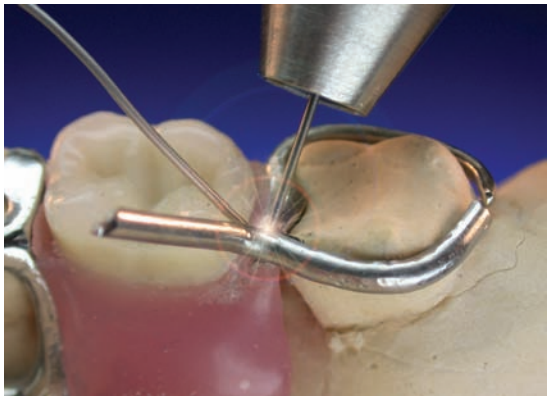

Fig. 5: The most logical thing to do is to create a new clasp by bending and securing a half oval wire in place with a couple of shots.


Fig. 6

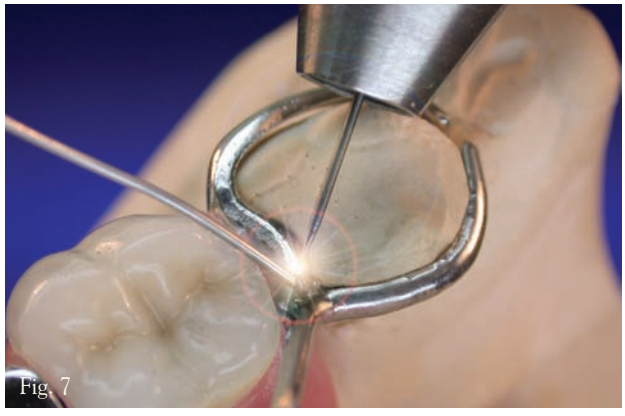
Fig. 7


Fig. 8

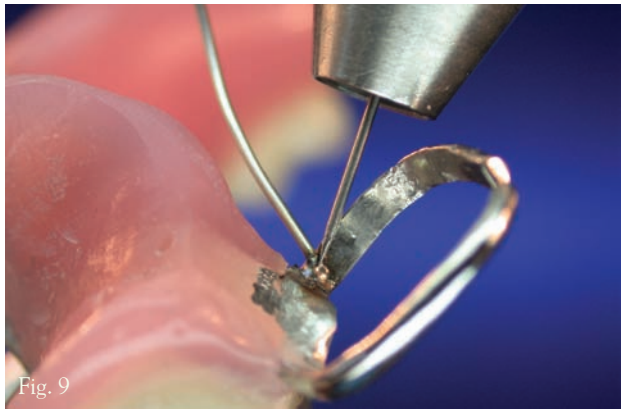
Fig. 9


Fig. 10

Fig. 6: For the welding some wire in chrome-cobalt without carbon is always used.

Fig. 7: In the same way as one uses a modelling instrument, it is possible to add material spot by spot with the tip of the electrode and a welding wire.

Fig. 8: Lift the prosthesis off the mold and weld the inside of the clasp.

Fig. 9: At this time you shall separate off the protruding part of the bent clasp arm (the holder)

Fig. 10: In the final stage the clasp is finished and polished. The resin has not been damaged by the welding process.

and removed the cause of the breakage (for example, the piece can be constantly under tension because of the incorrect size measurement with consequent stress of the material), the clasp will breake again in a short time. Furthermore, the metal on both sides in the proximity of the break point will have some microcracks, thus it cannot be utilized. For this reason, it makes sense in view of having a lasting repair, to realize a new clasp (bent or fused) to be welded at work.

Thus, by paying attention to the characteristics of the alloys and of this type of work, it is possible to accomplish the clasp repair, which before used to be a tedious task, in a very short time and with maximum assurance. SD