A good option for the lifelike recreation of gingival tissue

The flawless reconstruction of gingival tissue requires sound teamwork as well as excellent materials and exceptional skill. Layering with the light-curing laboratory composite SR Nexco takes this procedure to a new level.

By Dr. Patrice Margossian, Marseille, & Pierre Andrieu, France

Careful planning is indispensable in the treatment of an edentulous jaw with implant-supported restorations. The axes and positions of the implants must correspond to the given biological, mechanical and esthetic conditions. In situations where severe bone recession has occurred, the work of the dental team will involve not only the reconstruction of dental but also of gingival tissue. The dentogingival complex must primarily fulfill two aspects: function (chewing and speaking) and esthetics (alignment of the teeth and gums and lip support).

Clinical case presentation

When the 57-year-old female patient presented to our practice her teeth and the related bone structure were in very poor condition (Figs 1 and 2). Numerous teeth were missing in both the upper and lower jaw. Furthermore, the upper jaw showed considerable bone and gingival resorption. The patient wished to have fixed teeth again and regain an attractive appearance. Due to the extensive damage that had occurred, the complete restoration of both jaws with implants was indicated.

Surgical phase

As a result of sufficient bone structure in the lower jaw, this part of the mouth could be restored at once with four immediately loadable implants. During the reconstructive phase, the upper jaw had to be treated with a provisional removable denture due to the atrophied jaw ridge. The tooth extractions in the upper and lower jaw took place during one day. At the same time, the four lower jaw implants were inserted and loaded. An immediate denture was placed in the upper jaw.

During the osseointegration period of the mandibular implants, the bones in the upper jaw were reconstructed. The maxillary sinus and the jaw ridge were augmented in one appointment. At the next appointment, ten implants were placed according to the treatment plan. Six months after this intervention, the implants were exposed. As a result of a well-planned soft tissue management strategy, firm keratinized tissue had formed in adequate form. The permanent restorations for the upper and lower jaw were fabricated two months later (Figs. 3 and 4).

Prosthetic phase

The determination of the occlusal plane and the ideal incisal edge are crucial in the prosthetic phase.

Prosthesis fabrication

The final prosthetic phase included the fabrication of the definitive prostheses for the upper and lower jaws (Figs. 3 and 4). The ceramic crowns were NobelProcera® and the white esthetics were NobelProcera® Full Contour.

Soft tissue management

The soft tissue management included the application of various translucent materials to impart the desired depth effects. The application of SR Nexco® Paste Intensive Gingiva was crucial in achieving a lifelike, vital, esthetic appearance. The final result was a harmonious integration of the prosthetic gingiva with the desired depth effects.
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saline line allows the tooth arches to be integrated more easily in terms of esthetics and function.

**Impression taking**

Open tray impressions were taken with a special plaster (Snow White) and unplumped impression posts. The considerable stiffness of the impression material completely immobilized the impression posts, which prevented any errors from occurring in the casting of the study models.

**Articulation of the models**

The articulator allows the kinematics of the jaw to be correctly simulated. The aim of the cast part of the treatment is of a functional nature. It is intended to ensure the optimal occlusal integration of the restorations and the proper jaw movements during chewing, speaking and swallowing. In this particular case, the upper jaw model was positioned with the help of a facebow. Four impression posts were screwed on the implants in order to provide strong support and enhanced reliability. Alternatively, this step can take place directly on the immediately loaded provisional restorations. For this purpose, however, the model has to be mounted in the articulator of the dental practice. In the present case, the maxillary model was positioned in the correct relation to the hinge axis-oral plane.

Subsequently, we adjusted the bite patterns in order to record the vertical dimension of occlusion. The centric relation is regarded as the reference position for adjusting the muscles to the centric and functional jaw relation. The maxillary model was mounted in the articulator with the help of an antagonist jaw simultaneously. Immediately loaded provisional restorations. For this purpose, however, the model has to be mounted in the articulator of the dental practice. In the present case, the maxillary model was positioned in the correct relation to the hinge axis-oral plane.

The restorations have to be immobilized when they are mounted in the articulator. The Artex system allows the articulator of the dental practice to be integrated more easily in the treatment plan to the final outcome. Laying gingival portions with a laboratory composite represents a genuine improvement on previous materials and methods with regard to esthetics, handling and hygiene (Fig. 14).

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In order to achieve very lifelike results in the layering of the gingival tissue, saturated (in transparent) materials were used. First (SR Nexco Pasti transparent Gingiva) (Fig. 9). Next, transparent, light-curing Gingiva (SR Nexco Pasti Gingiva, SR Nexco Pasti basic Gingiva) were used at the gingival areas with the desired depth (Fig. 10). The colours of brushes, and the patient was given special instructions regarding her oral hygiene.

For a long time, ceramics were considered to be the esthetic benchmark. With the introduction of state-of-the-art industrially fabricated acrylic teeth, which are specially designed for implant applications, the bar for esthetics has been raised in this category of materials. The teeth used in this case exhibit a true-to-nature morphology, which allows the restoration to be functionally integrated without any problems. Using the laboratory composite SR Nexco to recreate gingival tissue is a good restorative approach. In contrast to ceramic materials, the composite resin is easy to handle and delivers exceptionally esthetic results (Fig. 1). The light weight of the material is an added bonus. An all-ceramic restoration (zirconium oxide framework, layering ceramic, gingival composite) almost twice as much as a titanium composite resin denture. An additional advantage of the type of restoration described here is its long service life.

**Conclusion**

The success of an implant-retained denture depends on the systematic coordination of all the surgical and prosthetic requirements.

A strict procedure needs to be followed from the treatment plan to the final outcome. Laying gingival portions with a laboratory composite represents a genuine improvement on previous materials and methods with regard to esthetics, handling and hygiene (Fig. 14).

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