

Gingiva Solution

Creating individualized IvoBase® dentures using the SR Nexco® lab composite



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Preface

Permanent restorations fabricated in the dental lab must provide both function and esthetics. This is the basic principle and understanding in dentistry. The advent of implant prosthetics allows dental professionals to achieve highly functional results. At the same time, however, the requirements regarding the esthetic design of the dentures have increased. We can observe this trend not only in the implant sector but also in the field of complete dentures. In the case of active seniors or, in other words, of edentulous patients who wish to live a fulfilled and active life, we use two different methods for the reconstruction of artificial gingiva in the practice: the characterization of the gingiva from the inside (intrinsic technique) and the characterization from the outside (extrinsic technique).

In this article, we would like to expand on the intrinsic characterization technique using the SR Nexco® lab composite in combination with the IvoBase® denture base material.

Patients who wear removable complete dentures often show signs of a significant reduction or alteration of the alveolar mucosa and alveolar process. Shade taking alone does not provide all the information necessary for the successful characterization of the gingiva. We therefore pay particular attention to the patients' skin and lip colour as well as to their physiognomy before starting with

the characterization of the gingival parts. This approach offers the dental technician plenty of leeway but requires a high level of creativity at the same time.

We use the Biofunctional Prosthetics System (BPS®) from Ivoclar Vivadent for the fabrication of suction-effective dentures. These kinds of dentures are retained in situ by means of a strong suction effect. The anterior teeth are set up according to the dental cast analysis following the BPS principles. Since this model analysis is based on the positioning of the natural teeth before the tooth loss, the occlusal plane has to be lowered in many patients showing sagging mimic muscles in order to obtain esthetic results.

Despite the fact that this technique leads to highly esthetic results when the lips are opened in a "normal" smile, more work may be needed to enhance the appearance of patients when they smile broadly and the gingiva becomes more visible. We are convinced that, particularly in these patients, the esthetic properties of fixed dentures can be optimally improved by characterizing the artificial gingival portions. Furthermore, dentures which reflect the patients' individual, esthetic characteristics have a positive impact on their self-confidence and self-assurance. As a result, patients feel more comfortable and accept their dentures more easily.

Cut-back of the denture base

for the esthetic reconstruction of the gingiva
using SR Nexco®

First, the polymerized denture base, which was fabricated using the IvoBase material, is cut back in order to make space for the SR Nexco veneering material.

An area of 5 mm from the denture margin is critical for the suction effect and is therefore not reduced. The cut-back procedure is performed on the 1- to 1.5-mm thick resin layer of the remaining denture surface. Special attention is paid to the transition area between the denture resin and the lab composite. In order to ensure sufficient space for the veneering process with SR Nexco, a defined transition from the denture base to the lab composite has to be created.





- Fig. 1: Cut-back of the denture margin
Fig. 2: An uncut marginal area of 5 mm ensures effective suction results.
Fig. 3: A rim is prepared using a small instrument head.

Surface treatment

of the denture base material

Since a rough surface structure is required to obtain optimum bond strength, the surface is carefully sandblasted with Al_2O_3 Type 100 at 2 bar pressure. In order to prevent roughening of the denture teeth, they are protected using e.g. liquid silicone. Then, the surface is cleaned with a stream of oil-free air.

Subsequently, the surface of the denture base material is conditioned using SR Connect. The agent is left to react for 2 to 3 minutes and then light-cured in the Lumamat 100 for 11 minutes. The SR Connect conditioner bonds light-curing veneering materials to PMMA, heat- or cold-curing polymers and resin denture teeth.



Fig. 4: The conditioner SR Connect is applied.

Fig. 5: SR Connect

Fig. 6: The Lumamat 100 polymerization unit

Reconstruction of the marginal area

for a natural transition

The SR Nexco Paste Basic Gingiva BG-34 shade, which is identical with shade 34-V of the denture base material IvoBase High Impact, is applied on the transition area at the denture margin in order to achieve a natural and virtually invisible transition between the denture base material and the lab composite. The various applied materials are cured after each working step using the Quick intermediate polymerization device.





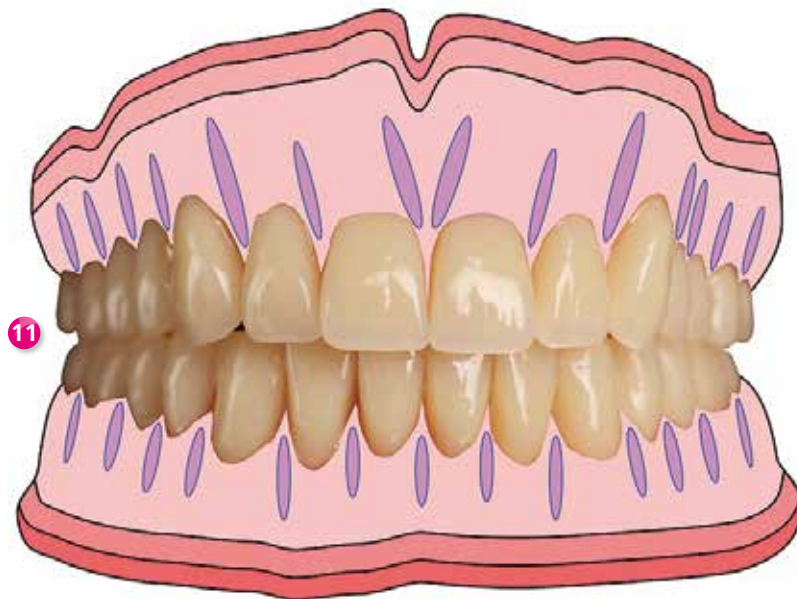
Fig. 7: Schematic presentation of the marginal area

Figs 8+9: SR Nexco Paste Basic Gingiva BG-34 is applied on the transition area at the denture margin.

Fig. 10: The shades of the denture base material and the SR Nexco Paste Basic Gingiva are coordinated with each other.

Reconstruction of the alveolar spaces

In a next step, SR Nexco Gingiva 5 is applied into the alveolar spaces of the attached mucosa, starting from the marginal seam towards the gingivobuccal fold. Thus, depth effects and contrasts are achieved in these interproximal areas.





- Fig. 11: Schematic presentation of the alveolar spaces
- Fig. 12: Depth effects and contrasts are achieved in the interproximal areas using SR Nexco Paste Gingiva 5.
- Fig. 13: SR Nexco Paste Gingiva 5 is applied in the interproximal areas.

Reconstruction of the attached mucosa

at the alveolar processes

In the case presented, the attached gingival parts at the alveolar processes are extremely wide. Therefore, two shades are used for the reconstruction of these areas. Firstly, an orange-coloured background is created in the transition area and applied towards the mobile gingival parts using SR Nexco Paste Gingiva 1. Secondly, this material is covered with the pink-coloured SR Nexco Paste Intensive Gingiva in order to obtain a 3D effect.





Fig. 14: Schematic presentation of the reconstruction of the alveolar area
Fig. 15: Orange-coloured SR Nexco Paste Gingiva 1 is applied as background and applied towards the mobile gingiva.
Figs 16+17: Subsequently, these areas are covered with SR Nexco Paste Intensive Gingiva 3.

Reconstruction of the mobile mucosa

In a next step, the mobile gingival parts are reconstructed. For this purpose, SR Nexco Incisal I2 and SR Nexco Stains white are combined to form a homogeneous mixture. Depending on the mixing ratio used, this mixture causes a three-dimensional effect on the mobile gingival parts and a translucent effect in the cervical area. Air bubbles in the mixture should be avoided.





Fig. 18: Schematic presentation of the reconstruction of the mobile mucosa
Fig. 19: SR Nexco Paste Incisal I2
Fig. 20: SR Nexco Stains white
Fig. 21: The mixture of SR Nexco Paste Incisal I2 and SR Nexco Stains white is applied.

Reconstruction of the capillary vessels and the upper labial frenulum

In a next step, the upper labial frenulum and the capillary vessels are reconstructed. For the reconstruction of the capillary vessels, SR Nexco Stains clear and red are mixed together and applied on the attached mucosa using slight vibrations. This method allows the capillary vessels to be imitated as naturally as possible.

The upper labial frenulum is characterized similarly to the mobile gingival portions, i.e. SR Nexco Incisal I2 and SR Nexco Stains white are mixed and applied.





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- Fig. 22: Schematic presentation of the characterized denture
- Fig. 23: SR Nexco Stains clear and Stains red are mixed.
- Figs 24+25: The mixture is embedded into the gingival area using a sharp instrument.
- Fig. 26: The material is applied with slow and soft vibrating movements in order to design lifelike capillary vessels.

Final polymerization and finishing

Before final polymerization, SR Gel is applied on the reconstructed gingiva in a full-coverage layer which is, however, not too thick. SR Gel is an oxygen-impermeable masking gel applied to prevent the formation of an inhibition layer.

After polymerization, SR Gel must be removed completely. The finishing steps and the modeling of the surface texture of the denture are performed using customary tungsten carbide burs and polishing tools. The inhibited layer must be removed from the entire surface.



Fig. 27: SR Gel prevents the formation of an inhibition layer.

Impressions



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