



individual emergence ...

... profile for Ankylos C/X. Top esthetics even in the posterior region

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INTRODUCTION

A large range of standardized abutments with different angulations and shoulder heights is available for DENTSPLY Friadent implants. With these implant solutions, a wide variety of restorations can be realized. If the gingival line is strongly curved or if an emergence profile that corresponds to the dental anatomy is required, the limits of what is possible using pre-fabricated round abutments is quickly reached. The adaptation of abutments to the gingival line and the matching contouring of the emergence profile are parameters for the esthetic and functional success of implant-based prosthetics. These requirements can only meet with maximum accuracy using individualized abutments.



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For example, in the posterior tooth region the mucosal line often has a marked curve. Individualized, two-piece abutments have proven to be the ideal solution in such cases. They allow for outstanding adaptation to the respective mucosal conditions and a natural appearance of the emergence profile as demonstrated below.

Two-piece abutments consist of a combination of a metal base as the basic body and coupling to the implant and an individualized endodontic post of zirconium dioxide ceramic. This combination of materials can be used where patients want a porcelain restoration even in the posterior tooth region without having to forego the proven safety. The individualization with zirconium dioxide in this region meets the highest esthetic standards and with the force resistance in the metal component it offers the greatest possible safety for the patient. The procedure will be demonstrated by the following case report.

PREPARATION

To replace missing posterior teeth in the maxilla, the patient desired a fixed restoration that could meet the highest esthetic demands. The missing second premolar and the first molar were to be replaced with implant-supported ceramic crowns. It was clear that individualized abutments were necessary to create an anatomically correct emergence profile. This was the only way of shaping the cervical region for an appearance that would be as natural as possible. The poorly fitted metal-ceramic crown on the first premolar also needed to be replaced.

During preparation for implant placement, the thickness of the mucosa was measured allowing the dental technician to simulate the bone profile on the master cast. The implants had to be aligned with parallel axes to simplify the subsequent steps in the process. This was taken into account in the fabrication of the surgical guide on a duplicate of the planning model (Fig. 1). To provide adequate play, internal sleeves were not used. The index impression was taken immediately after placement of the implants, making it possible to manufacture individualized sulcus formers during the healing phase. This required the production of a second guide for the index impression to be used as a small individual tray.

Before preparation of the mucoperiosteal flap, its palatal extension was marked on the mucosa (Fig. 2). After folding the flap back (Fig. 3), the Ankylos implants could be placed (Fig. 4). An x-ray confirmed the correct placement of the implants (Fig. 5). For the following steps, the placement head was left in position instead of the transfer



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1_ The laboratory-fabricated guide for placement of the implants

2, 3_ After marking the palatal extension of the mucoperiosteal flap it is folded back vestibular.

4, 5_ Placement of the Ankylos C/X implants and the x-ray check

6_ The guide for the index impression is reinforced by a cold-curing acrylic resin. The cavities between the guide, the alveolar ridge and the placement head were filled with a plastic for temporary crowns.

7, 8_ The registration guide can be removed without difficulty if the implants are placed with parallel axes.



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posts to ensure that the freshly placed implants would be disturbed as little as possible. The index impression was taken with the above-mentioned second guide reinforced with cold-curing acrylic resin. Standard impression materials are not sufficiently stable to ensure fixation of the placement head and to compensate for the cavity between the bottom of the guide and the bone surface. For this reason, a plastic material for temporary crowns was used for fixation and taking the impression (Fig. 6). The alignment of the implants allows the guide for the index impression to be removed without difficulty (Fig. 7). Index impression during the operation saves one session (impression of the implants) and allows the dental technician to prepare the following steps during the healing phase.

CONTOURING OF THE GINGIVA

The implant analogs were positioned on the placement head (Fig. 8). The implant analogs were fitted into the working model and the gingival mask was fabricated from polyether (Fig. 9). The technician prepares the emergence profile into the mask (Fig. 10). Although this was not intended by the manufacturer, we also used the placement head to manufacture the individualized healing caps. The placement heads provide a secure connection to the implant and also ensure good retention for the individually fabricated gingiva formers. Once the placement heads had been shortened to the desired length, the individualized gingiva formers were shaped. Using copy mills, the modelation was transferred to pink-colored zirconium dioxide ceramic and cemented to the placement heads. After uncovering the implants the individualized sulcus formers were screwed to the implants (Fig. 11).

CERAMIC – TISSUE-COMPATIBILITY AND PERFECT ESTHETICS

The original working model was also used to produce the individualized abutments. Ankylos Regular /X abutments were used as the base (Fig. 12). After waxing the individualized abutments they were transferred to zirconium dioxide ceramic (Cercon) and cemented to the abutments (Fig. 13). The manufacturer's directions regarding modifications to the abutments must be observed. A major advantage of cementing in the laboratory are the ideal conditions. During the cementing process, all parts must be completely dry and precisely joined. For highest accuracy, using a stereomicroscope is essential for the actual work as well as the review.

9_ The implant analog is integrated into the existing working model and the gingival mask is manufactured.

10_ The emergence profile is prepared in the mask.

11_ The individual sulcus formers consist of the shortened placement head and the cemented moulded parts of pink zirconium dioxide.

12_ The dental technician manufactures the individual abutments while contouring the gingiva. The metal bases of the two-component abutments are Ankylos Regular /X abutments.

13_ After two and a half weeks the gingiva is well contoured and tooth 14 is prepared.

14_ The individual Cercon abutments are cemented to the metal base. The impression clarifies the spatial relationships.

Two and a half weeks after delivery of the individualized sulcus formers the gingiva showed perfect contours (Fig. 13). The individualized abutments were tried-in and some minor corrections were made. The preparation margin was slightly subgingival. Because in this case only the first premolar was to be restored with a ceramic crown, another impression was required to continue the work. The ceramic crowns (Fig. 15) were fabricated using the new working model (Fig. 14). Ceramic offers not only excellent esthetics (Fig. 16) but with its very smooth and dense surface, it is the best choice for the contact to the gingiva. The remarkable fit of the crowns on the individualized abutments is worth pointing out (Fig. 17). After integration of the two-piece abutments (Fig. 18), the crowns could be cemented. The slightly subgingival position of the crown margins made it easy to remove the cement residues as well as thoroughly monitoring this working step. The ceramic crowns are indistinguishable from natural teeth and have an identical emergence profile (Fig. 19 and 20).

SUMMARY

The clinical case report is an excellent demonstration of the options for a two-piece abutment in implant prosthetics with a modified protocol. The optimum communication and cooperation between dentist and dental technician made it possible to contour the soft tissue to conform with the given anatomy and form a completely natural-looking emergence profile. A good retention of the crowns and a connection between the crowns and abutments without visible gap are additional factors that improve the stability of the final result. ■



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15_ Application of the ceramic

16_ The finished crowns on the master cast

17_ The cervical view shows the excellent fit between individual abutments and ceramic crowns.

18_ The individual abutments in the mouth.

19, 20_ The ceramic crowns are identical to natural teeth in shape, color and in the cervical region.