The challenge of combining TFZ to e.max in one case

By Alham Farah, Syria

The challenge of this case.

The way to think about combination cases, where you have glass ceramic veneers next to zirconium oxide bridges, is different than having only one kind of restorative material in a case. Lots of factors have to be taken into account, most important is the optical properties of both materials and the fact that they need to match (Not just from a dental technician’s point of view, but also from a dental point of view and the way he adjusts his/her preparation accordingly).

It was difficult to find an equivalent to our chosen SiO2 material for the veneers (IPS e.max Press, in this case), with its outstanding esthetic and life-like appearance, but going to Zirconium oxide option to restore the posterior bridges was necessary since the IPS e.max is indicated for a maximum of 5 units bridges up to the second premolar region, and in our situation here our bridges go further to the molar area.

Material Selection Judgment

Before you choose where to outsource your Zirconia work, you have to make sure that the brand of Zirconia to be used will fulfill your requirements of translucency-opacity level, and the shade concept will easily match your IPS e.max veneers work in the front esthetic region.

No method would enable you to make sure, better than milling different kind of Zirconia, and trying them all in, together with the IPS e.max veneers, to check the matching level yourself.

In my case scenario here, to narrow down my options I based on a study for 3M ESPE showing a comparison between several kind of high translucent zirconia. (Fig. 11)

Showing that; Lava Plus (from 3M ESPE) & Zenostar Zr Translucent Pure (from Wieland) are the top in their range when it comes to translucency levels. The advantage of Zenostar in our case situation over the Lava, was the important factor of the shading concept of Zenostar and how its coordinated with the IPS e.max press Ingot shade and coloring concept.

In terms of, MO (Medium Opacity) Ingot from IPS e.max Press has a match in the Zenostar Zirconia, which is also called MO (Medium Opacity). LT (Law Translucency) Ingots from IPS e.max Press have equivalent in the Zenostar Zirconia which is also called (T=Translucent).

Nothing left to do but to try the material on a dummy case and make sure of the match myself. (Fig. 12)

Zenostar Pure & Light

From the (T=Translucent) Zirconia and according to the final shade chosen by our patient for her veneers & bridges restorations which is BL4 (according to Ivoclar Vivadent shade guide A-D), we had to choose between two Zr blanks from the bright colors (light & pure). Since the intensity and brightness of a color would change relatively with changing the thickness of the material, I decided to go for both colors, then we choose which matches our veneers better on the day of the try in. (Fig. 14)

For professionals by professionals
– SR Nexco goes one step further

By Ivoclar Vivadent

A new flask has been developed in collaboration with expert users of the press technique.

SR Nexco Flask is a new type of flask with the help of which luting, veneering composites can be pressed on dental frameworks. In order to effectively address the practical challenges of functionality, ergonomics and design, the flask has been developed in close cooperation with industry professionals.

The new flask offers the following important benefit: It allows composite materials to be efficiently and quickly pressed to dental restorations, including long-span bridges. The results are highly accurate, showing hardly any difference between the IPS e.max Press Multi

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5-D virtual planning concepts for implant-retained full-arch mandibular prostheses: The bone reduction guide

By Dr. Scott D. Ganz, USA

The process of accumulating patient information to determine which course of dental implant treatment should be considered can be described under the category of pre-surgical prosthetic planning. The first step in patient evaluation involves conventional peri-apical radiographs, panoramic radiographs, oral examination, and mounted, articulated study casts. These conventional tools allow the clinician to assess several important aspects of the patient’s anatomical presentation, including vertical dimension of occlusion, lip support, phonetics, smile line, overjet, overbite, and ridge contours, and to obtain a basic understanding of the underlying bone structures.

The accumulation of preliminary data afforded by conventional diagnostics provides the foundation for preparing a course of treatment for the patient. However, the review of findings is based upon a 2-D assessment of the patient’s bone anatomy and may not be accurate in the appreciation of the spatial positioning of other vital structures, such as the incisive canal, the inferior alveolar nerve, or the maxillary sinus. In order to understand each individual patient’s presentation fully, it is essential that clinicians adopt an innovative set of virtual 5-D tools. Through the use of advanced imaging modalities, new paradigms have been established that, in the author’s opinion, will continue to redefine the process of diagnosis and treatment planning for dental implant procedures for years to come. Without the application of computed tomography (CT) or lower radiation dosage cone beams computed tomography (CBCT), an understanding of the 3-D anatomical reality cannot be accurately determined, potentially increasing surgical and restorative complications.

The utilisation of 5-D imaging modalities as part of pre-surgical prosthetic planning can take several paths as demonstrated in the flow chart. The first involves acquiring a 5-D scan directly, without any prior planning or ancillary appliances. The scan process can be accomplished at a local radiology centre or via an in-office CBCT machine, now widely available. The scan itself can be completed within several minutes. Once the data has been processed, it can be viewed via the native software of the CBCT machine used and evaluated for potential implant recipient sites, followed by the surgical intervention. A second path requires the fabrication of a radiopaque scanning appliance that incorporates vital restorative information and will be worn by the patient during the acquisition of the scan. In this manner, the tooth position can be evaluated in relation to the underlying bone and other important anatomical structures, such as the maxillary sinus or the inferior alveolar nerve. The scan data can again be visualised via the CBCT machine’s native software and a plan can be determined based directly upon the restorative needs of the patient.

The scan data is formatted into a nonproprietary data interchange protocol referred to as DICOM (Digital Imaging and Communications in Medicine). The DICOM data can be exported for use in third-party software applications that incorporate additional tools to aid clinicians in the diagnosis and treatment planning functions.

The use of interactive treatment planning has expanded dramatically in the past ten years as computing power has increased exponentially. There are at least two paths that can be taken once a virtual plan has been established. The first allows the data to be assessed, providing important information to the clinician who will perform the surgical intervention free-hand based upon the software plan. This has been termed CT-assisted intervention by the author. The second path involves the fabrication of a surgical guide or template that is remotely constructed from the digital plan usually through rapid prototyping or stereolithography. This method has been described as CT-derived template-assisted intervention and is considered to be more predictable than any previous methods. The use of advanced imaging modalities for presurgical prosthetic planning is essential for any type of implant surgical and restorative intervention, including single-tooth and multiple-tooth restoration, full-arch fixed and removable overdenture reconstruction.

5-D planning concepts for the mandible

Regardless of the image acquisition process, there are four standard views that need to be fully appreciated in the diagnosis phase. These include the cross-sectional (A), the axial (B), the panoramic (C), and the 3-D reconstructed volume (D) (Image: Dr Scott D. Ganz)
individual patient anatomy. The cross-sectional slice is important for the assessment of the facial and lingual cortical bone plates, the intramedullary bone, and the positioning of teeth within the alveoli. The axial view allows inspection of the entire upper or lower jaw, the maxillary sinus volume, the position of the incisive canal in the maxilla, and the mental foramina in the mandible. The panoramic view is an overall scout image, and can be helpful in tracing the mandibular nerve, and assessment of the maxillary sinus floor near the nose region. The 5-D reconstructed volumes are available in the planning process and in communicating information to the members of the implant team, including the patient and the dental laboratory technician who will fabricate the final prosthesis. These images are especially useful, as they are most readily understood and appreciated.

As represented in the flow chart, a patient may be referred to a radiology centre for a CBCT scan of the mandibular arch without a surgical indication, to assess whether the patient is suitable for surgery. If indicated, the 3-D reconstructed volumes are easily understood and interpreted for the implant team. In the presented case, it was decided to fabricate an occlusal template, and to fabricate 3-D reconstructed volumes to plan the bone augmentation (Figs. 6a & b). With innovative software tools, the teeth can be virtually extracted in the 5-D reconstructed volume, aiding the clinician in understanding the local anatomy to identify potential implant recipient sites (Figs. 4a & b). In this example, the alveolar ridge narrowed considerably at the midline. In order to facilitate implant placement, the ridge required an alveolectomy, reducing the ridge by approximately 8 mm.

Advanced software applications allow for the bone to be sectioned based on the desired implant. A bone reduction template can be designed that can be simulated by the software and then fabricated to assist in the bone removal (Figs. 5a & b). The reduction template fits over the ridge, allowing complete visualization of the residual bone to be sectioned from the alveolar ridge. The flattened ridge can also act as a guide for the clinician, enhancing the clinician’s appreciation of the remaining bone to be sectioned. The amount of bone to be removed can be visualized as shown in Figure 7a and then assessed with realistic manufacturer-specific implant placement in the bone (Fig. 7b). The occlusal and facial views reveal the new occlusal plane and position of the facial bone in the bone implant placement (Figs. 8a & b). The visualization of the bone crest can aid in the determination of ideal implant recipient sites. However, it must be noted that all other views must be considered to appreciate adjacent vital anatomical structures, and the remaining topography of the anterior mandible before any plan can be finalised. Several different options can be quickly simulated and then discussed with the patient and all members of the implant team. The use of a bone reduction template can facilitate the accurate removal of bone and the immediate placement of implants, eliminating the need for two separate surgical interventions and thus minimize patient morbidity.

The initial plan in the case demonstrated was for the patient to receive an implant-retained overdenture. Therefore, recipient sites were determined based upon the available bone in the mandible (Figs. 2a–c). In the presented case, four implants between the right and left mental foramina, which includes the anterior mandible, were illustrated (Fig. 14a). The positions of implants can be further enhanced by placing yellow abutment projections in the correct position and the simulated occlusal requirements (Figs. 15a & b). In addition, it is important to provide ample clearance between the most posterior implants and the inferior alveolar nerve and mental foramen. Once the positions of the implants have been finalised, a surgical guide can be simulated (Figs. 16a & b). Note that the implants were all parallel, 5-D reconstructions and laboratory fabrication for overdentures and in achieving passive fit for fixed prostheses are essential. In the presented case, the ridge required an alveolectomy reducing the ridge by approximately 8 mm (yellow areas; Fig. 10).

Virtual realistic implants were simulated in the residual alveolar bone (Figs. 11a–d). A simulated surgical template was fabricated for the desired implant positions and rested on the reduced bone both facially and lingually. At the midline, where the vital arches resided, it was elected not to place an implant to avoid potential surgical complications (Fig. 12). The simulated bone-borne surgical template was visualised in various views (Figs. 13a–c). The first two revealed a midline horizontal stabi-lisation (Figs. 13a & b) and the last showed a standard bone-borne template without midline horizontal stabilisation (Fig. 13c). The hybrid restoration has been indicated, supplementary recipient sites could have been included based upon the available anatomy.

In order to demonstrate the capabilities of the new digital paradigms, five virtual implants were placed into the initial anterior alveolar ridge after the teeth had been extracted virtually (Fig. 14a). The positions of implants can be further enhanced by placing yellow abutment projections that extend above the occlusal plane. Using selective transparencies, the various structures can be adjusted in opacity and trans- lucency. Using advanced software simulation, horizontal osseous structures can be evaluated in all horizontal planes. Using these, the clinician can assess several important aspects of the patient’s anatomical presentation, including vertical dimension of occlusion, lip support, phonetics, smile line, overjet, overbite, and ridge contours, and can obtain a basic understanding of the underlying bone structures. The accumulation of preliminary data afforded by conventional diagnostics provides the foundation for prepar ing a course of treatment for the patient. However, the review of findings is based upon a 2-D assessment of the patient’s bone anatomy. In order to understand each patient’s presentation fully, advanced 5-D imaging modalities are essential. This article has illustrated the use of various innovative 5-D tools.

The application of CT or lower to higher resolution CBCT scans will enable clinicians to better understand the relationship between patient anatomy and the desired treatment outcomes. In the process of achieving true restoratively driven implant reconstruction, the ability to utilise digital imaging and treatment planning technology is now within the reach of many clinicians through the various software products on the market. In addition, there are many third-party outlets online that enable clinicians to upload their DICOM data for evaluation, processing, treatment planning, and even surgical template fabrication.

In many case presentations, a reduction of the alveolar crest is an essential part of the surgical phase to achieve adequate width of the bone for implant placement. It is now possible to plan for accurate bone reduction with the full knowledge of the impact on the inter-arch space and oc- clusal requirements. The advent of the bone reduction template provides one additional digital solution that can also result in reduced patient morbidity, espe- cially when the process can be completed in one surgical procedure. New paradigms have been established that, in the author’s opinion, will continue to redefine the process of diag- nosis and treatment planning for dental implant procedures, both removable and fixed implant-retained restorations, for years to come. 

More information is available from the publisher.
Global success – Sirona Connect portal now available in eight languages

By Sirona

ENSHEIM, Germany: Take digital impressions and order the restoration online, quickly and easily via the global Sirona Connect portal. Sirona Connect is the first innovative system for digital cooperation between dentists and dental labs. The rapidly growing number of users is creating a true boom in orders – this year Sirona anticipates a 60 percent increase in orders around the world.

Sirona Connect allows dentists to order their restorations via the portal provided by Sirona, the global market and technology leader in the dental industry, in a total of eight languages. In addition to German and English, the available languages include French, Italian, Spanish, Chinese, Korean, and Portuguese.

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The Dental Company

and dental technicians to connect in a very modern way – they can exchange data conveniently and securely via the portal. The portal interface is integrated into the dentist's and technician's software, regardless of which software version is being used by either party, thus greatly facilitating workflow.

More and more dentists and dental technicians are using this service. “This year, we anticipate 60 percent more orders than last year via the portal all around the world,” says Ronny Kucharczyk, Product Manager Digital Impressions. “This corresponds to around 100,000 restorations.” He partly attributes this growth to CEREC users who use laboratory services for certain indications or materials. “These are dentists who cannot or do not want to make certain restorations themselves for various reasons.” And there is also a growing number of users of purely digital impression systems such as APOLO DI or CEREC AC Connect with Omnicam who order their restorations via the portal. “The high demand reflects practice routine,” explains Kucharczyk.

Sirona Connect users come mainly from Europe and the US. But the number of orders from countries such as China, Korea, and Brazil is increasing as well. The main reason for this is that taking digital impressions is becoming more common in practices, especially in these countries. Thus the Sirona Connect portal is now available in the language of each respective country. Dentists and dental technicians can now communicate via the portal provided by Sirona.

The final restoration and the wax-up. Moreover, the flask is exceptionally versatile, due to the many special details incorporated into it, which allow it to be individually adjusted to the specific indication and the framework situation.

Many handy details make work easier

SR Nexco Flask is equipped with large, easy-grip screws. Unlike in most other devices of this kind, these screws are not permanently fixed. They can be inserted without any guides and therefore improve flask handling. The top part of the flask is transparent and allows light to pass through it. As a result, the light-curing composite is evenly polymerized from all sides. Apart from an additional base plate, which enables height adjustments to be made depending on the dimensions of the restoration involved, the flask also includes a separate spacer for curing smaller restorations.

The spacer reduces material consumption to a minimum. Positioning pegs keep the top part of the flask in place. The notches on the sides allow the top and bottom parts to be easily separated. The openings for the injection of Transil F clear silicone are designed to accommodate the product's mixing tips. This renders the silicone easy to handle and use in conjunction with SR Nexco Flask. Due to its excellent flow properties, Transil F completely encases the invested framework.

The new flask is an extension of the existing SR Nexco product system. It is ideally matched to the SR Nexco materials.