case report - treatment of edentulous maxilla

ATLANTIS Conus abutment — Treatment of a fully edentulous maxilla

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Initial situation

The 71-year-old female patient presented at the clinic with two tooth-supported maxillary bridges that required removal due to secondary caries, apical osteitis, and general bone loss.

The patient requested a fixed restoration with high aesthetics and easy hygiene maintenance.

Clinical and radiographic examination showed that sufficient bone was available for placement of six ANKYLOS C/X implants (DENTSPLY Implants).

After treatment planning and discussion, the patient consented to extraction of the seven remaining maxillary teeth followed by a friction-retained prosthesis supported by six ANKYLOS C/X implants and six ATLANTIS Conus abutments (DENTSPLY Implants).
During the healing period, the patient was provided with an immediate temporary denture that was relined several times to minimise soft-tissue trauma.

_Surgical treatment_

Seven weeks after the extractions (Fig. 1), a mucoperiosteal flap was elevated by making a crestal incision from region 16 to 26 with relief incisions buccally in region 16 and 26 as well as buccally and palatally in region 11/21. The six ANKYLOS C/X implants were placed slightly subcrestally in regions 15, 14, 11, 21, 25, and 26, using a conventional drilling protocol (Fig. 2). The placement heads were removed and replaced by cover screws. This first stage of the two-stage surgical protocol was completed with tight
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suturing (Fig. 3). Directly after surgery, the patient was provided with the relined temporary denture.

The healing phase was free of complications. Twelve weeks after implant placement, the second-stage surgery was performed. A small incision was made at each implant and due to this minimally invasive approach, the cover screws could be replaced by gingiva former without the need for any suturing (Fig. 4).

Prosthetic treatment

Impressions were taken two weeks after the second-stage surgery. The gingiva former were exchanged for transfer posts, and a closed-tray impression (Fig. 5) taken with an individual tray and polyether impression material was taken (Fig. 6). In the dental laboratory, the cast model was scanned, and 4-degree-angled conical abutments were designed using ATLANTIS VAD software (DENTSPLY Implants) (Fig. 7). The final abutment designs were sent digitally to DENTSPLY Implants in Mölndal, Sweden, where the six ATLANTIS Conus abutments were produced (Fig. 8). To connect the abutments to the bridge framework, prefabricated tapered ANKYLOS SynCone Caps were used on top of the ATLANTIS Conus abutments (Figs. 9 & 10).

To achieve precise fitting in the mouth, the laboratory provided transfer keys made from light curing composite to connect the ATLANTIS Conus abutments to each other (Fig. 11).

In the next step, the gingiva former were replaced by the six ATLANTIS Conus abutments with the help of the transfer keys. The abutments were torqued to the implants with 15 Ncm (Fig. 12). After test for perfect fit of the SynCone Caps and framework in the mouth, the SynCone Caps were cemented to the cobalt-chrome framework intraorally using dual-hardening cement (Figs. 13 & 14). This part of the treatment was essential to assure perfect fit; carefully following the instructions for mixing the cement is highly recommended.

After the cement had cured completely, the fit of the framework, including the SynCone
Caps, was checked and the framework then removed from the mouth (Fig. 15). A new impression was taken using an individual tray and polyether impression material to pick up the cobalt-chrome framework (Fig. 16). The six ATLANTIS Conus abutments were not replaced by the gingiva formers again. Therefore the temporary denture had to be largely adjusted to provide space for the abutments, and relined once again.

A new master cast was created in the laboratory. The framework was used to create a bite registration (Fig. 17). After defining the plane of occlusion, the tooth setup was made in the laboratory (Fig. 18). Before finalizing the removable prosthesis, the wax tooth setup was sent by the laboratory for the final clinical try-in (Fig. 19).

To avoid a metallic grey shadow, the cobalt-chrome framework was treated with a pink opaque composite (Fig. 20) before processing the prosthesis in acrylic (Figs. 21 & 22).

Figures 23 and 24 show the removable prosthesis after it was finalised and polished.

The final palate-free restoration was inserted in the patient’s mouth (Figs. 26 & 27) and checked with an OPG (Fig. 25).

**Conclusion**

The treatment described in this case was delivered before the ATLANTIS Conus abutments were officially introduced in the summer of 2014, and the abutments were only available with a 4-degree angle.

Due to the perfect retention with that angulation, the patient had some problems removing the prosthesis for cleaning. Therefore, a decision was made to remove two of the ATLANTIS Conus abutments (14 and 25) and seal those implants with gingiva formers. This made it easier for the patient to remove the prosthesis, but could still provide the comfort of a fixed restoration when chewing.

To avoid this problem, the ATLANTIS Conus abutments are today only available with a 5-degree angle.

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