

# Generation fifty plus: Restoring a natural smile

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Today's quality conscious and vital seniors wish to retain an attractive appearance in the later stages of their life. They demand removable dentures that allow them to lead active lives and enjoy life to the full. Consequently, esthetics are an important issue. Clinicians seeking to fulfil the demands of today's seniors require well-thought-out strategies and materials that feature appropriate properties. In this article, the authors provide insight into the Biofunctional Prosthetic System (BPS), a highquality denture system which satisfies the needs of discerning patients.

In the past decades, the Biofunctional Prosthetic System has established itself as the standard of care in complete

denture prosthetics. The success of the system lies in the interplay of coordinated products, their correct use on the patient and the effective collaboration between dentist and dental technician. Among other things, the system comprises a range of tools (eg articulators) to re-establish efficient chewing function as well as optimally coordinated materials (eg denture base resins) which allow the soft tissues to be reproduced and denture teeth and metal frameworks to be joined. The BPS system comprises all the components required for the clinical and laboratory procedures involved in the fabrication of dentures. Consequently, a smooth flow of communication between the different parties – patient, dentist and dental technician – is ensured.

The increasing demand for implant-supported dentures is easily explained by the fact that today's patients stay active and in good health even at an advanced age. They want to enjoy life to the full. In this context, implant-supported dentures may contribute substantially to enhancing their quality of life. One of the main benefits of the BPS system is that it offers all the components required from the planning of a case to its completion, thus allowing successful results to be achieved. The launch of a new generation of denture teeth – SR Phonares® NHC – has further increased the level

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*Figure 1: Starting situation: The remaining teeth were found to be affected by periodontal disease.*



*Figure 2: The X-ray revealed loosening of the remaining natural dentition as well as defective restorations.*



*Figure 3: Following extraction of the remaining teeth, the immediate dentures (fabricated with the BPS system) were incorporated.*



*Figure 4: The provisional dentures in situ. Bone re-modelling took place in the course of the three-month healing period.*

of quality achievable in the fabrication of esthetic dentures for the edentulous patient. Due to innovative features such as wear resistance, low plaque accumulation, low tendency to discoloration as well as natural shape and shade, these new denture teeth are the first choice for high-quality prosthetic solutions.

### Diagnosis and treatment planning

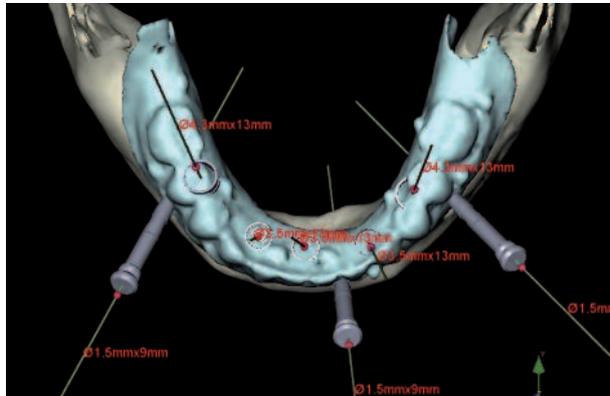
A 57-year-old female patient presented to our dental practice. She was unhappy with the esthetic appearance of her dentures as well as their masticatory function. A careful clinical and radiological examination, which was followed by an analysis of the diagnostic casts in the articulator, revealed generalized, complex, chronic periodontal disease with poor prognosis, which affected the entire remaining dentition (Figures 1 and 2). After having discussed the different

treatment options with the patient, the following treatment plan was set up:

- Extraction of the residual teeth not worth preserving and fabrication of provisional dentures;
- Insertion of five implants in the maxilla and five implants in the mandibula;
- Rehabilitation by means of fixed, implant-supported upper and lower dentures.

### Provisional dentures

As a first working step, immediate dentures were fabricated with the BPS system (Figure 3). At the same time, multiple extractions were done and the alveolar ridge was adjusted where necessary. The patient left our surgery with the provisional dentures in place. These remained in the mouth during the healing period of three months (Figure 4).



**Figure 5:** Planning of the surgical intervention. The superposed image of the immediate denture formed the basis for the correct placement of the implants.



**Figure 6:** The implant bed was prepared using a drilling template and the implants were inserted.



**Figure 7:** Set-up of the denture teeth in the articulator (Stratos 300).



**Figure 8:** CAD/CAM-fabricated titanium framework for the upper jaw.

### **BPS as a planning tool in computer-assisted oral surgery**

A cone beam CT scan was carried out. Based on this scan, the surgical intervention required to place the implants was planned using digital 3-D implant planning software. The interim dentures served as a reference in this process. This helped to ensure the correct positioning and insertion angle of the implant fixtures in relation to the planned prosthetic superstructure (Figure 5).

Surgical templates for implant bed preparation were fabricated using stereolithography. They made the procedure less traumatic for the patient and ensured high precision (Figure 6).

### **Fabrication of the dentures**

The fabrication of the definitive dentures involved the following steps:

#### **1. Development of efficient chewing function**

For the new dentures of the patient, SR Phonares NHC denture teeth were used. The teeth were set up according to the BPS Phonares set-up method using the articulator Stratos® 300 in conjunction with the corresponding accessories. The patient's individual data were recorded and transferred to the model using the UTS transferbow system (Figure 7).

#### **2. Fabrication of the titanium framework**

In line with the arrangement of the teeth, a titanium framework was produced using CAD/CAM technology. We decided to use titanium for the framework because this material combines biocompatibility and passivity with precision, high fracture strength and low weight (Figures 8 and 9).



Figure 9: CAD/CAM-fabricated titanium framework for the lower jaw.



Figure 10: The completed dentures ready for final incorporation in the mouth.

### 3. Completion of the definitive dentures

The teeth set up in dynamic occlusion and the titanium structure were joined by means of a denture base system (SR Ivocap® Sytem). The SR Ivocap HI (High Impact) material is processed through injection moulding. It provides high impact resistance and produces no increase in vertical dimension. As a result, high accuracy of fit is ensured. A reliable bond between the denture base, the teeth and the metal framework can be achieved. Furthermore, an esthetic transition between the teeth and the adjacent soft tissue portions is created (Figure 10).

### 4. Incorporation of the completed dentures

The completed dentures were attached by screwing them to the implants. The screw holes were first covered with Teflon tape and then sealed with a temporary filling material (Systemp®.inlay). For the occlusal surface of the teeth, IPS Empress® Direct was used, while in soft tissue areas SR Adoro® Gingiva 4 was applied. Outstanding precision was achieved with the procedure described above, particularly as far as vertical dimension and centric occlusion were concerned (Figure 11). The seamless integration of the SR Phonares NHC denture teeth into the



Figure 11: The denture attached to the implants with screws in the mouth of the patient.



*Figure 12: Excellent esthetic integration of the denture teeth (SR Phonares NHC) as well as of the soft tissue portions into the natural environment.*



*Figure 13: A picture speaks volumes: The patient with her new, implant-supported dentures.*

natural environment as well as their excellent function clearly sets them apart from earlier generations of resin teeth. These highly esthetic teeth, in combination with the technical, manual and teamwork skills of the clinician and laboratory technician, ensure a successful outcome in the prosthetic rehabilitation of the edentulous patient with implant-supported dentures (Figures 12 and 13).

### **Conclusions**

The BPS procedure described above allows complete dentures to be fabricated that provide masticatory efficiency, as well as a high level of comfort and esthetic integration. As a consequence, this type of treatment considerably enhances the patient's quality of life. The advantages for the clinician providing this type of service are obvious: The standardized, reliable system allows high-quality restorations to be fabricated in a simple, quick and cost-efficient manner – even in highly complex cases.

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