

Immediate implant-supported full arch reconstruction of both jaws

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Initial situation

An 80-year male patient in good physical health, required fixed rehabilitation in both jaws to replace an existing unsuitable upper denture and to restore the hopeless dentition in his lower jaw (Fig. 1). When the patient smiled, his upper teeth were barely visible and the protrusion of his upper lip was deemed too full from an esthetic point of view.

Due to gingival recession and periodontal disease, his lower incisors were excessively visible. A removable prosthesis in the mandible had never been tolerated by the patient due to his gag-reflex. Therefore, the patient requested to receive treatment in both jaws at the same time, in order to avoid using any provisional removable prostheses and to shorten the overall treatment time. The aim was to perform both implant placement and loading with screw-retained provisional prostheses in both jaws on the same day.

Treatment plan

In such complex cases, accurate planning plays a fundamental role for successful treatment outcome. The ideal teeth set-up must first be checked in the patient's mouth to help in visualizing the final restoration. Once the feasibility of the treatment plan is confirmed, all the following steps can be developed accordingly. The approach used in this case was to



Figure 1



Figure 2



Figure 3



Figure 4

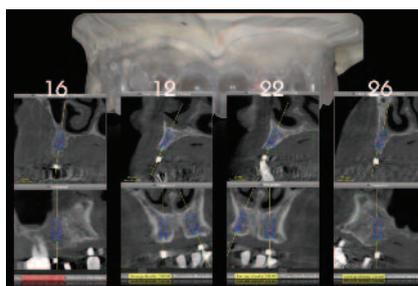


Figure 5



Figure 6

place four implants in each jaw, which would be immediately loaded with provisional fixed prostheses.

After 3 months of healing, these provisional reconstructions would be replaced with the final prostheses. The first step of the treatment was to check the ideal teeth set-up in the patient's mouth. In order to reduce the excessively full upper lip, the flange was removed and the teeth were positioned in the correct alignment with the upper lip (Fig. 2). The incisal edges of the lower teeth were marked in black to show how their appropriate length would appear in the final rehabilitation (Fig. 3). The comparison between the initial situation and the planned final restoration clearly showed the improved lip support with the new tooth positions (Fig. 4).

Once the try-ins were accepted from an esthetic and functional point of view, they were copied as diagnostic guides and used in the CBCT exam to help show the available bone volume. In the upper jaw, the CBCT exam

revealed very poor bone quality in the sites chosen for the implant positioning (Fig. 5).

To address this problem, Straumann® Bone Level Tapered implants (BLT) were selected for better primary stability and to facilitate immediate loading. In the lower jaw, a guided surgery protocol was chosen as stabilization of the guide on the lower canines during implant placement helps to make this technique more reliable and precise. As the bone quality was good in the lower jaw, Straumann® Bone Level implants were selected.

Surgical Procedure

After the planning stage, the diagnostic guide for the upper jaw was made into a surgical guide for conventional implant placement. In the lower jaw, a surgical guide was fabricated by 3D-printing. Provisional fixed full-arch bridge prostheses for immediate loading were constructed based on the original dental setup. During surgery, the lower jaw was first treated by



Figure 7



Figure 8



Figure 9



Figure 10

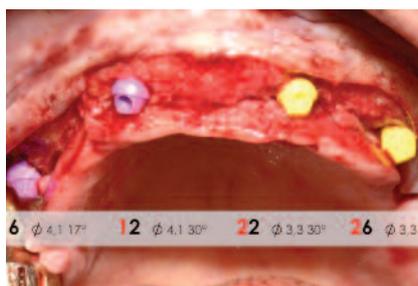


Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16

placing implants with a guided-surgery procedure. A flap was raised in the anterior area (Fig. 6), while a flapless procedure was carried out in the posterior area. Once the implants were in position, the screw-retained abutments were placed on the implants (Fig. 7). The titanium copings were secured on the screw-retained abutments, and isolated by rubber dam pieces, before resin was injected in the surrounding area. The lower provisional prosthesis was then placed over the implants, to connect them with the copings whilst setting in occlusion with the upper surgical guide (Fig. 8).

In the upper jaw, a flap was raised via a crestal incision. As directed by the surgical guide, the first implant site was prepared with dedicated drills for BLT implants (Fig. 9). Due to the low quality Type 1 bone this site was under-prepared and a BLT implant was placed to achieve high primary stability. The same procedure was repeated in the remaining sites (Fig. 10).

After all the implants were placed, the appropriate screw-retained abutments were chosen using the respective plan components from the Planning Kit (Fig. 11). These plastic plan

components help the clinician to select the corresponding working abutments. Similar to the procedure already carried out in the lower jaw, the titanium copings were attached to the screw-retained abutments on the upper implants. The upper provisional prosthesis was used to pick up the titanium copings, while in occlusion with the lower provisional prosthesis. The upper and lower provisional bridges were removed from the mouth for final polishing by the dental technician in the office. The provisional bridges are screwed into the patient's mouth and checked when the patient is smiling (Fig. 12).

After a period of healing, healthy soft tissue is seen around the implants in the maxilla (Fig. 13), and the mandible also showed excellent soft tissue conditions (Fig. 14).

During the impression procedure for the final restoration, transfer copings are used in the maxilla, and titanium copings were used in the mandible (Fig. 15). A CAD/CAM framework was manufactured by Createch Medical and later veneered using a composite resin.

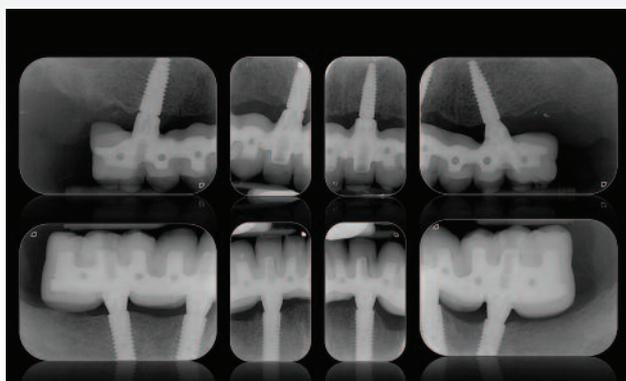


Figure 17

Final result

The final restorations complete with composite veneering, provided an excellent esthetic result (Fig. 16). The final radiographs confirm correct implant placement and very precise prosthetic rehabilitation (Fig. 17). This upper and lower full-arch rehabilitation has satisfied both the esthetic and functional criteria as required by the patient (Fig. 18).

Conclusion

The treatment of this challenging case was greatly supported and simplified by using the appropriate implants and abutments. The new Straumann® Bone Level Tapered (BLT) implants allows the clinician to reach the insertion torque that is necessary for immediate loading even in cases of low bone



Figure 18

density. An immediate tactile sensation of stability and firmness is provided during the insertion of the BLT implant. In addition, the screw-retained abutments offer a wide range of prosthetic options, simplifying the re-alignment of the divergent implant axes where needed, thus allowing the clinician to select the ideal prosthetic solution.

A well-executed treatment plan can be carried out with the availability of ideal surgical and prosthetic devices. This is the true foundation of success in such a demanding case.

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