Implant-retained bar overdenture—planning and manufacturing process

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The purpose of this article is to show an example of the implant-retained bar overdenture planning and manufacturing process.

The 48-year-old male patient presented at Dr Giudice’s dental practice. The patient had several dental problems. The dentist decided to

Fig. 1: CBCT after implant surgery.
Figs. 2 & 3: Designing process.
Figs. 4 & 5: CAD scans of the prosthesis after the aesthetic try-in.
Fig. 6: Bar with screw holes and attachments.
Fig. 7: Top view of the bar.
proceed with the extraction of all teeth and insert a full temporary denture. After the healing period, it was decided to perform a radiographic examination to evaluate the possible insertion of implants. After the CBCT analysis, the clinician decided to intervene with four AZ implants and a milled bar with three Rhein 83 attachments.

Fig. 8: Check-up of the available spaces.
Fig. 9: Positioning of the attachment on the bar.
Fig. 10: Finished and polished bar after laser melting.
Fig. 11: The bar, palatal view.
Fig. 12: The bar, mucosa view.
Fig. 13: Scan of the bar on the model.
Fig. 14: Design of the counter-bar.
Fig. 15: Vertical section of the work.
Fig. 16: Check-up of the available space.
Fig. 17: Vertical section of the attachment.
Fig. 18: Check-up of the available space.
Fig. 19: Internal view of the counter-bar in CAD programme. – Fig. 20: The bar and counter-bar in CAD programme. – Fig. 21: The counter-bar after laser melting. – Fig. 22: The counter-bar after laser welding of the metal housings. – Fig. 23: Insertion of the counter-bar. – Fig. 24: The counter-bar fully seated. – Fig. 25: Top view of the counter-bar on the model. – Fig. 26: Palatal view of the counter-bar on the model. – Fig. 27: Prosthesis finished and polished on the master model BN. – Fig. 28: Finished prosthesis.
The impression was taken in the conventional way. Once the master model was produced, the wax rims were fabricated and the passivation of the bar was carried out. After the repositioning the analogues that were out of position on the master model, the teeth set-up and consequently the aesthetic test was performed.

With the correct teeth relationship and aesthetics, the master model scanning was done, followed by the CAD drawing of the bar with screw holes for the threaded attachments.

It was decided to put three threaded attachments with two OT Equator and one OT Cap micro. Once the bar delivered by the milling centre, it was refined with a two degree bur and polished.

The sleeves of the threaded attachments were cemented and the bar scanned with the metal housing in order to correctly design the counter-bar. The counter-bar, in laser melting, was checked for spaces between the bar, counter-bar and the teeth set-up.

The metal housings for the retentive caps were laser welded inside the counter-bar and waxed, and the teeth set-up for the last aesthetic try-in was carried out.

As the excellent result was achieved, the prosthesis was cured and polished.

On the day of delivery, the dentist screwed and tightened the bar. He also checked that the insertion of the counter bar was suitable, as well as the occlusion and retention of the attachments. Once those tests had carefully been performed, the patient stated a good satisfaction and comfort with the prosthesis.

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