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The quest for an improved appearance driven by the media’s portrayal of beauty has dramatically changed dentistry from a need-based to a want-based practice. Patients’ demands and expectations are high, and clinicians are continuously challenged to acquire innovative techniques to satisfy this need. One important part of providing aesthetic dentistry is to incorporate acceptable biological technology for long-term survival, function, and aesthetics based on the minimally invasive concept.

This concept entails a detailed diagnosis and treatment planning with attention to function and aesthetics. Furthermore, aesthetic treatment requires mastery of the art of understanding various types of personalities with different expectations for treatment. Proper communication will not only enhance the dentist–patient relationship, but also provide greater acceptance of treatment planning. The evolution of digital technology has created exciting opportunities for improving this communication process and facilitated a smooth workflow, from diagnosis to the final treatment and maintenance phase. In this year’s autumn issue, we have included two special articles about digital smile design that will enlighten the reader about the specific protocol used for an aesthetic digital smile design and demonstrate how this concept can be applied to your daily work, providing you with a new means of communication.

As a member of the Health Technology Committee at the University of Iowa’s College of Dentistry, I perceive that the digital smile design workflow transitions well to the widespread use of CAD/CAM technology. Given the success of CAD/CAM approaches in the clinical setting, computer-assisted learning or simulation systems are being introduced into dental education too. These systems are promoted for their ability to facilitate individual learning by providing objective and consistent feedback. It is expected that incorporation of this digital technology into the curriculum will have a great impact on aesthetic dentistry in the future.

In this issue of *cosmetic dentistry*, we also feature beautifully illustrated and documented articles that provide the solutions to improving aesthetics in the anterior region based on the minimally invasive concept and a multidisciplinary approach. I hope you will enjoy this issue and apply your new knowledge successfully to your daily practice.

Yours faithfully,

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Co-Editor-in-Chief
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Cover image courtesy of Zoom Team
Edelweiss DR is introducing a new level in direct esthetic restorations with its direct system, developed under the guidance of Dr. Didier DIETSCHI. This material expands the possibilities in free-hand bonding techniques following the well established “NATURAL LAYERING CONCEPT” leading to uncompromised esthetic and functional results thanks to a new, improved homogenous nano-hybrid technology combining surface smoothness and mechanical strength... try and convince yourself!

The reliable composite system
... for everyone!
Owning a dental practice or group has always presented challenges, but the marketplace has never been more crowded than it is now. With an ever-increasing level of choice for patients, it is more important than ever for dental businesses to stand out from the crowd. While we of course all know the value of providing a first-rate customer service, and that will always remain the most important factor, how many of us recognise the importance of creating and building a brand?

Generally, in dentistry, branding has not been regarded in the same way it is in the corporate world, where multi-national businesses expand on the strength of their brands. But now, with the growth of dental corporates and multi-practice groups, branding is becoming an increasingly important factor. That is not to say that branding is only the domain of the big players. Creating a brand which is unique and people can identify, talk about, recommend to others and remember is just as important for a single practice, and in some situations even more so, where there are other local competitors for existing and potential clients to choose from.

Effective branding is also important when looking to expand, franchise or sell one’s business. When dentists are adding another site to their existing portfolio, doing so under a brand will enable people to know who is moving into their area, and can help give confidence that this is an established dental business taking over their local site. One example being a business in North East England I act for, the Burgess & Hyder Dental Group, who now operate eleven clinics across the region under their brand.

“...it is more important than ever for dental businesses to stand out from the crowd.”

Author: Amanda Maskery, UK
They are welcomed into each area as their brand is widely known, as is the quality associated with it.

Equally in franchising, the importance of a strong brand is crucial to enable a business to thrive in other areas relies on an existing strength of reputation. Through being part of that recognisable brand, patients will know that each site under that umbrella will offer the same levels of service and quality. Another of my clients, Damira Dental, has recently rebranded from Aspire Dental Care, and is pursuing a franchising model under its new and fresh identity. The business, which has 14 sites across the South of England, has amassed a strong reputation during its eight years in operation, and the strength of its service coupled with its branding will allow that to be replicated across the UK.

The creation of a brand identity, which can help support the expansion of a business, can also be of great importance when it comes to selling. It is much easier to market a business which is well known and has invested time and effort in standing out from the crowd. To a potential buyer, they are important factors in instilling the confidence to take on a site in a new territory.

In this day and age of dentistry being an increasingly competitive business, distinguishing oneself from the many other players has never been more important, and is something that must be given due consideration.

_Amanda Maskery is one of the UK’s leading dental lawyers. She is Chair of the Association of Specialist Providers to Dentists (ASPD) in the UK and a Partner at Sintons law firm in Newcastle. She can be contacted at amanda.maskery@sintons.co.uk._
Daily work with Coachman’s Digital Smile Design protocol

Author: Stefan Krause, Germany

The Digital Smile Design (DSD) protocol developed by Dr Christian Coachman is an important part of daily work at our practice. It is an integral way of viewing the patient that clearly improves the quality of the treatment planning, as well as the functional and the aesthetic results.
An important aspect of the DSD concept is that the patient is shown what his or her smile will look like after treatment in an emotive presentation. In this manner, we can easily convince the patient to accept the proposed treatment plan and encourage him or her through the perfect, immediate facial integration of the mock-up.

The DSD is a multipurpose conceptual protocol described in great detail by Dr Coachman and available on his website; therefore, in this article, I will not present the DSD protocol, but will focus on my personal experiences with this concept. Based on my observations, I wish to suggest...
a new procedure for capturing the frontal photographs. In addition to general examination, choosing the initial photograph is essential, because the DSD process starts from this point.

**Steady head position**

First of all, it is necessary to observe how the patient speaks, smiles and interacts with his or her head. It is important to note the line joining both eyes. I often see that both eyes are not on the horizontal line. These parameters should be taken into consideration for future measurements. One needs to check the parameters again in the case of treatment for cranio-mandibular dysfunction.

I use the slit-lamp stand (used by ophthalmologists) to hold the patient’s head in the optimal 3-D position because it keeps the patient’s forehead and chin perfectly still. I have learnt that this procedure is more convenient for taking the patient’s measurements during the workflow (Figs. 1a & b).

I use frontal photographs for the mock-up for the treatment plan presentation, after preparation, for measurements for the dental technician, the digital bite impression, as well as the verification from mock-ups and all tests, including the final result.

In the following, I will present my practical work with the DSD concept in different cases without discussing the smile design process in detail. I can confirm that the digital workflow is very helpful in all steps and cases of aesthetic treatment, because it saves time and yields better results in horizontal/vertical plans without extensive corrections.
Case presentation

The four cases illustrate a new method of capturing frontal photographs.

The first case demonstrates the preparation of six IPS e-max crowns (Ivoclar Vivadent) on teeth #13–23 (Figs. 2–7). The second case presents the mock-up for the treatment plan presentation for a patient with cranio-mandibular dysfunction (Figs. 8–10). The third presents full-arch restoration with Zircon/IPS e-max crowns in the upper jaw (Figs. 11–14). The last case shows the mock-up in a patient with chronic periodontitis (Figs. 15–19).

Conclusion

In this short article, I have presented a new method of capturing the frontal photographs used in the DSD protocol from Dr Coachman. These changes can help standardise the photographs captured in the various steps of the DSD process and can enhance treatment quality.

Case 4

Fig. 15. Facial frontal photograph in the headrest, retracted.
Fig. 16. Initial situation.
Fig. 17. Direct mock-up in the upper jaw, without correction.
Figs. 18a–c. Initial smile.
Figs. 19a–c. Mock-up smile.

Prosthodontist and smile designer: Stefan Krause
Dental technician: Sergei Müller

Fig. 15 Fig. 16
Fig. 17
Fig. 18a Fig. 19a
Fig. 18b Fig. 19b
Fig. 18c Fig. 19c

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Aesthetic Digital Smile Design: Software-aided aesthetic dentistry—Part II

Author: Dr Valerio Bini, Italy

Virtual planning and digital wax-up

Having introduced the fundamental tenets of this method in Part I (Cosmetic Dentistry 1/15), I move on to a step-by-step description of Aesthetic Digital Smile Design (ADSD) in Part II.

Import and adaptation of images: after having acquired the video frames that statistically capture the dynamic phases of the smile and after having imported all the intra- and extra-oral photographs in the manner described in Part I, the smile designer, as if he or she were an architect, undertakes true and accurate mapping of the face and the smile, observing the peculiarities according to focal length. The aesthetic analysis (macro, mini and micro) to which it makes reference is based on values and parameters derived from Powell, Goldstein, Rufenacht, Lombardi, Arnett and Chiche, Pinault, Ricketts, Fradeani and others, and the aesthetic dentist can use these values and parameters with rulers, set squares and goniometers. The full face images of the patient also involve an analytical observation of the portrait and therefore hair and skin colour, make-up, pose, etc. are important. After being imported, these factors will be processed in the manner described below.

Verification of orientation and exposure of the subject photographed (Fig. 18a): the imported images must be verified on the basis of the quality
of the shot, exposure, sharpness, etc., technical factors that most software packages can correct and improve, and some of which the Digital Firmware camera cannot correct itself. Practice to acquire greater familiarity and skill will prove useful to the smile designer.

In addition to the qualitative factors, the correct orientation of the patient’s face is absolutely essential. Some software on Mac operating systems allows rotation of the image with a simple movement of the fingers. In general, however, it is possible to trace a bi-pupillary plane that the software will recognise as the horizontal plane to which to make reference for adapting the image.

Another efficient method, with a dual function, is that of using the cropping grid. This offers the possibility of cropping the photograph to centre the image for use in ADSD. It permits us to align the bi-pupillary plane horizontally to check the symmetry in relation to the sagittal plane.

There is another simple but efficient way: increasing the zoom on the photograph. The pupils will be more detailed and thus, by rotating the photograph, it will be possible to take as a reference point the upper edge of the software window, on which to verify the pupillary alignment. Later on, it will be possible by scrolling the image towards the top to examine the mouth and the teeth to verify the occlusal plane.

Mapping of the macro-aesthetics (face): having decided on the correct position of the face for a detailed aesthetic analysis and after a digital analysis, it is indispensable to mark the face and the smile with reference lines and areas, verifying symmetries and asymmetries (Fig. 18b). The first thing to do is to mark the reference points and morphological determinants (face marker); these should be saved in the project from the photograph because they are fixed anatomic topographical points in both the extra-oral and intra-oral soft tissue, obviously bordering on the teeth and gingiva. From now on, it is essential to save the various ADSD projects. In this manner, we shall have immediately at our disposal the cardinal points of the topographic anatomy on which we shall later base the proportions of the face in terms of Fig. 18b. Mapping of the macro-aesthetics of the face.

Fig. 18c. Mapping of the mini- and micro-aesthetics of the mouth and smile.

Fig. 18d. Check of mini-aesthetic virtual planning with opacity and semi-transparency.

Fig. 18e. Comparison of the before and after images in virtual planning.

Note. Figures 18a–e are demo simulation of ADSD method, they are not a case report.
Mapping of the mini-aesthetics (mouth and smile): from the macro-aesthetic focal length, we can come closer to select the perioral and intra-oral zone where it is necessary to carry out the virtual simulation after a careful dento-labial analysis (Fig. 18c).

The photographs taken statically with closed lips in relaxation, the lips spontaneously half-closed or the lips in a smile while pronouncing the phonemes “/m/” and “/i/” can be compared to video frames: from the recording of this data, we can evaluate movement, the dynamic curvature of the lower lip in relation to the maxillary anterior teeth, the position of the central incisors, their exposure and the breadth of the smile well delimited by the width of the labial corridors.

All of these factors are relevant to the smile design. It is also fundamental to verify the relationship with closed lips between the labial vermilion (analysed both frontally and in profile) and the labial dimensions useful for defining and comparing the vertical dimensions of the face, eventual losses or excesses of substance, bruxism, atrophic jaws, dental alignment, micro- or macrodontia, malocclusion or even simple loss of lip fullness, which is currently of great aesthetic interest not only clinically, but also and above all in the media.

Often the multidisciplinary approach to a clinical case entails a preliminary examination by the plastic surgeon to establish the aesthetics of the labial profile. The plastic surgeon, who has to speak in favour of possible plastic surgery to the profile or the like, sends the patient to the dentist for a clinical evaluation of the dental–skeletal ratios, which is comparable with the aesthetic analysis of the entire profile of the face (Powell’s aesthetic triangle, Ricketts’ aesthetic plane, etc.). A dento-facial aesthetic analysis thus becomes a fundamental pillar for the co-operation between the specialists in the facial aesthetics medical team (Fig. 1 in Part I) to allow a predictable diagnosis and a treatment plan based on a multidisciplinary vision, considering the fact that the soft tissue of the lower third of the face is supported by and moves by sliding on the hard structures (bones and teeth).

In this regard, ADSD can be of help for analysing the lateral thickness of the hard tissue, particularly the position of the anterior teeth, their inclination and their emergence profile. Indeed, it is possible to perform digital image editing analytically on a millimetre grid based on the reference points from the mapping of the facial profile. The simple superimposition of the images and the implementation of protocols or complementary examinations (virtual 3-D orthodontic simulations; vto; cephalometric analysis; dental design related to the thickness of veneers, overlays, prosthetic crowns, recontouring, etc.) can process virtual plans, in which it is possible to pre-
dict the future position of the lips and vestibules (Fig. 19).

Mapping of the micro-aesthetics (intra-oral): the iconography of the analysed face includes the study of photographs taken with lip retractors in place (micro-aesthetics). The focus of this type of image is the close-up of the mouth, the details of which are relative to and parameterised according to the horizontal and vertical lines traced on the patient’s face. Our virtual project will centre on the occlusal plane ideally parallel to the bi-pupillary plane, and the main vertical lines (i.e. the median of the face, inter-incisal of the teeth, subnasal area, etc.).

The intra-oral mapping is thus a simple magnification of what has already been traced on the face. In practice, on our computer desktop, we will have a map in which there are very distinct regions, including outlines, ridges and depressions characteristic of the dento-facial morphology.

At this point, all we have to do is to start tracing lines (outlines; Figs. 11a & b in Part I) on the intra-oral photographs, passing over the gingival margins, papillae, and interproximal margins of the central incisors, lateral incisors and canines (Digital Dental Design). In order to achieve a symmetrical drawing, the lines and contours of the teeth can be duplicated to create a mirror image. In this way, it is possible to obtain the positioning of the forms on the contralateral teeth. Among the lines used, it is very important to insert a line corresponding to the ideal aesthetic curve, which will have a value directly proportional to the position of the occlusal plane.

Paste or overlay the images taken from the Dental Digital Photo Database or model a filling of the outlines. In many cases, it is not strictly necessary to draw the teeth, since often the images of the teeth are copied, shaped, moved and positioned on the dental arch (Digital Dental Calibrated Transposition).

Position the teeth by reducing the opacity to place them with greater visibility in the desired positions. Opacity enables one to better visualise the underlying images when using tools for the superimposition of images, is an option in all photograph-editing software and can easily be adjusted in percentage.

Adapt and proportion the teeth in space (dimension and alignment) by using the images rendered semi-transparent by adjusting opacity comparable to the previous opacity (Fig. 18d).

Save the images where the transparency level enables us to calculate it as a superimposition (Figs. 20a & b), where the points of departure and
arrival can be seen and where the sublabial dental composition can be seen (i.e. superimposing the micro-aesthetic images with the mini- and macro-aesthetic ones, and being able to observe above and below the labial and perilabial soft tissue). Indicate and record on the photograph the unit of measurement chosen for the conversion scale of the software so that the data approximates the clinical reality of the subject photographed.

- Verify and modify the gingival architecture concerning the aesthetic component and tissue ratios. The positioning of the zenith, papillae and cervical parabolas represents an absolute value in aesthetic analysis for planning. It is particularly sensitive data useful for deciding on therapy with the periodontist.

- After finishing the positioning of the teeth and gingivae, shape them morphologically according to the customised aesthetic “plan”, bordering on the aesthetic dental composition (Fig. 18e).

- Every image editing step relating to the simulation must be saved in the software format so that no data is lost to allow modification at a later date. The same must be done for JPG and similar formats in the patient’s file, re-naming them in a sequential manner, which permits a more reliable and revisable back-up for the smile designer and the aesthetic dental team, and permits a better method of communicating the various therapeutic possibilities to the patient. It also provides essential information for checking the positioning of the prototypes (Figs. 20c & 21a–c).

- At this point, we have at our disposal the digital wax-up, which we can transfer to the dental technician so that he or she can create an actual diagnostic wax-up, which once photographed can be inserted into the oral cavity. Note that, where it is already possible to transfer the ADSD file into CAD, the CAM phase will produce a model that is useful for reducing the time and synchronising the methods implementing the protocols. By decreasing the opacity of the image and working on the transparency, we can check whether the virtual records and indications conform to the analogue model.

- If everything corresponds, it is possible to make modifications then to continue with the direct or indirect mock-up, which necessitates the preparation of a silicone key to accommodate provisional material to be adapted to the teeth or a workpiece produced by the dental technician without it being necessary to adapt the material to the teeth, such as composite veneer, resin and PMMA.

- Having positioned the aesthetic model in the oral cavity, it is inspected and approved with the patient, correcting any individual or functional details from the point of view of occlusion, facial expressions and the dento-labial relationship,
which can easily be tested using phonetic tests. In this phase, as well as giving the patient the opportunity to look at himself or herself in a mirror, it is very useful to use the camera again, since the recording of the physiology of the smile in relation to the phonetics and facial expressions may become the subject of further live 3-D analysis of the patient. The more information we send to the dental technician, the more it will be possible for him to observe the patient and update himself or herself on the analysis being carried out. While the dentist is in his or her surgery, the technician in the laboratory can watch the video clips, analyse the photographs and communicate via the telephone or video-conferencing on Skype. All this offers many advantages to this protocol. Being able to dispel any doubts will give greater satisfaction to the dental team and result in clinical success, clearly demonstrated by the aesthetic harmony in the smiles of our patients.

Once the mock-up has been approved with the consent of the patient, who will have been the first critical spectator of and commentator on the video clip, one can take another traditional dental impression or take an impression using an intra-oral scanner (optical impression). During the video playback, the patient is able to observe peculiarities about himself or herself that he or she would not be able to see using only a mirror, the first being seeing himself or herself in profile through images that are not static and precisely because of their dynamic nature correspond to spontaneity and naturalness.

Carry out digital smile morphing of the images step by step to demonstrate and transmit the actual simulation corresponding to virtual planning. This phase is of great interest and effect for the patient because morphing, being shown sequentially, appears to be like a film. This procedure is carried out as far as the superimposition of the images processed during the first analytical aesthetic phase up to the related functional models inserted into the oral cavity before the definitive restoration in the oral cavity (Figs. 23a & b). The final step in the implementation of ADSD in the CAD/CAM protocol is the placement of the definitive restoration in the oral cavity. The outcome of the multidisciplinary approach should confirm the predictability concerning the aesthetic and bio-cosmetic integration of the prosthesis.

Conclusion

The detailed analysis of the smile and its project, indispensable for the formulation of an aesthetic clinical diagnosis, is a fundamental part of the delicate approach to the patient, the true protagonist of aesthetic dentistry. Today, the operator has at his or her disposal new non-invasive means of formulating the treatment plan; digital dentistry and image-editing software are now part of a dentist’s armamentarium. Furthermore, the entire treating team being advanced in the use of instruments and technologies for diagnosis and communication makes an excellent marketing tool for dental services. ADSD is a simple and economical way of offering the patient a predictable plan that can be visualised immediately or at least at the second appointment to demonstrate the aesthetic and functional changes possible with treatment with the aid of corresponding models. It is also a tool for transmitting all the information necessary to the entire treating team in the multidisciplinary approach. Let us hope that a new professional figure may soon establish himself or herself in the world of dentistry, the smile designer, a new way to communicate.

Editorial note: This is the second of a two-part article based on a paper presented by Dr Valerio Bini to the 15th International Congress of Aesthetic Medicine in Milan in October 2013 during the session titled “Aesthetic dental surgery of the lower third of the face.” Part I of the article appeared in cosmetic dentistry 1/2015.

Dr Valerio Bini, DDS, graduated from the University of Genoa in Italy. He is a specialist in prosthodontics and aesthetic dentistry. He has presented papers at international conferences on aesthetic dentistry and aesthetic medicine, and is the author of many articles published in national and international journals. Dr Bini is a member of the European Society of Cosmetic Dentistry, a fellow of Società Italiana di Estetica Dentale (Italian society of aesthetic dentistry). Dr Bini may be contacted at info@studio-bini.com.
‘No-Prep’ adhesive restorations: another way to deal with aesthetic deficiencies

Author_Dr Didier Dietschi, Switzerland

_Introduction_

The use of ceramics in the form of veneers or crowns was, for a long time, considered the only satisfactory and durable solution to the aesthetic deficiencies of the smile, in young as well as adult patients. This hegemony of ceramics which, for that matter tends to linger, is favored by the dental industry that invests significant amounts of money to promote its materials and new technologies, without always showing a lot of consideration for the biomechanics of the healthy tooth.

The sheer aesthetic criteria must, therefore, be weighed against the biological and mechanical fundamental principles of the natural tooth in order to ensure the longevity of the restorations on one hand, and preserve the vitality and the integrity of the dental organ on the other hand. Thus, these considerations have been encouraging us for a long time to consider direct bonding techniques as a first choice alternative for the treatment of aesthetics deficiencies of the young smile especially, and in general, every time the extent of the defects allows it.1–6

The improvement of the aesthetic properties of restorative composite materials based on the model of the natural tooth5–9, also permitted to make direct restorations available to everyone, since they are no longer the prerogative of gifted clinicians trained to complex stratification techniques, inaccessible to the general practitioner.

Indeed, several systems have been developed during these past ten years, building on the ‘Natural Layering Concept’, consisting of only two basic layers (dentin and enamel) and an appropriate shade guide. The clinical protocols logically followed a simplification and an increase in reliability, which bodes well for our profession, always under economic pressure. Moreover, clinical results in the medium and long term about the use of direct composite as an aesthetic correction material, proved to be reliable.10–12 The goal of this article is, therefore, to present two clinical cases that illustrate the direct therapeutic approach and the aesthetic potential of composite systems based on the ‘Natural Layering Concept’.

_Clinical cases_

Case 1—Diastema closure

This first case presents a simple application of direct bonding for diastema closure in a young patient also showing a dark dentin shade, as well as a mild fluorosis especially visible on incisal edges and canine tips (Fig.1). Given the age of the patient (15 years old), it was decided not to treat the fluorosis, which would have made whitening necessary, but also critical in view of the risks of sensitivity (Figs. 1–4). The treatment was carried out under rubber dam to ensure the quality of the bonding in the proximal areas, juxta-gingival and also for safety and comfort of work. The enamel surfaces were only prepared by sandblasting (aluminum oxide 25 μm) before phosphoric acid etching (H3PO4 35–37 %) for 45–60 seconds, given the fluorosis. The bonding procedure was carried out with a multicomponent system (OptiBond FL, Kerr) before the direct application of the composite in two layers, plus the application of an effect shade (inspiro system, EdelweissDR).

The stratification started with a layer of dentin (Body i3, inspiro) on the distal surfaces of the upper lateral incisors and on the mesial face of the right canine. A semi-opaque white effect shade (Ice, inspiro) applied on the dentin layer enabled to imitate the fluorosis stains and to improve the restoration mimicry; (Figs. 5 & 6). A layer of enamel (Skin White, inspiro) allowed to complete the restorations and perfect their aesthetic integration. The ‘Natural Layering Concept’ was followed to carry out this treatment, based on a bi-laminar application of the composite and
Case report  adhesive restorations

the dentine and enamel shades, accurately imitating optical characteristics of the natural tissues (Figs. 7–11).

Case 2—Extensive reconstruction of the smile

The second case presents a more extensive and complex application of direct bonding, but nevertheless based on the same clinical protocol. This case concerned a 17-year-old patient showing a hypodontia of the four upper incisors and also a generalised mild to moderate fluorosis (Type III according to the classification of Thilstrup and Fejerskov) (Figs. 12 & 13). A preliminary orthodontic consultation had led to the recommendation of an essentially restorative solution to this problem. In addition, the relative complexity of this case suggested the preparation of a diagnostic wax-up and a guided intraoral mock-up in order to confirm the therapeutic choice and allow an aesthetic preview (Figs. 14 & 15).

The treatment was also realised under a rubber dam, using mainly interdental matrix, a silicone key and a caliper for the control of the new dimensions and dental proportions (Figs. 16 & 17). The reconstructions were carried out by applying three shades like for the first case (dentin: Body i2, effect shade: Azur, enamel: Skin White, inspiro) (Figs. 18 & 19). The treatment was performed over two clinical sessions for comfort reasons. Figures 20 and 21 summarise the positive aesthetic impact of the treatment, as well as the stability of the result two years later (Fig. 22).

The difference between the two cases illustrating the versatility of bonding lies essentially in the diagnostic phase, which was more thorough for the second treatment.

_Reliable and aesthetic results

The use of direct composites has thus become unavoidable in aesthetic dentistry in almost every treatment of the young smile and during aesthetic transformations of no or little restored teeth. This is a very positive evolution of conservative dentistry, supported by the aesthetic improvement of the materials and the simplification of clinical protocols. This article summarises the indications and advantages of the concept of the ‘Natural Layering Concept’ to reliable and highly aesthetic results.

_Figs. 1–4

Preoperative extra and intraoral views of a young patient showing bilateral diastemas, complicated by a mild fluorosis.

_Figs. 5 & 6

A direct approach has naturally been followed in this case, the restorations include a dentin shade (Body i3), an effect shade (Ice) and an enamel (Skin White, inspiro).

_Figs. 7 & 8

Final intraoral views showing the good integration of the restorations.
_Figs. 9–11_

General views summing up the therapeutic approach and the clinical procedures carried out under a rubber dam. The aesthetic integration is facilitated by the application of a concept of bi-laminar stratification, easy to implement and predictable, ideal for the treatment of aesthetic deficiencies of the young smile.

_Figs. 12 & 13_

Preoperative extra and intraoral views of a young patient showing a hypoplasia of anterior teeth.

_Figs. 14 & 15_

Wax-up and intraoral resin model according to the wax-up used to confirm the aesthetic and functional configuration planned on models.

_Figs. 16 & 17_

Intraoperative views and restorative procedures under a rubber dam in order to control the quality of the bonding and its longevity. View of the proximal dentine set-up on the 12.

_Figs. 18 & 19_

View at the end of the first session showing the new anatomy of the four incisors transformed by direct technic (dentin: Body i2, effect shade: Azur, enamel: Skin White, inspiro).

_Figs. 20–22_

Final extra and intraoral views and after two years. The direct approach, without reparation, represents an unequaled therapeutic advance for the aesthetic treatment of young patients and of the smile without any other form of pathology.

Author’s statement: The author declares having taken part in the development of the product used to carry out the two cases presented in this article but hasn’t received any fees or royalties for this work.

Editorial note: A complete list of references is available from the publisher.
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Front-tooth restoration to go

Author: Dr Mario Besek, Switzerland

Aesthetic considerations are obviously very important when it comes to highly exposed areas, i.e. in the restoration of front teeth. Patients increasingly expect a perfect appearance, which means increasing demand for improved aesthetics. In many cases, this can be difficult to achieve in direct restorative dentistry. The emphasis usually has been on the preparation of restorations that are invisible at normal speaking distance.

Traditionally, dentists used either the established freehand technique to correct the shade and the shape of a tooth or they opted for classic ceramic veneers. Swiss dental specialist COLTENE developed and created an innovative system that gives dentists another option to choose. The direct composite veneering system COMPONEER both improves and simplifies the time-consuming freehand technique for major front tooth restorations (Fig. 1). Polymerised, prefabricated composite–enamel shells can improve the final quality, while their basic anatomical shape allows dentists to work up to 40 per cent more efficiently. The customisable shells are completely free from air inclusion, which improves marginal adaptation. The homogenous material with a thickness of only 0.3 mm bonds 100 per cent to the processing composite.

Different systems

In general, three basic systems are normally used for restoration of front teeth:

- Direct freehand technique with composite;
- Direct CAD/CAM technique (Cerec);
- Laboratory-fabricated veneers.

Large-scale freehand restorations require time, skill and shaping. However, the direct technique is less invasive and more economical, which makes it attractive to many people. Even so, indirect techniques are often used for restorations because they are more likely to be successful. Major problems with the conventional direct technique are difficulties with shaping margins, management of the top enamel layer and anatomical shaping. Because of the nature of the materials microporosities are common, which often means faster discoloration and problems with appearance. The COMPONEER direct veneering system with its combination of improved materials, specially designed equipment and detailed instructions broadens the range of indications for the direct technique. COMPONEER moreover sets new standards for economy and quality.
The basic principles of the freehand technique have not changed. However, the technique has been simplified and improved. The following example shows some of the most important steps.

Application

After defining the indication and the diagnostic goal, the teeth that required restoration were defined. In this case the caries was to be treated from canine to canine in the maxilla and the shape, shade and axial tilts were to be corrected (Fig. 2). The enamel shells are available in various sizes and two different translucent shades: a neutral ‘Universal shade’ and a light ‘White Opalescent’ shade, which is more suitable for a youthful mouth. With the appropriate dentine composite positioned behind the shells any desired combination of shades can be created.

The tooth shape is selected with a COMPONEER Contour Guide (Fig. 3). The shape in the Contour Guide is placed over the tooth that is to be restored, with the blue-transparent colour offering an optimum contrast to the selected tooth. The enamel shells can also be test fitted on the teeth or temporarily cemented with uncured composite to assess where and how much the composite veneer shell requires customisation. Corrections that require grinding can also be marked at this stage. A rough disc at low speed without water cooling is the best tool for correcting the shape of the shell. In general, a larger shape is preferred to cover marginal regions and to allow as much scope as possible for customising the shape.

The specially developed holder is ideal for handling the shell (Fig. 4). The label on the primary package can be removed and filed with the patient file for documentation. Dry working is essential for the best results. The classical rules do not apply for preparation. The minimum coating thickness of 0.3 mm means that the surface only requires minimal reduction (Fig. 5). In some cases, the enamel is simply roughened and there is no defined preparation. Etchant Gel S is applied to all enamel and dentine areas for bonding and evenly distributed with the brush. The curing time on enamel is 30 to 60 seconds and on dentine 15 seconds, then the area is sprayed for 20 seconds. In the basic principle, the Total Etch method is used with One Coat Bond, which is easily filled and offers better wetting with a nanohybrid composite. The One Coat Bond is applied evenly on enamel and dentine and left to cure for at least 20 seconds. Then transparent matrices are placed in the interdental spaces to prevent adhesion of the teeth.

The bonded surfaces are pre-cured for 10 seconds. The unique microretentive surface of COMPONEER (2 μm) (Fig. 6) reduces the conditioning on the inside of the shell because additional processes such as grit-blasting and silanisation are not required. One Coat Bond is applied directly with the brush and does not require light-curing. The result in combi-
nation with the fixing composite is a 100 per cent bond, which means that there is only one homogenous coating of composite on the tooth, thereby increasing the strength of the final result and reducing the tendency to discolor. For an appropriate aesthetic success SYNERGY D6 is recommendable, which is ideally matched in shade to COMPONEER. It can also be used with other systems, in which case testing the shade result before use is highly advisable.

If it is necessary to remove fillings first, COMPONEER can be applied with the corresponding dentine mass and filled from the palatal direction after the initial lightcuring. This can also be done for tooth extensions or diastema closure. On the other hand, cavities can be filled beforehand with dentine mass to establish a homogenous base. Enamel mass can be used for shape corrections or simple shading corrections. Too much enamel will make the restoration grey and too transparent. The composite is applied to the side of the composite shell that is to be fixed with a suitable instrument, e.g. the included MB5 spatula (Fig. 7). The composite is also applied to the tooth to prevent air inclusions. Then the COMPONEER is carefully placed in its final position with constant gentle pressure by the placer (Fig. 8).

Theplacer has been specially developed for positioning veneers. The working tip is a silicone knob, which provides ideal force distribution. For complete front tooth restorations, I recommend starting with the two central incisors. With the shell held in position, large residues are removed and the composite is shaped to match the margins. The light-curing process is not started until the correct position of the veneer has been verified. Then obvious residues are removed or the preliminary contouring is carried out. Finishing and polishing strips can be used for the proximal regions. Flexible discs are the best tools for shaping interincisal angles. Due to its smooth anatomical structure it is possible to individually characterize the surface or to adapt the shape to the face, bipupillary plane or lip line (Figs. 9 & 10). Microbrushes used without water are ideal for the final polishing to achieve the optimum high gloss (Fig. 11). The complete homogeneity of the composite shells means that the final finishing is in no danger of bringing unwanted porosities to the surface (Figs. 12 & 13). A glossy composite surface of the highest quality for longlasting aesthetics is the final result. The COMPONEER, manufactured from high-quality composite, can be considered as aids for shaping. They are primarily used for making the complete anterior region of the teeth more attractive and guarantee an easily achieved and high-quality result. At the same time, they promote efficient working and reduce treatment time by as much as 40 per cent. This is good for the dentist and also more comfortable for the patient.

**Conclusion**

The innovative composite veneering technique optimises and simplifies restorative dentistry and offers new options for function, economy and aesthetics that benefit both patients and dentists. COMPONEER are more than simple veneering shells, they are a complete treatment system that extends the range of indications from gap closure, extending incisors to the correction of discoloration and quick single tooth restorations.

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Anatomical pin: A clinical case report

Authors: Profs. Frederico dos Reis Goyatá & Orlando Izolani Neto, Brazil

Introduction

Endodontic treatment of teeth with significant coronal destruction is a very common clinical procedure in the restorative clinical practice. When we are faced with this clinical situation, there will be an eminent need for the use of intra-radicular retainers to obtain greater stability and retention of the restoration to the remaining teeth.1, 2

The use of an anatomical pin is proposed for the rehabilitation of anterior teeth with extensively compromised root canals and with significant loss of dentine tissue.3 In this restorative method, in
addition to the fibreglass pin, a compound resin is used to model the radicular conduit with the objective of reducing the space that would be filled by the resin cement. In this way, the combination of two restorative materials (pin and compound resin) will serve and behave biomechanically as a replacement of the dentine structure lost.4

Anatomical pins have an extremely favourable prognosis in cases of fragile roots due to loss of dentine structure and they contribute significantly to the rehabilitation of the tooth in terms of both masticatory function and aesthetics.5 In addition, the fibreglass pins have a more uniform distribution of tension in the occlusal and radicular regions compared with metal pins.6 Etching and silanisation of the pins are of the utmost importance for promoting interfacial adherence, especially in the region prepared for the core.7 8

This study reports on a clinical case that demonstrates the preparation technique for the anatomical pin, using fibreglass pins and compound resin, in a maxillary central incisor with weakened roots, with...
Case report

A young male patient came into the integrated dentistry clinic at Universidade Severino Sombra needing restorative treatment of tooth #21. In the clinical and radiographic examination, significant coronal destruction and satisfactory endodontic treatment were noted (Figs. 1–3).

Restoration with an anatomical pin was proposed to the patient, in order to recover the function and aesthetics of the tooth and provide for future rehabilitation of the tooth with a full ceramic crown.

First, the decayed tissue was removed from the remaining tooth structure and the fibreglass pin was selected (Exacto # 3, Angelus), as well as the accessory pins (Reforpin, Angelus; Fig. 4). The radicular conduit was isolated with mineral oil and the compound resin was applied (Fill Magic NT Premium, Vigodent/COLTENE) over the remaining tooth (Figs. 5 & 6) with the aid of a #1/2 Suprafill spatula (SS White). After filling of the conduit with resin, the Exacto pin and the pre-silanised accessory pins (Silano, Angelus) were inserted with the application of an adhesive (Fusion-Duralink, Angelus; Figs. 7–9). Next, the initial photoactivation was conducted on the pin and resin for 20 seconds.

Finally, the coronal reconstruction was performed with the previously used compound resin in incremental portions and photoactivation was conducted (Figs. 10 & 11). A marking was made on the most incisal portion of the pins to guide the subsequent cropping of the pins (Fig. 12). The anatomical pin was then removed and the final photoactivation was performed for 40 seconds (Fig. 13). Soon after, the pin was adapted to the remaining coronal structure (Fig. 14).
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After the preparation phase of the anatomical pin and coronal portion of the core with compound resin, preparation for adhesive cementation to the remaining tooth began (Fig. 15). Acid etching of the pin was performed for 30 seconds, and then it was washed and dried. The silane was then applied (Silano) for 20 seconds, as well as the adhesive (Fusion-Duralink) with subsequent photoactivation for 20 seconds (Figs. 16–18).

After the anatomical pin had been prepared, acid etching was performed on the remaining tooth for 20 seconds, followed by washing and drying it lightly to leave the dentine moist (Fig. 19). The dentine primer and the adhesive (Fusion-Duralink) were applied and then photoactivated for 20 seconds (Fig. 20).

The cementation was done with auto-polymerisable resin cement, waiting a period of five minutes for the cement to chemically set (Figs. 21 & 22). Once the cementation of the anatomical pin was finished, the adhesive was applied to the coronal portion and photoactivated for 20 seconds, and the compound resin was applied in incremental portions for creation of the core (Figs. 23 & 24).

In order to complete the restorative process, the prosthetic preparation of the core was performed for future seating of a full ceramic crown (Fig. 25).

**Conclusion**

The anatomical pin constituted a clinical alternative for coronal and radicular reconstruction of endodontically treated teeth with significant destruction of dentine. In addition to rehabilitating the tooth, this clinical approach promotes a more balanced distribution of masticatory forces without compromising the remaining tooth structure, minimising the risk of radicular fracture. Moreover, this restorative alternative provides the possibility of an aesthetic result with the use of a metal-free full crown.

Editorial note: A complete list of references is available from the publisher.

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Non-compromised aesthetics with multiple single implants in the anterior maxillae

Tooth mobility is a clinical finding that indicates several difficulties regarding the treatment possibilities of the patients affected. Regardless of the mobility’s cause, periodontal disease, occlusal trauma or a combination, the prosthetic rehabilitation of such patients is challenging. As this case report shows, conventional single-unit prostheses, such as full-ceramic crowns, may solve the aesthetic problems. The aesthetic outcome may be satisfactory at the beginning, but in the medium term the soft tissue will continue to retract. At the same time, the main problem will not have been resolved. Mobility, especially in cases of untreated periodontal disease, will proceed despite the prostheses, which will eventually lose functionality, and a new treatment plan will be needed.

Periodontal treatments have priority over every other treatment. Depending on the attachment loss, tooth mobility can persist, requiring a long-term stability solution. In this case report, the clinical examination found a tooth mobility of Grade II for teeth #12–23 as a result of an attachment loss that persisted even after successful conservative periodontal treatment. As mentioned, fixed prostheses are not an alternative, and fixing the teeth with a bridge would only accelerate further attachment loss, although it would reduce the occlusal load. A removable denture was not an option for the patient. An implant solution was thus deemed the only acceptable treatment.

A removable temporary denture was not an option for us and therefore we decided to replace each extracted tooth with an implant with immediate loading.

In such cases, surgeons have to deal with tooth loss, epithelial proliferation, bone resorption and loss of the periodontal ligament. In this case, we could clearly see in the pretreatment analysis that major bone resorption had occurred both horizontally and vertically. The bony defects affected more than one wall, but the bone resorption around the root was not infiltrated with soft tissue.

Clinical and radiographic findings

The clinical examination found severe periodontal defects with a screening index of Grade IV, pocket depths up to 4mm and tooth mobility. The functionality was very limited and the aesthetic situation unsatisfactory. The radiographic findings confirmed that all four maxillary incisors and the left canine needed to be extracted (Figs. 1 & 2). The patient had a low scalloped gingiva with a middle thick gingival biotype, rectangular teeth and a bright smile.

Treatment plan

A removable denture was not acceptable, nor was a temporary or definitive denture. Although the
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major focus of treatment was on functional rehabilitation, aesthetics should not be underestimated in such cases. Once functionality has been obtained, the patient’s attention turns to his or her appearance. The patient was to receive implants for teeth #12–23 in an immediate implantation with simultaneous guided bone regeneration. The implants were to be loaded immediately with a high-filler resin temporary bridge.

_Surgery_

With a wax-up on the situation model, an optimal form was created to support and manipulate soft tissue during the healing phase. At the same time, the temporary bridge functions as wound coverage if primary closure is not possible (Figs. 3–6).1–4

In the next step, teeth #12–23 were extracted. The flap outline preserved the papillae of the adjacent teeth by an incision at the papilla base. Owing to the interproximal bone defects, papilla raising in this region would have led to severe recession. The vertical bone defects were obvious after raising a full-thickness flap. A releasing incision was made only mesiodistally at tooth #12 and only in attached gingiva to prevent scar formation through vertical cuts at the mucosa. The low vestibule made a split-thickness or periosteal pocket flap the less logical choice. Mobilising soft tissue from the lips too, through other flap designs, would have caused functional limitations, suture tension and a second gingival surgery to reposition the coronally transpositioned soft tissue. The wound margins were cut back to remove excess epithelium and the bone defects freed from soft-tissue ingrowth (Figs. 7–10).

The horizontal bone loss was moderate. The implants were placed slightly sub-crestally. Although the gap between the implants and buccal plate was due to the resorption of approximately 1–1.5 mm and the buccal plate thickness of less than 1 mm, we decided on 3.8 mm implants, leaving a 1.5 mm gap from the buccal plate.5–10

The inter-implant space and the buccal plate were augmented with a combination of allograft and xenograft materials. Autologous bone obtained with a bone scraper was placed directly on the implant surface and covered with a mixture of allograft and xenograft materials. A pericardium membrane was used as barrier (Fig. 11).
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The anatomy of the maxillae and the low vestibule did not allow primary closure. To protect the augmentation and the membrane from proteolytic resorption, we placed two layers of collagen tissue fleece above the membrane. Through the collagen fleece and the protection of the provisional bridge, free granulation of the extraction socket was expected after two weeks (Figs. 11 & 12).

The patient was recalled weekly for prophylaxis and hygiene instructions. Three weeks post-operatively, the sutures were removed. The tissue was not inflamed and the wound healing and closure ideal (Fig. 13).

Re-entry and prostheses

Three months post-operatively, an impression was taken without removing the abutments using special impression screws. The abutments were not removed (except for photographs) until the zirconia abutments had been fabricated. The healed situation showed optimal soft-tissue quality and an adequate quantity of attached gingiva. Above the implant necks, we measured a soft-tissue height of 2–2.5 mm, enough for the necessary emergence profile. With the help of convex or concave prostheses, soft tissue can be manipulated in the direction desired for aesthetic reasons (Figs. 15 & 16).

The final crowns showed great results. The papillae and pseudo-papillae filled the interproximal space. The interproximal contact had to be deeper and wider than normal in order to compensate for the previous vertical bone loss, especially in regions #11 and 12. Nevertheless, no black triangles could be seen, the patient was satisfied and it was expected that with the proper hygiene the aesthetic outcome would be optimised in the next several months. Therefore, there was no need to use gingival ceramics.

Discussion

In a periodontally compromised situation, it is important to decide whether a curative periodontal treatment offers satisfactory long-term results. As was the case on this occasion, an extraction at the crucial time helps us to preserve what we have, use it to the maximum for implant surgery and risk no
Further bone loss or recession. Any other procedure would have led to a two-stage surgical approach and probably to a removable prosthesis.

The patient’s thick biotype, particularly the low lip line, was very favourable. The quantity of soft tissue was evident. Tension on the flap closure was prevented through the surgical protocol and free granulation of the wound. The bone quantity ensured primary stability of the implant. The immediate implantation provided stability for the augmentation and reduced the amount of material required. The positioning of the implant allowed us to create an optimal emergence profile, making complicated soft-tissue procedures unnecessary.17–19

Through the positioning of the implants and the free granulation of the extraction wound, we enhanced the soft tissue, a major advantage for the re-entry and prosthesis.20–22

The implants placed have microgrooves of 1 mm in height on the implant neck. This laser-manufactured design imitates biology and promises improved cell adhesion to this surface. Such modern designs, combined with the advantages of platform switching, result in high-tech products. Modern crestal bone maintenance works by means of the protection of the crestal bone. When implants are placed sub-crestally or crestally, a soft-tissue ring is built up on the platform to protect the bone below. When implants are placed supra-crestally, the implant neck designs secure the crestal bone below through soft-tissue fibre attachment to their necks, implants can be placed closer to each other, cases like this can be treated successfully with single implants, and fibre attachment to the surface and between the implants secures the crestal bone, building a natural barrier.23, 24

In cases in which primary closure is not possible or mobilisation of adjacent soft tissue through other flap designs is not desired, temporary prostheses are essential. The soft-tissue manipulation begins from the very first moment and is crucial for the aesthetic outcome.25–27 Owing to the implants used and the immediate loading, the soft tissue did not have to be manipulated. The implant system allowed us to take the impressions without having to remove the abutments. The continuous removal and insertion of implant components may introduce bacteria under the soft tissue. Every aesthetic try-in could also be performed on the initial abutments. In this protocol, we only removed the temporary abutments once the fixed single-unit crowns had been fabricated.

The clinical situation at the point of implant loading with the crowns showed optimal soft-tissue quality and quantity. No individual abutments were needed.

The aesthetic achieved was more than satisfactory, especially regarding the soft-tissue outcome.13–15

The combination of these biomaterials forms part of our standard augmentation protocol and is well documented. The results of guided bone regeneration are predictable and can be planned, even in case of major defects. The structure of the combined biomaterials is very important. Rocky and edgy particles help to establish internal stabilisation at the augmentation area. Often, external stabilisation with pins or screws is unnecessary. The porosity of the particles is defined by their biology. This is the reason that we do not prefer alloplastic biomaterials and take advantage of the benefits of allografts and xenografts through their combination. These are the requirements of modern biomaterials, including of course osteoinductivity and osteoconductivity.28–30

Conclusion

Periodontal disease is frequently a limiting factor in oral implantology, but there are situations in which periodontal disease presents no contra-indication for implantology. Prerequisites for similar procedures are an understanding and knowledge of biology, surgery and prosthetics. There are no algorithms for such procedures, rather the treatment outcome depends on proper diagnosis, analysis and planning for every individual patient and the selection of the right implant system and biomaterials. As the presented case has shown, modern implantology provides all of the tools for successful implant treatment._
The aim of this article is to offer readers information on a topic that is discussed very rarely in dental journals: how tooth position and damage to individual teeth reflect emotional and health status.

In 2000, I read a book by French dentist Dr Michèle Caffin, *Quand les dents se mettent à parler* (When the teeth talk). Because I was most intrigued by the findings of my French colleague, I started to observe these relationships and document them. I encouraged my patients to talk about their troubles and problems that did not appear to be overtly dental. In this manner, psychosomatic medicine has inconspicuously become part of treatment. It helps patients who are healthy biochemically, radiologically, etc., but who still exhibit dental problems.

In order to avoid constantly flipping through my records, I created convenient one-page diagrams mapping the significance of individual teeth. The colours correspond to acupuncture pathways. The relationship of acupuncture pathways to different groups of teeth will be discussed in Part II of this article. In Part I, I seek to convey an unconventional perspective of teeth as a mirror of emotional and health status in patients based on my more than ten years of experience.

If we look at the jaws from this unconventional perspective, then the upper jaw firmly attached to the skull represents our wishes (Fig. 1). Particularly its width and regular tooth alignment in the jaw indicate that the patient is able to express...
his or her wishes and therefore communication with him or her will be trouble-free (Fig. 2).

A narrow jaw with incisors and canines in anterior crossbite, in contrast, signifies a passive individual with whom communication will be more difficult. Such difficulties with expressing wishes and feelings throughout life are signalled by a complete maxillary prosthesis, for example (Fig. 3).

The lower jaw loosely attached to the skull by the mandibular joint represents our actions. The chin, especially, is a symbol of energy and will. Heroines in novels do not have bird profiles.

The right quadrant relates primarily to the future and the left to the past. The positive and negative expression of the status of individual quadrants is illustrated in Figure 4.

Regarding individual teeth, the fundamental consideration is the position of the tooth in the
Central incisors represent the male and female figures: the father, the right maxillary central incisor; and the mother, the left maxillary central incisor (Fig. 5). People with a prominent left maxillary central incisor (this tooth often overlaps the right one) had and often still have in their adulthood a much stronger maternal influence than paternal influence during their lives (Fig. 6). Once one is aware of this, one will observe that this is very common. The opposite (a stronger influence of the father) is in the minority (Fig. 7). If both of the incisors are aligned symmetrically, it signifies the balanced influence of both parents. An example from real life: Figure 8 shows the fracture of both central incisors. It was ultimately necessary to extract the left incisor owing to a root fracture. The patient’s parents divorced and she was given over to the care of her father by the court and her sibling to her mother. Thus, she lost her mother and symbolically tooth #21.

I usually see diastemas (Fig. 9) in patients whose parents may live together, but who essentially lead separate lives. Patients with diastemas usually have difficulties in their relationship with a partner. Of course, one does not usually gain such dental arch. If the tooth is located vestibular from the dental arch, the characteristic is significant.

If the tooth is located orally, is displaced beyond the adjacent teeth, is in anterior cross-bite or is missing, the characteristic is repressed. Large areas affected by caries, dental fillings, and pulpless teeth are equally negatively assessed.

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If the tooth is located orally, is displaced beyond the adjacent teeth, is in anterior cross-bite or is missing, the characteristic is repressed. Large areas affected by caries, dental fillings, and pulpless teeth are equally negatively assessed.
information from the persons concerned, but one gains insight into these secret corners of the family when one is a family dentist for many years.

Mandibular central incisors (Fig. 10) predicate the importance of the patient’s parents in daily life. The informative value of maxillary incisors is, however, far greater according to my observation.

Lateral incisors represent the temperament of the person and his or her reactions to archetypes (= attitude towards parents; Fig. 11). If the right maxillary lateral incisor is in protrusion, it means the person is able to defend his or her freedom in the family, but is usually in dispute with the father (Fig. 12). Similarly, on the left side (tooth #22), this position indicates opposition to the mother (Fig. 13), as was confirmed by both of the patients shown in the figures. If both teeth #12 and 22 are in protrusion and overlap the central incisors, the patient tends to have an edge over his or her parents.

In contrast, retrusion, microdontia or total anodontia (Fig. 14a) of these teeth is an indication of subordination, often both in the family and in society. For example, my questions directed at the child in Figure 14b with anterior crossbite of the primary lateral incisors were always answered by his mother and the child did not interject. Thus, orthodontic, prosthetic or implant treatment allows these patients a much better start in current society (Figs. 15a & b) and a stable position in the family.

Canines reflect the changes through which a person has gone. They erupt in times of great growth and at the beginning of adolescence (Fig. 16). The right maxillary canine represents the presentation of personality outwardly. The left maxillary canine represents attitude towards change (Fig. 17). The right mandibular canine is an expression of what we wish to achieve outwardly. The left mandibular canine is a reflection of our internal transformation (Fig. 18). The canines are generally perceived by others as a symbol of vitality and superiority. People with small canines or canine in managerial positions often have in its place an implant, or a dental restoration to rebuilt the tooth. I have also observed in these teeth the retroactive effect of tooth position evident in a change in the patient’s emotional behaviour, as with the lateral incisors. A shy girl with a retracted right maxillary canine completely blossomed and gained confidence after orthodontic treatment. Of course, she made her parents anxious because they suddenly had a completely different child at home. It was probably not the only cause, but in my practice I often see similar examples of the retroactive effect of tooth alignment.

When a patient has his or her teeth aligned through orthodontic treatment, the original information is lost (Fig. 19). However, if the underlying issue is not resolved, for example a mother still dominates her daughter, who did not manage to disappear into world (tooth #21 overlapped tooth #11) or, conversely, the daughter of this mother unconsciously does not want to grow up to be a woman because she likes fulfilling the role of the good child, when such a patient stops wearing retainers to maintain the tooth position after removal of the fixed appliance or does not have his or her teeth fixed by some kind of splint, the teeth will quickly relapse apparently without cause._

Editorial note: This is the first of a two-part article.

A complete list of references is available from the publisher.
“We are still pretty much in shock”

An interview with Dr Sushil Koirala, Editor-in-Chief of **cosmetic dentistry**

Dr Sushil Koirala: The situation in Kathmandu still remains very difficult owing to the extensive damage to many public buildings, government offices and schools. Nearly 7,500 lives have been lost and 14,500 people have been injured. Those who survived the earthquake are traumatised.

While physically my family and I are fine, we are still pretty much in shock. My children are very distressed because they were alone at home during the first episode of the earthquake. Some of my staff from the hospitals and clinics lost their houses unfortunately and had to stay with relatives for some time.

In one of the worst earthquakes in over 80 years, more than 10,000 people are believed to have died in the Federal Democratic Republic of Nepal. Living in and practising dentistry in the capital of Kathmandu, Dr Sushil Koirala, Editor-in-Chief of **cosmetic dentistry**, has been directly affected by the disaster. Dental Tribune International had the opportunity to talk to him briefly about the situation in the country and how the international community can help it to overcome the humanitarian crisis.

**Dental Tribune International:** The earthquake on 25 April had a devastating effect on your country’s infrastructure and its people. What is the situation currently in Kathmandu, and how have you been affected personally?
Have you heard from colleagues in other parts of the country, and if so what is their situation?

Most of my dental colleagues are unharmed, but many of them are facing problems with their damaged clinics. Most of the dental hospitals in Kathmandu remained closed for several weeks owing to the damage and employees not being able to work because they are busy rebuilding their lives. Various agencies have estimated that more than eight million people across 39 of the country’s 75 districts have been affected by the earthquake. The most severely affected areas include the Bhaktapur, Dhading, Dolakha, Kathmandu, Kavre, Lalitpur, Nuwakot, Ramechhap, Rasuwa, and Sindhupalchowk districts of Nepal’s Central Region, as well as the Gorkha District of its Western Region.

Have you received any correspondence from the dental community?

I am glad to have received many e-mails with best wishes and prayers from our dental friends around the world. It is so gratifying to know that many of them have pledged their support of the earthquake victims of Nepal. Some dental manufacturers have shown keen interest to help us in the rehabilitation of children who have been affected.

Despite an immediate response from India and Western countries, relief efforts seem to be insufficient, according to reports. What is your impression?

International communities have offered immediate support and we really appreciate their help. However, 39 of the most affected villages are in remote locations with mountainous terrain. The relief work, therefore, is hampered and support items cannot be delivered on time. Many people in these small villages were waiting for basic items, such as food and shelter.

Regardless of the efforts by the Nepalese army, police and Red Cross Society, as well as national and international organisations, which were working 24/7, the manpower and supplies were still inadequate.

In your opinion, how will this disaster affect the infrastructure of your country in the long run?

Nepal’s development budget depends mainly on foreign aid. Rebuilding all the infrastructure affected by the earthquake will require an estimated US$200 billion. The government plans to meet this mainly through foreign and international funding. However, damaged infrastructure will definitely affect the economic growth of Nepal negatively.

When I will be able to start practising again depends on when all my staff are mentally ready for work. Daily life in Kathmandu is still very stressful, as there are frequent aftershocks and people were still terrified. Under these conditions, I do not expect people will come for general dental treatment, except in the case of an emergency.

What do you consider the most important to improve your situation, and how can the international dental community help?

More than 95 per cent of houses and infrastructure have been damaged in the affected villages, so the rehabilitation phase for the earthquake victims is going to be a great challenge for our country. I personally feel that in order to overcome this difficult time our country needs support from each individual and professional in Nepal. We have, therefore, started a humanitarian project, the Dental Community for Humanity—Nepal Earthquake Relief Project, under the umbrella of the Punyaarjan Foundation, a charitable and non-profit organisation dedicated to supporting people most in need. This project aims to support poor children living in these remote villages in particular. I humbly appeal to the international dental community to support this cause. Please, with your donations and support, we can bring back the smiles of our poor children.

Thank you very much for taking the time and all the best for the future.
Bio-Emulation movement continues to grow

Author: Dental Tribune International

On 4 and 5 July, the 2015 Bio-Emulation Colloquium was held in Berlin in Germany. The event, which was organised by the Dental Tribune International team in close collaboration with the Bio-Emulation Group, attracted more than twice the number of participants compared with last year. Overall, more than 300 dentists and dental technicians attended the extensive programme on biomimetics in dentistry, including 16 lectures and 13 workshops.

After the successful première of the Bio-Emulation Colloquium last year in Santorini in Greece, this year’s meeting was held under the
theme “Bio-Emulation Colloquium 360°”. Key opinion leaders in adhesive and restorative dentistry educated the participants on methods and techniques to achieve high aesthetic standards and emulate nature using a histo-anatomical approach.

During the sessions, particularly the workshops, attendees had the opportunity to learn more about the mechanical and optical properties of natural teeth and gain knowledge on using existing techniques and materials. A considerable number of workshops were fully booked; for instance, Dr Pascal Magne’s session on dental morphology function and aesthetics was among the most requested.

Over 95 per cent of attendees who took part in a representative evaluation survey said that they would definitely recommend the event to others. They were most satisfied with the choice of speakers and topics in particular.

Many of the participants took advantage of the networking opportunities offered on the two evenings of the meeting. Each day, about 200 people attended the social events.

This year’s colloquium was held at the European School of Management and Technology, a historical site in the centre of Berlin, next to the office of the German Ministry of Foreign Affairs. The building, which has landmark status today, was once the state council building of the former German Democratic Republic. After a lavish refurbishment in 2004 and 2005, it was transformed into the current private business school.

Dental manufacturer GC Europe was the main sponsor and Shofu was the official partner of the event. In addition, the colloquium was sponsored by Ivoclar Vivadent and CROIXTURE, and supported by American Dental Systems, anaxdent and Velopex International.

At the closing session in Berlin, members of the Bio-Emulation Group announced that the next colloquium will take place in Barcelona in Spain. Details will be made available in due time at www.bioemulationcampus.com.

(Photos by Claudia Duschek/DTI)
## International Events

### 2015

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<td>8–10 October 2015</td>
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<tr>
<td>ICOI World Congress</td>
<td>15–17 October 2015</td>
<td>Berlin, Germany</td>
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Questions?

Magda Wojtkiewicz (Managing Editor)

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