A perfect fit

Werner Slabbert and ***Jon Dolding*** describe how a simple, accurate and stable full arch implant-supported prosthesis changed a patient's life overnight

Figure 1: The patient had been edentulous for more than a year

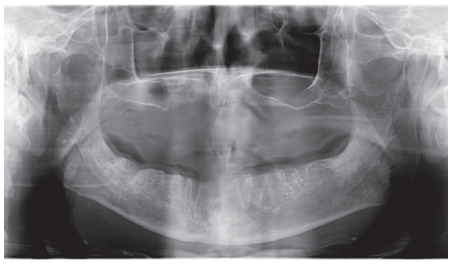


Figure 2: Panoramic X-rays and 3D cone beam CT images were taken to confirm the amount of resorption that had occurred and the density of the remaining bone

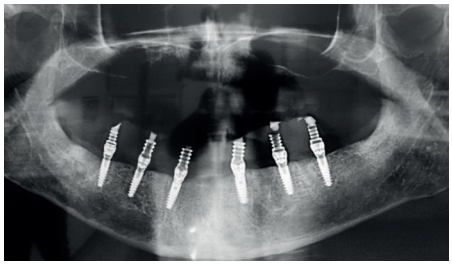


Figure 3: Six Axiom TL narrow implants with Inlink connections were placed in the lower jaw

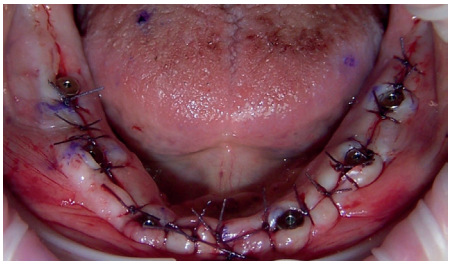
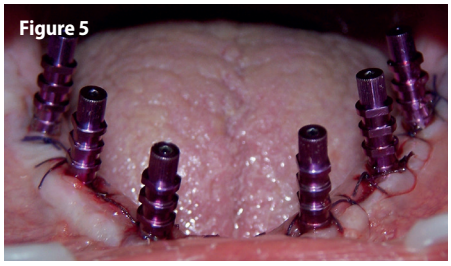


Figure 4: The flap was closed with sutures



Figures 5 and 6: Guide pins were fitted to enable an open tray impression to be taken for the manufacture of the fitting surface of the lower prosthesis

A 60-year-old male attended the Sussex Implant Centre on the recommendation of another patient. He had suffered a complete dental breakdown, which resulted in all his teeth requiring removal. He had been edentulous for more than a year (Figure 1) and could not cope with his lower denture.

Dr Werner Slabbert BChD (Stell) MClinDent Oral Surgery (Lond) DipImpDent (UWC) DipSed (Kings) MJDF RCS (Eng) is director of the Sussex Implant Centre in Brighton. He has a passion for advanced dentistry – in particular implant dentistry, oral surgery and sedation – and has extensive experience in difficult extractions and implants. He regularly accepts referrals from other dentists, and has completed oral surgery training to specialist level.

Jon Dolding is owner and director of Ceramic Designs Laboratory. An early adopter of implant and digital dentistry, Jon is now one of the country's foremost experts in the field. Deeply committed to CPD (both for himself and the team), Jon has attended numerous courses and is a ceaseless reviewer of new techniques and materials.

He did not find it comfortable to wear and was looking for a fixed alternative.

Fixed, permanent solution

The options discussed during the initial consultation included remaking the dentures, securing them with locators or an implant-supported full arch prosthesis. As he wanted a fixed, permanent solution, the patient chose the latter.

At the first appointment, panoramic X-rays and 3D cone beam CT images were taken to confirm the amount of resorption that had occurred and the density of the remaining bone (Figure 2). Primary impressions for bite blocks and special trays were prepared. This enabled secondary impressions to be taken and models to be made for the manufacture of upper and lower full arch wax try-in dentures by Ceramic Designs Laboratory.

The try-in allowed the patient to see the colour and shape of the planned prostheses. Occlusion vertical dimension, tooth position, centre-line, horizontal and vertical axes and bite registration were all verified.

Management of bone resorption

Once the prostheses had been checked and returned to the laboratory for finishing, the patient was given intravenous sedation, and six Axiom TL (Anthogyr) narrow implants with Inlink connections were placed in the lower jaw (Figure 3).

Tissue level implants were chosen, as there had already been some resorption of the jaw bone. Given the large frame of the patient, and the forces expected to be exerted on the prosthesis, it was decided that six implants would provide better stability than four.

Once the implants were placed, the flap was closed with sutures (Figure 4). Guide pins were fitted to enable an open tray impression to be taken for the manufacture of the fitting surface of the lower prosthesis (Figures 5 and 6).

Easy-to-clean bridge

Laboratory analogues were placed on the implant copings and a soft tissue mask was made (Figure 7). A model was cast and temporary cylinders were placed in the best position (Figure 8). The junction between the bridge and tissue was fairly even, making it easy to clean (Figure 9).

When the implants had been placed, the flat fit surface was manufactured and polished to aid good healing (Figure 10).

A negative of the try-in denture was located on the model and acrylic was poured into the mould, locking the temporary

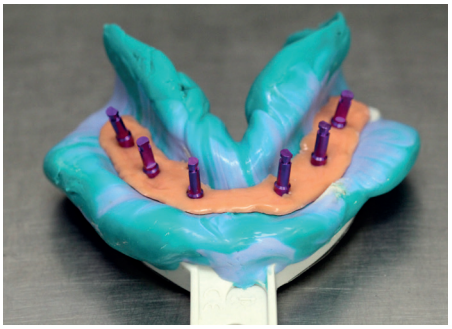


Figure 7: Laboratory analogues were placed on the implant copings and a soft tissue mask was made

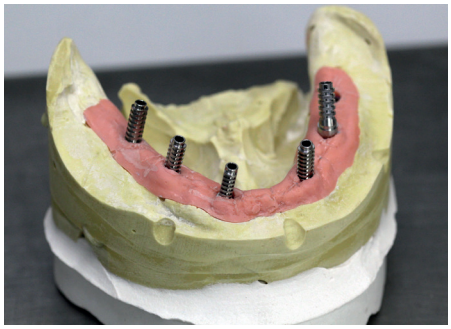


Figure 8: A model was cast and temporary cylinders were placed in the best position

Figure 9: The junction between the bridge and tissue was fairly even, making it easy to clean

Figure 10: The flat fit surface was manufactured and polished to aid good healing

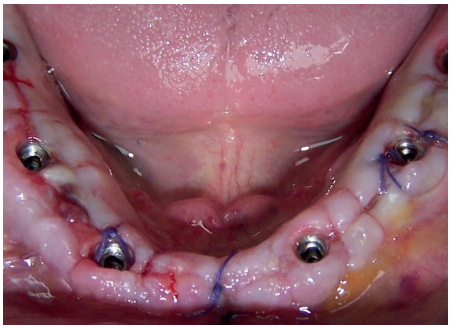


Figure 11: After 24 hours, soft tissue healing was progressing well

Figure 12: The Inlink connections made attaching the prosthesis quick and simple

cylinders and teeth in the correct position. The definitive upper denture was processed in Ivoclar Vivadent SR Ivocap.

Balanced occlusion

After 24 hours, the patient returned to have both the removable upper full denture and the fixed lower full arch temporary bridge placed.

Soft tissue healing was progressing well (Figure 11) and the fit was perfect – very accurate and stable – with balanced occlusion. The Inlink connections made attaching the prosthesis quick and simple (Figure 12). With one-piece implants, there are fewer moving parts and maintenance is easier.

Simple, predictable laboratory process

Once the verification jig had been cross-referenced and the try-in approved, a 3D design was created and forwarded to Anthogyr for fabrication of the titanium bar.

The model and try-in were also posted to the company's production team to be scanned in, allowing the bar design to be placed within the prosthetic envelope. The plan was sent back to the laboratory to be reviewed, using a 3D viewer, to confirm gaps and spaces were accurately reproduced within tolerances, giving the required aesthetics. Once verification had taken place, the milling process began.

When the titanium bar was received at the laboratory, the try-in wax-up was transferred to the bar and a final patient sign-off was obtained.

Figure 13: The treatment changed the patient's life overnight and gave him a major confidence boost, along with the ability to enjoy food he had not been able to eat for some time

The bridge was then processed, polished and characterised. The Inlink connections were placed in their housings and the prosthesis was returned to the practice for fit.

This was a simple prosthesis to produce. Delayed load implant cases are easier and more predictable, as the conversion is not on the same day. Anthogyr's production team provided a prompt service that worked well with the laboratory workflow timescales.

Confidence boost

The patient was extremely happy with the outcome. It changed his life overnight and gave him a major confidence boost, along with the ability to enjoy food he had not been able to eat for some time (Figure 13).

He has attended regularly for postoperative follow-up appointments and, at his recent six-month check, the prosthesis remained stable. The definitive lower bridge can be produced using the long-term temporary bridge as a guide for bar manufacture.

The plan for future treatment is to replace the upper denture with another implant-supported prosthesis. **IDT**