The aesthetic challenge

By Dr. Mohamed El Sayed Hassanien, Egypt

Patient’s satisfaction has always been the main goal of dentistry. As the popularity of cosmetic procedures increases, a growing number of patients are seeking treatment for improvement of their aesthetic dentition. Accordingly several treatment options have been proposed to satisfy the patients growing esthetic demands.

Many construction techniques have been utilized in the field of esthetic treatment, including porcelain veneers, composite veneers, and direct resin composites. However, porcelain veneers are still the gold standard for dental aesthetics.

Porcelain veneers are thin porcelain shells that are bonded to the front surface of the teeth to improve their appearance. They are a popular treatment option for patients who want to improve the color or shape of their teeth.

Porcelain veneers are made by a dental lab technician using specially formulated porcelain material. The porcelain is shaped and polished to the desired form and color, and then bonded to the tooth with a special adhesive.

The procedure for porcelain veneers typically involves several visits to the dentist. During each visit, the dentist will check the fit and color of the veneers to ensure a natural appearance.

In this case, the patient was a 25-year-old woman who was concerned about the appearance of her front teeth. She had chipped and broken teeth that had been repaired with crowns in the past. The dentist recommended porcelain veneers as an option to improve her smile.

The dentist prepared the teeth for the veneers by removing a small amount of enamel and creating a smooth, even surface. The porcelain was then shaped and fitted to the prepared teeth during a follow-up visit.

The porcelain was then baked in a special oven to harden and set. This process is called firing. After firing, the porcelain was polished to a smooth finish.

The final result was a beautiful, natural-looking smile that greatly improved the patient’s self-esteem.

In conclusion, porcelain veneers are a popular treatment option for improving the appearance of teeth. They are a safe and effective way to achieve a beautiful smile, and they can be a great option for patients who want to improve their confidence and self-esteem.

Dubai Medical Equipment L.L.C.
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KaVo MASTErSurg LUX Wireless: Redefining the best

By KaVo

With the successful launch of the EXPERTsurg LUX surgical unit and the SURGmatic instruments, KaVo recently celebrated its comeback as a main player in the dental surgery field. As one of the world market leaders, the dental company now presents another highlight: The MASTErSurg LUX wireless surgical unit. Thereby KaVo confirms its market position as a leading and innovative international dental player.

The new KaVo MASTErSurg now completes the attractive KaVo surgical portfolio and redefines surgical standards. Thereewith all dentists and dental surgeons, no matter what their different individual needs are, will find the perfect solution for their surgical work. The KaVo MASTErSurg surgical unit convinces through outstanding comfort. It is offering a wireless foot control, allowing the user a great freedom of movement. The data documentation function supports procedure by real time displaying of the torque and other important digital data and saving it concurrently.

KaVo MASTErSurg makes it real: a customizable surgical unit that adapts to dentists’ and dental surgeons’ individual requirements. E.g., multiple programs, each with up to 10 treatment steps, maximum speed, maximum torque and even more parameters can individually be defined and saved.

When it comes to performance and comfort, KaVo continues to set the benchmark with the EXPERTsurg and the MASTErSurg controllers, the SURGmatic instruments (now available with hexagon clamping system with optimized head gearing) and the INTRA LUX S600 LED motor. All these components combine to a system for dental surgery that is not only easy to use but that provides save and highly precise tools for dentists and dental surgeons to face their daily challenges.

Nobel Biocare to join Danaher dental business

By Dental Tribune International

SZÜICH, Switzerland/CHARLOTTE, N.C., USA: Today, Danaher, a US health care conglomerate of brands from various industries, and Swiss dental manufacturer Nobel Biocare announced that the two companies have entered into a definitive transaction agreement. In order to further expand its global dental business, Danaher has offered to buy Nobel Biocare, which is the second-largest supplier of dental implants worldwide, for CHF2 billion (US$2.1 billion).

As reported by Dental Tribune ONLINE earlier this year, Nobel Biocare confirmed that it had been approached at the end of July by third parties with a potential interest in acquiring the business. Now, the company’s board of directors has unanimously decided to recommend that Nobel Biocare’s shareholders accept the offer, which in
Concepts, goals and techniques for successful orthognathic surgery

By Dr. Theodore D. Freeland, USA

In this article, you will be introduced to the concepts, goals and techniques needed to diagnose surgical cases, when surgical cases should be started and how to gain the knowledge needed to create successful results.

We'll delve into joint status, soft-tissue analysis, surgical treatment objectives, pre-treatment surgical setups and surgical setups. We'll then follow-up by looking at the concepts of natural head position, the axis-horizontal plane and the true vertical line will be introduced. By the end of this article, you should have:

- An overview of the knowledge needed for successful treatment.
- An introduction into what, when and how to perform successful cases.
- An overview of joint health.
- A summary of the soft-tissue analysis.
- An outline of the surgical treatment objective.
- An overview of joint status.

Remember that this article is an introduction only; it's not intended to teach you how to do surgical cases. Advanced training will be needed to master successful orthognathic surgical cases. So with no further ado, let's get started.

Clinical examination

The goal is to obtain functional occlusion. Before treatment, you have to determine if you have an orthodontic surgery case. You don't want to begin orthodontic treatment with the idea that if orthodontics fails, we will do surgery.

You'll see in Figures 1-5 that this case involves every facet of dentistry. Changes occurred not only in the facial features, but also in the teeth themselves. It involved orthodontic and orthognathic surgery, but also lengthening the front teeth by the restorative dentist to achieve the natural smile in balance (Figs. 1-2). To determine when and how to perform surgical setups. We'll then follow-up by looking at the concepts of natural head position, the axis-horizontal plane and the true vertical line will be introduced. By the end of this article, you should have:

- Joint status
- Soft-tissue analysis
- Surgical treatment objective
- Pre-surgical setup/surgical setup technique
- Surgery

Joint status

We'll give you a brief overview of the goals for each of the areas, then do an in-depth look into each of them individually.

Soft-tissue analysis

- You'll need to know how to analyze the soft tissue. You'll need this because you are looking at everything from a soft-tissue standpoint, or put another way, you're recording the basic measurements that come from soft tissue, not hard tissue. If you deal with hard tissue only, then you will come up short in the soft tissue. Ignoring the soft tissue will result in a face that's not improved, just different.

Surgical treatment objective

You need to know how to do a surgical treatment objective. You'll need to know how to apply it because the surgical treatment objective allows you to treat the face, the occlusion, in a two-dimensional medium.

Pre-surgical setup/surgical setup technique

Once you have established what you'll need to do from the surgical treatment objective, you will need to do what we call a presurgical setup. Otherwise you'll need to apply the knowledge you've gained from the patient, soft-tissue analysis and the surgical treatment objective, and perform a three-dimensional workup to make sure what you have planned will work with the joints, muscles and nervous system.

Surgery

Finally, you need to know surgery. I recommend that the orthodontist be in the operating room so you know what the surgeon is doing, and how the surgery goes. It's very important to know that the surgeon gets the joints seated in a passive manner. If the joint is stressed, then there's a good chance that we'll have some surgical relapse.

Joint analysis

Joint analysis will include three portions: history, a clinical examination and imaging. Building a history will be similar to traditional patient assessment. We need to know if there are any family members who exhibit TMJ problems. If yes, then there's a good chance the patient will develop significant joint issues that will affect the outcome of treatment.

After an oral investigation, a thorough clinical examination of the joints will need to occur. We'll be on the lookout for any history of injuries to the mandible. If the patient has had any injury that involves the chin, there's a good chance that the joint may have been damaged.

Finally, we need to look into any past treatment. Has the patient had orthodontics before? Has the patient had a lot of restorative dentistry? This is important because all of the above have a tendency to affect joint status.

Clinical examination

Clinical examination includes the following:

- Range of motion
- Symmetry of jaw motion
- Palpation
- Auscultation
- Muscle splinting
- CRJ position
- Range of motion should be between 45 mm and 55 mm on opening and includes assessing movement. We're looking for a symmetrical mandibular motion — meaning the chin should not deviate to the left or right on opening — and it should be relatively free of dental interference.

Now check for palpation of the muscles of mastication. If you don't check the muscles that move the mandible, then there's a good chance that you'll miss some sort of functional bite issue. We also listen to the joint with a stethoscope, and we apply some anterior pressure to the disc through external auditory meatus to make sure the disc is functioning properly.

When trying to manipulate the mandible, one can feel the muscles. If the muscles will not let you obtain a centric joint position, then we cannot do a diagnosis because the muscles aren't holding the condyle out of the socket. This is usually due to some inflammation.

Finally, we'll check what we call the centric relation position, which you should be able to feel. It should feel solid and the patient should be able to open from this position with relative ease, and there should be no noises.

Imaging

The clinical examination will tell us a lot about the joint status. The use of imaging will help us build our base of case-specific intelligence. We'll use two types of imaging: MRI and cone beam.

Fig. 1a. Patient profile.

Fig. 1b. Patient frontal.

Fig. 1c. Patient oral casting.

Fig. 2. Joint degeneration.

Fig. 3. A state of degeneration: a condyle that is actually changing.

Fig. 4. Overlaid soft tissue on top of hard tissue.
LCBT

Most of the time, we start with cone beam because it's easy to obtain a 3-D image of the joints. Thanks to the work of Ricketts and Dr Ikeda, we have a way to measure joint position and get an idea of where the condyle is basically seated. With cone beam, we can measure the health of the condyles.

Our imaging showed a joint that is in a state of degeneration. The condylar head has changed in vertical height. Therefore, we would expect to see an asymmetrical opening where the chin deviates to the affected side. In all three views (sagittal, coronal and axial), we have a condyle that is actually changing, especially when you make a comparison to the left condyle (Fig. 3).

In a side-by-side presentation, you can see that the left side is definitely in a lot better shape, having a more rounded edge to it. The size of the coronal view is one that shows a definite symmetric outline to it as compared to the left side. The axial view confirms this, you see that the shape is better and has a more dense outline.

Thus, our basic imaging system helped us to see the whole case, one side is going to be the problem side, especially as it pertains to orthognathic surgery. If we go to the two-dimensional X-ray, we can see that the right joint has definitely lost vertical height, and we definitely have a joint space that is excessive (Figs. 4 & 5).

In the coronal view, we can even see that there may be some sort of cyst formation. When you compare the right side to the left side in the coronal view, you get a more traditional image, and that is what we’d like to see. However, there have been some changes, and that is probably because we’re starting to see a “hard-breaking” effect in the left joint. This is caused by the joint that are one of the important in determining if we should proceed with any kind of a surgical correction.

In the sagittal view, the right side, the joint looks pretty normal. However, if we look at it in a transverse direction, you’ll see less joint space laterally than you do medially, something we see in both the left and right joints (a normal joint space). That’s why it’s important that you not only look at a sagittal view, but you also need to look at the coronal view to see if you have a transverse problem occurring in the joints.

Soft-tissue analysis

When we’re trained in orthodontics, we’re trained in hard-tissue analysis, otherwise all of our cephalometric analysis are based on hard structures. If you use hard structure to determine soft-tissue corrections, then you’ll be missing out on good facial aesthetics. That’s why a soft-tissue analysis is so important.

Using soft-tissue markers with 3-D facial mapping, we are able to diagnose the soft tissue, and we can also relate it to the hard tissue.

In Figure 4, we’ve overlaid the soft tissue on top of the hard tissue. With the markers on, after we convert it to a two-dimensional X-ray, we can see where the sub-pupal area is, where the checkbones are and where the alar base is. In addition, you will see a marker that we call a hinge access marker, which comes from establishing the true hinge axis of the patient. There is also a marker that’s placed on the nose that we call the horizontal point.

We are going to analyze everything from a basic coordinate system of a true vertical to an axis horizontal.

The image is orientated from the axis horizontal plane and the true vertical plane, which is based on the patient’s natural head position.

Figure 5 shows how these two corners are at 90 degrees from each other. In this analysis, we’re going to record all of our soft-tissue measurements, both horizontal and vertical. We’re going to base them on the line that runs through the subnasale (SN). This establishes the true vertical line based on natural head position.

Furthermore, we’re including a few hard-tissue measurements that will tell us about the architecture of the maxilla. These come from Ricketts and from the Jarakah analysis. With this analysis, we can cover the basis that we need for orthodontics, but we can also cover what we need in a more surgical workup.

We also need a frontal analysis, which is taken from the patient’s face. Most of the frontal workup is done in examining the patient clinically. This enables us to look at the orbital rim, cheekbone, sub-pupill,alar bases, nasal bases and canthus of the eyes.

All of this enables us to assess if we have transverse asymmetries, where the occlusal plane is cantled instead of level. This will be true with the mandibular plane, which we may also find is cantled. This is especially true in cases where there’s a degenerative process happening in one joint.

Head position, profile and frontal analysis

The natural head position is different for each individual patient. This will make the distance recorded on Glabella to the true vertical line different.

To measure how far Glabella is from SN (true vertical line), we first need to establish the patient’s natural head position (Fig. 6). To do so, we have the patient stand in front of a mirror. First, the patient is asked to close his eyes and then he stands up and down three times.

After this is complete, the patient is asked to open his eyes and look himself directly in the eyes in the mirror. After we have established the natural head position we then use the measurement to close his eyes and then he looks at himself in the mirror.

We’re going to measure the distance recorded on Glabella to the true vertical line. We’re starting to see a “bird-beaking" effect in the left joint. There have been some changes, because this is what we’d like to see. However, if we look at it in a transverse direction, you’ll see the joint space and too much gingival tissue.

Soft-tissue analysis

The treatment objectives are based on the soft tissue. You perform the surgical treatment objective in this order.

1) Establish the position of the upper lip to the true vertical line in a vertical and horizontal manner.

2) Determine what you need to do with the anterior teeth to create the correct upper lip position.

3) Once you established the anterior part of the maxilla, then proceed to the posterior part of the maxilla and determine if you need to do an intrusion or extrusion of the posterior segments to level the occlusal plane.

4) In most cases where there’s a retrusive chin and a skeletal open bite, the patient has an occlusal plane, measured from the true vertical line that is somewhere between 102 and 108 degrees. By leveling the occlusal plane, based on the anterior tooth position, you can set the mandible to the maxilla. This will usually balance the lower third of the face. If you still find the chin is too far forward or too far back, you may need to do genioplasty.

In the example case (Fig. 8), we have performed a surgical treatment objective, established the true vertical line and we have our axis-horizontal plane. In this patient, we need to move the anterior teeth up because in the frontal analysis the patient showed much too much tooth structure and too much gingival tissue. To fix this, we balance the maxillary anterior teeth based on the upper lip position.

Once we’ve established the correct tooth position in the anterior, we’re able to set up our occlusal plane at 95 degrees, showing us what we need to do with the posterior segment. In the example case, we need to extrude the posterior segment.

Figure 9 shows how we’ve completed the extrusion of the maxillary segment, and we’ve balanced the occlusal plane. The next objective is to place the mandible with the correct overbite. This is not 2 mm but 4 mm. This is because you want to have an adequate overbite to create adequate discusion. In establishing the mandible, you can see in our example how the lower part of the face is placed normally enough with the true vertical line (Fig. 10).

In establishing the surgical treatment objective, we see that we want to place the anterior section in the superior direction and the posterior in the inferior direction. These are all the measurements we need to establish a surgical setup. Hopefully, this is performed preoperatively so the patient has a good idea of what needs to be done.

Pre-surgical and surgical set-ups

The pre-surgical and surgical set-ups are techniques that do require the clinicians’ time. It’s
The importance of cementation: A veneers case using a new universal cement

By Kerr

Esthetic options in dentistry are the prevailing choice of most patients today. Veneers and bleaching in particular have become buzzwords in popular culture, and TV sitcoms, film and magazine advertising have turned these cosmetic techniques into household names. As a result, dental teams must accommodate the demands of their patients, becoming highly versed in placing metal-free restorations.

Practitioners can find a multitude of educational articles and courses teaching the science and technology of porcelain, zirconia and composite. But while emphasis is frequently placed on the final prosthesis or direct restoration, often overlooked are the increasingly important auxiliary materials that contribute equally to the clinical success of these new materials and restorations: impression and provisional materials, bonding agents and cements. Education is imperative because cementation and bonding are two areas of esthetic dentistry that have evolved through generations of products and techniques.1 These processes are essential in making esthetic restorations both functional and comfortable.

That’s why veneering can be an optimal, conservative alternative to crowning teeth, since preservation of tooth structure is important to dentists and patients alike. The highly esthetic results are due to the fact that ceramists have a translucent finished surface texture similar to that of natural enamel.2 Dentists, assistants and lab technicians spend vast amounts of time and effort perfecting veneers, avoiding fracture through painstaking preparation, material and shade selection, fit and fabrication. Yet even after such arduous processes, clinical failure and patient dissatisfaction readily occur with errors in cementation.

Cementing veneers is a delicate process with a historical litany of potential problems – color instability, insertion difficulty, handling and cleanup issues, unsatisfactory radiopacity, low translucency after curing, mismatch between try-in gels and final cements, and debonding, to name a few. Cement selection in certain applications necessitates knowledge of the chemistry and physical properties of the particular cement type, and insertion requires an exacting technique for successful clinical results.3

This article outlines a veneers case using NX3® Nexus®-Third Generation—a new, universal cement from Kerr. The subject is a long-standing patient-of-record with a current radiological and medical chart. This focus is on the steps and techniques implemented at final cementation of the protheses.

Clinical Case

A female patient in her mid-fifties presented a chief complaint of being unhappy with her smile. An examination of her hard tissues revealed immediate concerns of multiple fractures, hypocalcification, shortened anterior teeth due to wear and an asymmetrical smile line (Figures 1 and 2). After proposing a first phase treatment plan to restore all of her compromised upper anterior teeth, the patient consented to restoring only teeth numbers 6-11. The patient ultimately qualified for and accepted veneers as the mode of indirect restorative treatment.

Prior to preparation, the tissue around tooth No. 8 was recontoured. Then, the teeth were prepared for pressed ceramic veneers and provisionalized in the standard manner. Occlusal analysis and adjustments were performed over a period of weeks and the veneers were tried in. After the requisite steps were completed preceding insertion and the veneers were finalized, the provisional was removed and the teeth were cleaned (Figure 5). Expasyl® was used for gingival retraction and hemostasis in order to gain cervical access and control bleeding in that area (Figure 4).

The teeth were then etched for 15 seconds with Kerr Gel Etchant, which is composed of 57.5% phosphoric acid (Figure 5), and then rinsed and slightly dried (Note: While a total etch technique was used, NX3 works with both total-etch and self-etch protocols, adding to the distinctiveness of the product).4 Per manufacturer directions, Optibond Solo® Plus (Kerr) was brushed onto to the tooth surfaces for 15 seconds (Figure 6), air-thinned for 5 seconds, and cured for 10 seconds using the L.E. Demetron II curing light (kerr) (Figures 7 and 8). After etching and bonding, the veneers were cemented using NX3 light-cure cement in the clear shade (Figure 9). The cement was dispensed directly onto the internal surface of the veneer and was expected to ooze from all margins when the veneers were placed onto the prepared teeth. With the choice of either the single-syringe light-cure veneer cement or the dual-syringe dual-cure resin, the light-cure method was used because the veneers were not inordinately thick. NX3 allows veneers to be cemented all at once (as opposed to cementing centrals first, laterals second, and so on) because of its unique "thixotropic" properties, which enable them to stay where they are placed prior to light-curing. This feature makes adjustments and proper placement easier while decreasing the need to add excess cement to be cleaned (Figure 10). The veneers then were gelled for 40 seconds if space is needed once they are cured.

Prior to final curing, the restorations were spot-cured for 15 seconds to allow the excess cement to be cleaned (Figure 10). The veneers then were gelled for 40 seconds if space is needed once they are cured.

For more information, kindly visit the first dedicated Middle East website for Kerr Corporation www.kerrdental.ae.
Conservative approach to multidisciplinary aesthetic dental treatment

By Konis Giamakapelos, Greece

The aesthetic performance of dental restorations has always been a factor of utmost importance in the success or failure of the treatment. Lately, as aesthetic awareness of the population increases and the evolution of dental materials have made new techniques possible, optimal aesthetics can be achieved following less invasive restorative procedures. In many cases, multidisciplinary treatment is necessary so that the best possible outcome is achieved with a minimum degree of compromise between invasiveness and aesthetics. Every complex case should be treated planned by a team of specialists, so that every detail and limitation from each point of view is taken into account. The restorative dentist usually designs the smile and oversees each phase of the treatment by all other specialists.

Congenitally missing lateral incisors are a common dental problem that can be esthetically dealt in three different ways: 1. canine substitution, 2. tooth supported restoration, and 3. implant supported restoration. Tooth auto transplantation (usually premolar) and removable partial dentures are other, less commonly applied treatment options. In the case of only one lateral incisor missing, an additional problem of symmetry arises. In many cases, multidisciplinary aesthetic treatment is necessary so that the best possible outcome is achieved with a minimum degree of compromise between invasiveness and aesthetics. Every complex case should be treated planned by a team of specialists, so that every detail and limitation from each point of view is taken into account. The restorative dentist usually designs the smile and oversees each phase of the treatment by all other specialists.

Peg shaped lateral incisors pose another aesthetic problem that is usually restored with as follows: 1. all ceramic crowns, 2. porcelain veneers, and 3. direct or indirect composite veneers. Additional to the inadequate width and length of the peg shaped lateral, many times there is also a gingival aesthetic problem that can lead to a square looking restoration and too much gingival display if not properly treated planned with either orthodontic intrusion or gingivoplasty. The restorative dentist and aesthetic treatment planning is crucial in the success or failure of the treatment process.

In this article, a case is reported of a young patient with one congenitally missing and one peg shaped lateral incisor. The patient was treated with a combination of orthodontic, periodontal surgery and aesthetic – restorative dentistry interventions.

Case report
A 22 year old Caucasian female presented to the clinic asking for aesthetic improvement of her smile. The patient was single and a student of law school. The medical history was unremarkable with no pathologies and no known allergic reactions reported to any kind of medication. No medications were taken on a systematic basis by the patient. The dental history was also unremarkable with only preventive and minor operative dentistry interventions and prophylaxis in the past. The patient mentioned a history of congenitally missing teeth in her family.

The chief complaint of the patient was spaces between the teeth and specifically the missing upper left lateral incisor tooth, the irregularly shaped upper right lateral incisor, and the diastema between teeth #11 and #21. Also, she was concerned about asymmetries in her smile and misalignment of her teeth. Finally, the patient stated she would like to have a brighter smile (Figures 1-3).

The dental examination revealed no pathological findings or signs of dental disease. The DMFT was low and the comprehensive periodontal examination was within normal limits; soft tissue examination resulted in no pathological findings; radiographic betweener examination revealed no pathological findings as well.

The aesthetic evaluation of her smile resulted in the following issues that would need to be addressed in the treatment plan: 1. peg shaped lateral incisor #12, 2. congenitally missing lateral incisor #22 with diastema between #11 and #21, 3. dental midline transmitted to the right by 4mm, 4. asymmetry between the left and right side, especially in the space between 11-13 and 21-23, 5. gummy smile, especially on the area of #12 and the missing tooth #22, and 6. the gingival zenith was asymmetrical between #11 and #21 (Figures 4-6, Table 1). The occlusion was Class I. The base shade of the teeth was A5 on the upper central incisors and A3,5 on the upper canines with the Vita Classic shade guide (Vita Zahnfabrik, Bad Sackingen, Germany).

Photographs and alginate impressions were taken in the exam appointment to fabricate study models. Then the team of aesthetic/restorative dentist, orthodontist and periodontist treatment planned the case. The recommended treatment plan was accepted by the patient in favor of the alternative treatment plans.

Orthodontic phase
The orthodontic treatment goals were as follows: 1. intrude #11 to align the incisal edges of the centrals, 2. equalize the spaces between #11-15 and #21-25, 3. transfer the dental midline to the left, and 4. correct misalignments and minor rotations in different areas. Some composite resin was bonded on the facial surface of tooth #12 to facilitate bracket placement. The composite was white in shade to match the other teeth.

Table 1: Teeth and spaces between them were measured. The proportions of the teeth (length to width ratio) and the arrangement of the spaces are crucial information in treatment planning, especially in patients with a high lip line.
A multi-disciplinary approach to minimally invasive functional aesthetic dentistry

By Dr. Tif Qureshi, UK

Simple tooth alignment is rapidly becoming accepted as the norm in cases that previously would have been treated with porcelain veneers. However, patients often present with a mix of problems such as previous metal ceramic work, the treatment of which should be integrated as part of the treatment plan. Timing becomes a vital part of the treatment when mixing restorative care, alignment, tooth whitening and occlusal planning. The following case illustrates an effective approach to treatment.

Case report
A patient presented complaining that “his two front teeth [old upper anterior crowns] felt as if they were too large and were always hitting the lower teeth”. In addition, his bite never felt “right” (Figure 1). He also wanted to try to improve the appearance of his teeth. He was aware of what could be done with porcelain veneers, but wanted to try to make the best of his own teeth.

Examination
On inspection, it was clear there were several issues:
1. Occlusion - The irregular alignment of the lowers and the thickness of the upper old crowns were adding to the problem of unbalanced anterior contacts. The back of the crowns, especially the upper left central, were hitting the front of his lower teeth, in particular the lower left central.

A heavy, not long centric contact was present in MIP, which was causing slight deflection of the central. This meant that the upper central crown had been placed quite labially and because it was metal ceramic, made it feel particularly thick.
2. Thickness/aesthetics of crowns - The occlusion meant that the upper crowns had been placed quite labially and because they were metal ceramic, made them feel particularly thick. They also appeared rather opaque.

Alternative options
Alternative options were discussed, fixed braces were discounted because of the cost, the difficulty in simultaneous whitening and added difficulty in having the crowns as temporary through treatment. The patient’s posterior occlusion was also good. Full anterior veneers were discussed, but after the patient understood how simply and quickly the alignment could be done, seemed a completely ridiculous and unethical solution.

Treatment
On the initial appointment the two old crowns were removed (Figure 2). The preps were merely cleaned and treated as conservatively as possible. Temporary crowns, which could be adjusted, were placed (Figure 3). Upper and lower impressions were taken for upper clear aligners and for a lower Inman Aligner. A prescription of the tooth movement using Spaceware software was given to the technician so they were aware of exactly where we wanted the teeth to be moved. Spaceware also calculates a figure for the amount of crowding present giving us an idea of the total amount of space that would need correcting and whether the case is suitable for Inman Aligners or not.

Two weeks later, the patient returned. The Inman Aligner and clear aligner were fitted on the lower and upper teeth respectively. Minimal interproximal reduction (IPR) was started. Despite calculating the amount of crowding present, the IPR is never carried out in one go. Only IPR strips or discs are used. This gives the opportunity to ensure the stripping is far more anatomically respectful than using burs or heavy discs. This massively reduces the risks of excess space formation, gouging or pour contact anatomy. No more than 0.15 mm per contact on the anterior teeth were adjusted on this single visit. The contacts are smoothed and fluoride gel is applied each time.
termittent wear reduces the risk of gum and bone loss. 20 hours a day is the maximum wear and this is in addition to eating and drinking. The Inman Aligner was worn for 15 hours a day and the patient returned. A retainer wire was bonded to the lower incisor teeth using a preformed wire retainer. Two weeks later, the patient was then sent home.

15 was bonded to the lower incisor teeth using a preformed wire retainer wire to be fitted with another wire tray for two weeks and was happy with the outcome. The temps were aligned rapidly and especially well (Figures 4 and 5). We then decided to start some simultaneous tooth whitening. Impressions were taken, even though the result was still 25% from completion. Sealed, rubber trays were made and careful instructions given to the patient. While the aligner is concentrat- ing on using the Inman Aligner, they are always highly recep-tive to using bleaching trays. It adds greatly to motivation and often means they achieve a far better result. Day-while from Oral Healthcare (formerly Discus Dental) is used so that the patient only needs to wear the bleaching trays 55-45 minutes a day.

The patient returned after another 3 weeks and was happy with the result. Many, simple procedures on the Inman Aligner can be done at the patient’s own convenience. Upper and lower alignment was now complete. An impression was taken for a lower retainer wire to be fitted later. The temporary crowns were removed, the prep cleaned with CINT and new impressions were taken after some minor adjustments to the buccal margins.

A new lower impression was taken of the lower arch and an inter- provsion to ensure the crowns could be made with a good long con-tact. The temps were replaced and impressions sent to the laboratory. The patient booked in for a week one week later and two weeks after causa-tion of bleeding where colour and tooth morphology was ex-amined and discussed with the patient. Two weeks later, the pa-tient returned. A retainer wire was bonded to the lower incisor teeth using a preformed wire on a jig made by the orthodon-
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make it easier to distinguish and completely remove it after the orthodontics was completed. After treatment, the goals set were accomplished (Figures 7-9).

Surgical phase
As stated previously, the dental team decided to align the incisal edges of #11 and 21 and not intrude further #11 to align the gingival zeniths. This decision was based on the fact that the teeth showed no signs of wear, in which case the worn tooth would be intruded more to be back in its original pre-wear position and then would be treated restoratively. The goals of the periodontal surgery were: 1. align the gingival zeniths of teeth #11 and 21, 2. gingivectomy with osseous reduction on #12 to reduce as much as possible the gingival display without compromising the long term prognosis of the tooth due to loss of periodontal support, 3. gingivectomy in mostly all the upper teeth to bring the gingival display to a more pleasing appearance. After surgery, a healing period of 8 weeks was recommended by the periodontist before the restorative procedures start (Figures 10, 11). The option of a single implant placement for the missing lateral incisor #22 was rejected before surgery, as an additional bone grafting procedure would be required and this was not accepted by the patient (Figure 12).

Aesthetic/Restorative phase
Six weeks after the periodontal surgery, in office whitening was performed so the patient’s desire for brighter teeth is met (Phillips Zoom, Philips Oral Healthcare, Stamford, USA). The shade of the teeth 10 days after the whitening was completed was A1 for the upper centrals and A2 for the canines (Figure 13).

After proper healing of the periodontal issues was confirmed with the periodontist, tooth #21 was prepared for an all ceramic lithium disilicate crown and the teeth #21 and 25 were prepared for an all ceramic lithium disilicate Maryland type bridge with wings (e.max, Ivoclar Vivadent, Schaan, Lichtenstein). The latter was selected because of the conservative approach and the minimal preparation required only on the palatal surfaces of the abutment teeth, as the occlusion was favorable and the patient had no parafunctional habits.

This type of restoration appears to be a viable solution in selected cases, as it does not have the problems of the conventional Maryland bridge with frequent dehiscences and the metal showing through thin and translucent central incisors. After gingival retraction with a retraction paste (Astringent Retraction Paste, SM ESPE, Seefeld, Germany), a final impression was taken with polyether heavy and light body impression material (Permadyne, SM ESPE, Seefeld, Germany) on a full arch metal tray. The final registration was recorded and an alginate impression was taken after 4 weeks (Figures 15-21).

A multidisciplinary approach in treatment planning and performance, as well as the use of contemporary restorative materials and techniques allow for a conservative, yet very aesthetic final result.

References

The Author would like to thank the Orthodontist, Dr. Evita Katsarou and the Periododontist, Dr. Alexis Bakopoulos for their contribution to the treatment of this case.

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Figure 10: After removal of the orthodontic devices the spaces are properly distributed. Note the gingival asymmetries.

Figure 11: Immediately after the periodontal surgery the gingival improvement is apparent.

Figure 12: CBRT radiograph verifies that there is not adequate bone to place an implant. A GBR procedure would be needed.

Figure 13: After ZOOM whitening the smile appears significantly brighter.

Figure 14: An e.max press crown and an e.max press Maryland type all ceramic bridge with wings are fabricated.

Figure 15: After ZOOM whitening the smile appears significantly brighter.

Figure 16: An e.max press crown and an e.max press Maryland type all ceramic bridge with wings are fabricated.

Figure 17: Figure 18 - 21: Retracted and palatal view of the case completed.

Figure 18: The smile of the patient after completion of the treatment appears significantly improved esthetically.

Figure 19: In office whitening was performed so the patient’s desire for brighter teeth is met (Phillips Zoom, Philips Oral Healthcare, Stamford, USA). The shade of the teeth 10 days after the whitening was completed was A1 for the upper centrals and A2 for the canines (Figure 13).

Figure 20: After gingival retraction with a retraction paste (Astringent Retraction Paste, SM ESPE, Seefeld, Germany), a final impression was taken with polyether heavy and light body impression material (Permadyne, SM ESPE, Seefeld, Germany) on a full arch metal tray. The final registration was recorded and an alginate impression was taken after 4 weeks (Figures 15-21).

Figure 21: The smile of the patient after completion of the treatment appears significantly improved esthetically.
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Dear Friends and Colleagues,

November is upon us once again. This year for the sixth consecutive time the amazing Jumeirah Beach Hotel in Dubai will host the Dental Facial Cosmetic International Conference for a two day scientific weekend offering all dental professionals the latest research and developments in the field of Aesthetic Dentistry. The Dental Facial Cosmetic International Conference has become a vital platform for the success and perception of dentistry in the Middle East region. Yearly hundreds of top dental professionals, practitioners, researchers and industry players gather together to listen to the latest world acclaimed professional Key Opinion Leaders as well as discuss hot topics through the interactive networking opportunities the event offers. The interdisciplinary meeting brings together the dental and medical professionals with common interests in facial aesthetics and cosmetics exchanging knowledge for the best quality of patient care.

This year’s conference will cover several subjects related to Aesthetic Dentistry enlightening all delegates with experiences from over 25 International Key Opinion Leaders who have gathered in Dubai. Participants will also have the unique chance to see the latest equipment which will be showcased at the product display made available by the top of the dental industry. We sincerely hope that this meeting will let our audience the most recent updates of technology in the dental field with few “surprises” as well.

On behalf of Emirates Dental Society, I would like to wish you all an enjoyable and educational 6th Dental Facial Cosmetic Intl’ Conference which is filled with 24 cutting-edge presentations, 12 hands-on workshops and a Dental Hygienist Day.

Dr. Aisha Sultan
President Emirates Dental Society
President of the Conference

Dear Colleagues of the Dental Team,

It is my honor and pleasure to welcome you all to our 6th Dental - Facial Cosmetic International Conference.

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This 6th edition of our DFCIC features a joint meeting with the American Academy of Implant Dentistry. During this session, the AAD will share with us their vast knowledge and experience as well as the latest in the field of Implant Dentistry.

I am sure that this conference will be of the greatest help to develop our knowledge and sharpen our skills in pursuing the goal that we all share, to provide our patients with the best possible solutions for their esthetic needs.

We will continue this unsurpassed cooperation to bring to our audience the most recent updates of technology in the dental field with few “surprises” as well.

See you all in the dynamic Emirate of Dubai.

Dr. Aisha Sultan
President Emirates Dental Society
President of the Conference

Dr. Munir Silwadi
BDS, MRCSO, DUSS, FADI, FICD
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DAY ONE
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0800 – 0900 BREAKFAST WITH THE SPONSORS / REGISTRATION
0900 – 0945 Dr. Giustino Pulvino, Italy
Adhesive esthetic solutions in anterior and posterior teeth
0945 – 10:50 Prof. Swaaid Samii, Germany
Minor & Major Augmentation in Oral and Maxillofacial Surgery and Implantology: new perspectives with Nonosan® Hyaluronic acid cement
1030 – 10:45 MEET THE SPONSORS / COFFEE BREAK
1045 – 11:30 Dr. Anton Lebedev, Russia
Zirconia + glass-ceramics – proven concepts
1130 – 12:15 Dr. Julian Caplan, UK
In-surgery CAD/CAM Dentistry – Fact or Fiction
1215 – 13:40 LUNCH / PRAYER TIME
1340 – 14:15 Dr. Costa/Nilopoulos, Greece
Simple Fast & High-Quality Implant Dentistry
1415 – 15:00 Dr. David Glarigue, UK
An Introduction to Digital Impressioning and the Digital Workflow
1500 – 15:45 Dr. Richard John Simonson, USA
Photography – Clinical for Dentistry, and Nature for Hobby
1545 – 16:00 DISCUSSIONS
1600 – 16:45 Prof. Carolina Mahanna Zogheib, Lebanon
Teeth whitening from A – Z
1645 – 17:30 Prof. Khalid Alshehri, KSA
The Effect of manufacturing features of rotary NiTiNS on their performance: A clinical approach for analysis
1730 – 18:15 Dr. Gary Severance, USA
Chairside Restorative Dentistry – Control Your Future
1815 – 18:30 DISCUSSIONS
1830 – 1900 POSTER PRESENTATION
MEET THE SPONSORS / COFFEE BREAK
DAY TWO
SATURDAY | 15 NOVEMBER 2014 | CONFERENCE DAY | MAIN AUDITORIUM
0800 – 0900 BREAKFAST WITH THE SPONSORS / REGISTRATION
0900 – 0945 Dr. James Russell, UK
Accessible Aesthetic Dentistry
0945 – 10:30 Dr. Michael Apa, USA
Advances in interdisciplinary Aesthetic Surgery and Implantology
1030 – 11:15 Dr. Julian Caplan, UK
The Aesthetics of In-surgery CAD/CAM Dentistry
1115 – 11:30 MEET THE SPONSORS / COFFEE BREAK
1130 – 12:15 Dr. Anton Lebedev, Russia
A day Out – Behind the Scenes
1215 – 13:00 Dr. Marcus Engelschalk, Germany
Double Scan vs. Single Scan – Two different workflows for essential improvement in fixed prosthetic reconstruction in implantology
1300 – 14:15 LUNCH / MEET THE SPONSORS
1415 – 15:00 Dr. Marcus Engelschalk, Germany
The conventional scan in prosthodontics – new workflows for more predictability
1500 – 15:45 Dr. Petros Yvanoglou, Greece
The Science & Art of Restoring Immediately Loaded Implants
1545 – 16:30 Dr. Björn Tittel, Germany
Innovative Solutions & Surgery in Aesthetic Dentistry
1630 – 17:15 Dr. Gary Severance, USA
The Landscape of Digital Dentistry
1730 – 18:15 Dr. Emilio Rodriges, Spain
Immediate Load with Aesthetic and Functional Restoration
1815 – 18:30 DISCUSSIONS
1830 – 1900 POSTER PRESENTATION
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0900 – 0945 Dr. Carine Tabarani, UAE
Lecture
Oral Health Management: Between Myth and Reality
0945 – 10:30 Prof. Mary Rose Pincelli Boglione, Italy
Lecture
Management of The Orthodontic Patient
1030 – 11:15 Victoria Wilson, Dental Hygiene Therapist, UK
Lecture
Communication & Implant Maintenance
1115 – 11:45 Prof. Mary Rose Pincelli Boglione, Italy
Lecture
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HANDS ON COURSES
VENERS vs. CROWNS THE CHALLENGE IN SMILE DESIGN
Dr. Edouardo Maim, Chile
14 November 2014 (09:00 – 17:30)

ESTHETIC IN SMILE DESIGN [DENTISTS]
Ahm Farah, CDST, UAE
16 November 2014 (09:00 – 17:30)

LASER IN MODERN DENTAL PRACTICES
Dr. Manaf Tahar Agha, UAE
16 November 2014 (09:00 – 17:30)

PERIODONTAL INSTRUMENTATION
Prof. Mary Rose P. Boglione, Italy
14 – 15 November 2014 (13:00 – 16:30)

FACE AND SMILE ANALYSIS
Dr. Edouardo Maim, Chile
16 November 2014 (15:30 – 19:30)

ESTHETIC IN ONE LAYER METAL CERAMIC & COMPOSITE GINGIVA
Ahm Farah, CDST, UAE
16 – 17 November 2014 (09:00 – 17:30)

VENERS vs. CROWNS THE CHALLENGE IN SMILE DESIGN
Dr. Edouardo Maim, Chile
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LASE IN ESTHETIC DENTISTRY
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<th>Baseline</th>
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<td>Fluoride-containing control toothpaste</td>
<td>25.40 (6.80)</td>
<td>19.80 (7.38)</td>
<td>24.75 (6.34)</td>
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22% reduction in bleeding (p<0.05 vs. baseline)

Adapted from Saxer et al 1994. All interdental spaces from 6+ to 6- were tested at baseline and 4 weeks for bleeding on probing on the right side (buccal) and left side (lingual). Findings were recorded as 0=no bleeding; 1=slight/isolated bleeding; 2=marked bleeding. Mean scores were determined. N=22. Baseline values [Mean SD]: Control (fluoride-containing toothpaste) group 24.75 (6.34); parodontax® group 25.40 (6.80). After 4 weeks: Control (fluoride-containing toothpaste) group 26.00 (9.14); parodontax® group 19.80 (7.38). *parodontax® vs control p<0.05.
CBCT and CAD/CAM allow for one-day restoration of Tooth #9

By Robert Pauley, USA

Case Overview
Our office received a frantic phone call from the mother of one of our twelve-year-old patients, who stated that her daughter fell while in P.E. class and broke a front tooth. We advised her to bring her daughter to the office as soon as possible. Immediately after her arrival a periapical radiograph, CBCT and CAD/CAM were obtained (Fig. 1).

Upon clinical examination and review of the digital radiograph, I saw tooth #9 was horizontally fractured at the middle third. There was no pulp exposure evident, but the tooth did have a pinkish tint on the lingual. No mobility was noted and no periapical changes or root fractures were obvious at this time. The new American Association of Endodontists guidelines recommend taking one occlusal and two periapical radiographs with different lateral angulations for all dental injuries, including crown fractures. If cone beam computed tomography is available, it should be considered to reveal the extension and direction of the fracture.1

Dr. Edward Mills in his presentation on Site Development and Implant Protocol Based on Etiology of Tooth Loss refers to a similar traumatic injury in which CT images revealed not only a root fracture within the bone but a fracture of the lingual plate.2

A limited field 3D scan 5cm x 5cm at 500 voxels was taken with the CS 8100 3D to rule out buccal or palatal plate fractures (Fig. 2). None were evident on the scan. While her parents were upset that she had been injured, the ability to view a 3D image reassured them that the damage appeared to be limited to the tooth’s coronal structure.

Treatment Plan
The patient’s treatment options were: 1) do nothing; 2) restore with a composite restoration, realizing that this would have a questionable long-term prognosis due to size of fracture; 3) restore with a CAD/CAM milled crown. The patient and her parents were advised that cases where teeth have been injured traumatically such as in this case, one might experience a post traumatic irreversible pulpitis at a period of time beyond the initial trauma. In some cases, this condition may be treated by endodontic treatment and crown restorations but in other cases root resorption may take place precipitating the loss of the teeth. These teeth will be monitored every 6 months over several years with periapical radiographs. Every appropriate effort to maintain the tooth in place and avoid the need of an implant until the patient reaches maturity. Dental implants in adolescent patients may affect vertical growth and development of the alveolar ridge because the osseointegrated implant acts as an ankylosed tooth. At a focus conference on Advanced Dental Implant Studies, Dr. Mills summarized that jaw growth in a young adolescent patient may compromise the outcome of the oral rehabilitation using an implant supported prosthesis even if implants successfully integrated. After presentation of the treatment plan and discussion of risks, benefits, options, and alternatives; the parents and patient elected to restore tooth #9 with a CAD/CAM crown.

The parents understand this crown will likely need to be replaced once she reaches adulthood for the best cosmetic appearance, as her teeth and face will change with further growth and development.

Tooth #9 was anesthetized and prepared for a ceramic crown. I utilized the CS 5000 intraoral scanner to scan the prepared maxillary anterior quadrant and the opposing mandibular anterior quadrant as well as obtain a bite registration (Figs. 3, 4). CS Restore software was then utilized to design the anterior crown (Figs. 5-7). The CS 5000 milled the crown from an ivo-
Porcelain laminate veneers – avoiding complications

By DCDM

Dental Veneering is the process of covering the facial surfaces of teeth by using various types of dental materials. Most commonly used are porcelain veneers which are thin shells of porcelain that are shaped like the outer layer of the teeth and are used to cover the teeth, aiming to enhance their appearance.

Many celebrities opt for this esthetic treatment to achieve what may seem like a picture-perfect smile. This may lead people to a false expectation that everyone is a good candidate for veneers. However, from a dentist's perspective preparing and planning for veneers is very challenging, and if proper care is not taken, the patient and proper techniques in preparing the teeth are not used, multiple complications can occur. These include gingival inflammation, chipping and breaking or even complete de-bonding of the veneers.

To decide whether a patient is a good candidate for veneers, many factors should first be assessed; the condition of the patient’s teeth, habits, periodontal condition and most importantly the patient’s expectations and willingness to maintain their veneers after they are placed.

We should start by analysis of the teeth. This involves assessing their shape and proportion; diastemas, and analysis of the occlusion. Regarding shape and dimension, there should be sufficient tooth structure to retain the veneer, otherwise the longevity can be severely affected. In teeth with small surface areas such as lower incisors, or teeth with multiple cavities and fillings which decrease the available surface for bonding, there is an increased chance of the early displacement of the veneer. In such cases full crowns may offer a better long term option (H.Serdar Coert et al., 2009).

In terms of diastemas, if these are too large veneers can only partly reduce the space, otherwise gingival inflammation and/or recession can occur due to the bulkiness of the veneer (Weissgold and Cohen, 1981). Additionally, a tooth which is unnaturally wide for its height looks unattractive. Orthodontics may be more appropriate in closing diastemas than veneers. When assessing a diastema the clinician must establish if it is stable or increasing since the latter may indicate periodontal bone loss or a harmful habit.

Finally in tooth analysis the occlusion must be considered. For veneers to have a longer survival rate they should not have excessive biting forces on their edges as this is common in patients with an edge-to-edge occlusion which can lead to chipping and breaking of the veneers. Care must also be taken in patients with missing posterior teeth, as this increases the loading on the anterior teeth. Patients’ habits such as grinding, clenching, and chewing on fingernails or objects like pens, create high horizontal forces impacting on survival of the veneers at a rate 8 times higher than patients who don’t have such habits. Such forces can readily lead to fracture, chipping or total de-bonding of the veneer. We should also consider the patient’s high consumption of dark or acidic foods as well as smoking habits which can lead to dark stains around the margins of the veneers (Fig 1). Since patients with dark stained teeth will often consider veneers as a solution, habits should be identified and changed after veneer placement to maintain the esthetics of their veneers (Beier et al., 2012).

Marginal stains can also be assessed, which leads us to the last key point of gingival health. Veneers should not be prepared on bleeding inflamed gingiva, which indicates poor oral hygiene. If this is done, complications which arise include placing the veneer margin too deep due to gingival enlargement, and bleeding during preparation and bonding leading to poor marginal seal and marginal staining after veneer placement. Eventually gingival recession or worsening inflammation will result. Good oral hygiene and gingival health should be achieved before veneers are started. All of these factors need to be considered during the initial assessment to avoid complications.

Additional complications can arise during the preparation of teeth. There are two common approaches to placing porcelain veneers, one is done without altering the natural teeth - bonding the porcelain veneers to unprepared teeth. This might seem a conservative choice avoiding alteration to tooth surfaces, but it inevitably creates a bulky over-contoured appearance and increases the risk of the veneer de-bonding and gingival complications. Alternatively teeth are prepared for veneers by changing external contour, removing less than a millimetre of the facial surfaces and around 2 mms of the incisal edges, thus porcelain replaces the tooth structure removed, ensuring the porcelain is seated properly onto the teeth with enough bulk of porcelain at the edge to minimise chances of chipping and breaking. Studies have shown that the overall success and survival of the first method is much lower than the second method. The commonest complications with veneers are breaking and chipping (H.Serdar Coert et al., 2009)(Layton and DPhill, 2013)(Akoglu et al., 2011).

A study analyzing the overall survival rate of porcelain veneers over a 20 year period concluded that the estimated survival rate over a 5 year period is at 95%, at 8 years is 94%; at 10 years in 86% and at 20 years is 85% (Beier et al, 2012). It should be noted that these were veneers placed after adequate tooth preparation.

The clinician must consider all these factors before choosing to place veneers if complications are to be minimised and patient satisfaction achieved.

References are available from the author.

Figure 1. A significant staining of the veneer margins as a result of smoking and high coffee consumption.

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Case report surgical correction of a class III malocclusion in an adult

By Dr. Fabien Depardieu

This case report describes a successful orthodontic treatment of a skeletal Class III malocclusion with mandibular prognathism in an adult individual. The patient with Class III malocclusion, having mandibular excess in sagittal and vertical plane was treated with orthodontics, bilateral sagittal split osteotomy. The surgical-orthodontic combination therapy has resulted in near-normal skeletal, dental and soft tissue relationship, with marked improvement in the facial esthetics in turn, has helped the patient to improve the self-confidence level. The interdisciplinary approach is the treatment of choice in most of the skeletal malocclusions (1).

Keywords: Class III malocclusion, decompensation, Orthognathic Surgery, Bilateral sagittal and vertical plane was performed, and the final molar relationship is Class III or Class I, there are challenges specific to the static and functional Class III occlusion that must be considered. Sometimes a Class III relationship is caused by a forward shift of the mandible to avoid incisal interferences. This is a pseudo-Class III malocclusion. In these cases, it is important to establish the inter-occlusal relationship with the teeth in the retruded contact position.

In this paper, the surgical orthodontic treatment of a young adult patient with a Class III malocclusion is illustrated.

Diagnostic and Etiology
The patient was a 28 year-old man who had a Class III facial type and slight crowding with a complete Class III relationship. His chief complaint was an esthetic facial and un-even bite. His medical history showed no contraindication for orthodontic therapy and orthognathic treatment. No one in his direct family had a skeletal Class III features.

The pretreatment extra-oral photographs showed symmetrical facial structures (Fig 1). The patient had a concave profile, a decreased nasolabial angle and a protusive lower lip. The intra-oral photographs (Fig 2) showed a Class III occlusion on each side with an anterior crossbite and without apparent compensations by straightening the dental midlines to the middle of the patient’s face. There were no signs or symptoms of temporomandibular joint dysfunction. Mandibular movements, such as maximal opening and lateral and anterior displacement were within normal limits. No deviation and pain were discovered during the border movement of the mandible.

The mandibular dental midline was deviated 2.5 mm to the right, although the maxillary dental midline was coincident with the facial midline. There were no signs or symptoms of temporomandibular joint dysfunction. Mandibular movements, such as maximal opening and lateral and anterior displacement were within normal limits. No deviation and pain were discovered during the border movement of the mandible. A cephalogram and a panoramic radiograph were taken before treatment. The cephalometric analysis and its tracing showed that the mandible protruded relative to the cranial base (SNA angle, 82°; ANB angle -3°). The panoramic radiograph showed no other abnormal signs. After the analysis of the photographs, the casts and radiographs, it was decided to approach his problems as a skeletal Class III malocclusion with an anterior cross bite and a lower deviated midline (2).

Treatment Objectives
The treatment objectives (5) were to obtain a harmonious facial profile by decreasing the protrusion of the mandible, improve the occlusion, including correction of the anterior crossbite, establishment of ideal overjet and overbite, achievement of a functional molar relationship; and place the dental midlines in the middle of the patient’s face. We planned:

• To set back the mandible to correct the prognathism and the midline deviation.
• To relieve the proclined maxillary incisor position and to relieve the dental compensations.
• To relieve the dental compensations by straightening the mandibular incisors to an upright position over basal bone.

Treatment Alternatives
The first alternative was orthodontic treatment with extraction of 4 premolars. Through the retraction of the mandibular anterior teeth, the anterior crossbite and Class III molar relationships would be corrected and the concave facial profile would be camouflaged. Nevertheless, the mandibular incisors were not suitable for much distal movement because of the thin trabecular bone in the mandibular anterior area that could damage the periodontal tissues by gingival recession, fenestration or dehiscence.

The second alternative was combined surgical and orthodontic treatment. The anterior crossbite would be corrected with a single-jaw surgery; a mandibular setback. The concave profile would be improved.
as well. It was decided to extract the upper second premolars to relieve the dental compensations by repositioning the upper incisors.

The third alternative was to correct the class III malocclusion by miniscrew-assisted mandibular dentition distalization. However we decided that the skeletal problem was too excessive and required orthognathic surgery.

After we discussed the three alternatives with the patient, he chose the second option.

Treatment Progress

The preoperative orthodontic preparation began on December 2011. Before the leveling and alignment procedures (4), the maxillary second premolars were extracted to decompress the maxillary incisor inclination and to reduce the acute nasolabial angle. Pre-adjusted 0.022-in edgewise brackets were bonded to all teeth. The preparatory orthodontic treatment was achieved in 12 months, ending with 0.018 x 0.025 stainless steel surgical archwires for the maxillary and mandibular arches. The orthognathic surgery involved a set back of the mandible with a bilateral sagittal split osteotomy. This was performed to improve the mandibular projection and establish an Angle Class I canine relationship. The orthognathic surgery was performed with maxillary and mandibular 0.016 x 0.022-in titanium-molybdenum alloy archwires. The appliances were removed after 16 months of active treatment. Bonded lingual retainers were fitted to the lingual surfaces of the anterior teeth in both arches. Maxillary and mandibular essix retainers were delivered with instructions to wear them full time for two weeks and then night time.

Treatment Results

The post-treatment photographs (Fig.5) showed that facial aesthetics were improved, and ideal occlusion was achieved with proper overjet and overbite. The maxillary dental midlines coincided with the facial and mandibular midlines. The occlusion was finished to a therapeutic Class II.

Discussion

The decision for surgical orthodontic treatment for this patient was based on the fact that his primary concern was his facial profile. Before the single-jaw surgery: a mandibular setback, preoperative orthodontic treatment, including decompression of the malocclusion, is necessary. The dental decompression we performed was intended to retract the proclined maxillary incisors to a normal axial inclination. Lack of optimal dental decompression compromises the quality and quantity of an orthognathic correction. The patient’s teeth were decompressed by extracting the upper second premolars and leveling the mandibular arch. This phase was achieved in 12 months.

Conclusion

This case report describes the surgical orthodontic treatment of a young adult man with dental and skeletal class III relationships. The orthognathic treatment was the best option for achieving an acceptable occlusion and a good esthetic result. An experienced multidisciplinary team approach ensures a satisfactory outcome. Presurgical orthodontics removes all the dental compensations and suggests the extent of the skeletal discrepancy. Normal skeletal base relationship is achieved by osteotomy and setback of the prognathic mandible, postsurgical orthodontics guides the normal occlusal rehabilitation by correcting any emerging dental discrepancies (2).

Reference


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Dental implant competitors shake things up amidst economic uncertainty

By Kristina Vidug, USA

In 2015, the global dental implant market—composed of the sale of dental implant fixtures, final abutments and other devices—was valued at over US$3.7 billion. The European market, valued at nearly one-third of the global market at close to US$1.2 billion, contracted through 2014, as uncertain economic conditions continued to reduce procedure volumes and as more low-cost competitors entered the market, driving down prices.

These factors hampered the expected economic recovery and resumption of growth projected for 2015. As a result, the dental implant market will continue its decline before stabilising in 2015. Only then will the European market slowly begin to recover. Factors such as low gross domestic product growth and high unemployment continue to render dental implant procedures—which are primarily paid out of pocket by patients—cost prohibitive, while alternatives, such as bridges and dentures, that are perceived as more affordable will represent attractive options.

Dental implants were invented in Sweden; as a result, it is not surprising that a great number of premium manufacturers are based in Continental Europe. In the past, premium manufacturers, such as Straumann and DENTSPLY Implants, were able to rely on their long-standing reputations in the market and the high quality of their products to command higher prices than did some of their competitors. More recently, however, some of the premium competitors have employed strategies to appeal to increasingly cost-conscious consumers. For instance, Straumann has reduced the price of its titanium implants by 15 per cent in Austria, Germany and Switzerland. While the price change only came into effect in the first quarter of this year, the strategy appears to have been effective because the company reported a 6 per cent rise in first-quarter revenue compared with a 6 per cent decrease in the same period last year.

The price reduction has come at a perfect time: while economic conditions begin to slowly improve, consumers are still extremely price sensitive. These price cuts therefore allow dental professionals to offer premium implant products to their patients at a reduced rate.

Straumann’s price reduction is not its only foray into the value market. In the first quarter of this year, the company purchased US$50 million worth of bonds from low-cost South Korean dental implant manufacturer MegaGen. The investment, which will be converted to shares in 2016, will help bolster Straumann’s revenue while allowing it to participate in both the premium and value segments, thus appealing to a wide range of practitioners and patients alike.

Straumann is not the only company shaking things up in the world of dental implants. Zimmer Dental recently announced its acquisition of rival Biomet. While both companies are better known for their orthopaedic products, they are fairly significant competitors in the dental industry as well. Lay-offs are not uncommon when companies merge, especially when the companies in question offer the same types of products. This can have a negative impact on sales in the short term, as the newly conjoined companies’ sale force decreases, leading clients to switch to other competitors.

However, this will not be the case with the Zimmer-Biomet merger, at least not in the short term, as the sales teams from both companies are expected to be retained through the merger. The cost of retaining both sales teams has been estimated at US$400 million. While the effect of this acquisition on the market remains to be seen, the fact that the sales force will not be decreasing bodes well for the newly merged companies, likely resulting in an increased market share in the dental implant segment.

There is discussion of merger and acquisition activity among other companies in the segment too, with Nobel Biocare reportedly in talks to sell to private equity firms and strategic buyers. While these talks are still in the very early stages, what is certain is that there has been a great deal of activity in the competitive landscape in the past several years.

This, combined with the aforementioned economic factors, is turning this once stable and mature industry into a dynamic, action-filled space. With the dental implant market set to rebound in Europe and with revenues expanding in other countries—particularly in the rapidly developing BRIC and Middle Eastern markets—the global industry is poised for even further change, and the competitive landscape could look entirely different a few years from now.

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Same Day Dental Implants® & Teeth
A Surgical & Prostho Protocol

By Costa Nikolopoulos, Oral & Maxillofacial Surgeon (S.A.) & Petros Yovanou, Specialist Prosthodontist (U.S.A.)

The original Branemark protocol advocated the use of a two-stage surgical approach where the turned (smooth) implants were buried for several months under the mucosa. With the advent of surface enhanced and tapered implants the protocol later evolved into a one-stage approach.

Several clinicians then proceeded to immediately load these one stage implants with good success provided good primary stability (more than 45Ncm) was achieved at time of implant placement and provided micromovements could be limited to 100μm. Ampule reports have been published on immediate loading of dental implants showing an initial unloaded period of 5 – 6 months is not necessary. From a patient's point of view the reduction of treatment time between implant placement & installation of a functional prosthesis leads to increased patient satisfaction & treatment acceptance and gain in time for the patient implies an economical benefit especially for professionally and/or socially active patients.

High treatment acceptance and patient satisfaction are the most important advantages of immediate loading and immediate function.

Surgical Protocol
The surgical protocol of immediate loading of dental implants with same day teeth is based on the surgical protocol of immediate loading and immediate function.

Avoid Bone Grafts
This is in line with Prof. P.I. Branemark's philosophy of “Lesser Surgery to Treat More Patients” (Fig. 1).

With increased costs and patient morbidity due to bone grafting, an increased patient resistance to implant treatment has been noted. An alternative method of treating implant patients who have suboptimal bone volume without bone grafting is made possible by using:

1) Angled implants in a titamed manner placed into available bone anterior and posterior to the maxillary sinus (Fig. 2).

2) Wider and appropriately shaped implants placed into immediate extraction molar sockets thereby avoiding socket or sinus grafting (Fig. 5).

High Primary Stability
An important factor for immediate loading success is high primary implant stability (greater than 45Ncm) which can be achieved by using a surface enhanced tapered implant design to enhance lateral compression of bone.

By underprepping, high insertion torque and primary stability can be achieved even in cases of decreased bone density such as is often the case in maxillary alveolar bone and as well as in osteoporotic patients. Primary stability can easily be measured during implant placement under a torque wrench (Fig. 4).

If 45Ncm insertion torque is not achieved, the implant should be removed and without further bone preparation a 1mm wider implant is placed. This usually results in adequate primary stability of 45Ncm for immediate loading. If 45Ncm insertion torque is still not achieved then again the implant can be removed and replaced with an even wider diameter implant if the available bone width permits. This usually results in adequately high insertion torque and primary stability (more than 45Ncm). If despite this, adequate primary stability is not achieved then immediate loading is not recommended.

One Abutment One Time
After bone milling to remove any interfering bone, transmucosal primary abutments are placed on the implants and torqued to 45Ncm at the time of surgery. These abutments are placed and then connected and torqued to 45Ncm directly on to the implant without an intermediate/transmucosal abutment (Fig. 11). This usually results in adequate primary stability (>45Ncm) which can be achieved by using a surface enhanced tapered implant design to enhance lateral compression of bone.

Prostho Driven Implant Placement
By using a silicone key of the facial surfaces of the existing teeth (Fig 5) or a silicone key of a diagnostic waxup (Fig 6), it is possible to place the implant in the correct position and angle so that the screw access hole can exit in the correct place to allow for screw retention.

In order not to loose significant orientation, extractions are not performed all at once prior to implant placement but are rather performed one at a time followed by implant placement so that the silicone key can direct the implant surgeon (Fig. 7).

It is very often necessary to use an implant with a built in angle of 12°, 24° or even 50° so that the case can be screw retained.

Screw retention is an absolute requirement for biological reasons (to avoid risk of inflammation due to excess cement) as well as the ease of handling of immediate loading in a surgical environment.

Bite registration is started prior to extraction of all the teeth in the mouth/arch case so as not to loose the centric relation and vertical dimension (Fig 8). The extraction sockets are inspected and assessed after bone milling to ensure the extraction socket walls is inspected and assessed (Fig 12). In healed sites where possible the “punch” technique is used (Fig 15).

Alternatively minimal flaps are raised where indicated.

This flapless/punch technique/minimal flap approach results in minimal or no soft tissue change thereby allowing the restorative dentist/prosthodontist to proceed with the provisional acrylic screw retained teeth in the same day and permanent ceramic screw retained teeth in 1 week in the case of multiple implants. In the case of the single implant the full zirconia screw retained tooth can be delivered in 6 hours on the same day.

Number of Implants
In edentulous cases 4 to 6 implants (lips 14 & 15) are placed per arch depending on:

1) Bone volume and quantity
2) Implant length & diameter
3) Implant distribution (A-P spread)
4) Patient’s age
5) Patient’s finances (cost to benefit ratio)

Prosthetic Protocol
The prosthodontic protocol of SameDay Dental Implants & Teeth is focused and designed around the patient’s needs. It’s fast, efficient and doesn’t compromise quality. The patients are never left without teeth for more than six hours. As a result treatment acceptance is high.

All implants with good primary stability (>45Ncm) are immediately loaded with screw-retained teeth. For single implant cases, the final all ceramic screw retained tooth is fabricated and delivered to the patient within six hours. For multiple implants cases, temporary screws retained acrylic teeth are fabricated with screw-retained ceramic screw retained all ceramic or metal ceramic teeth are delivered one week later.

Timing of Immediate Loading
Immediate Loading Dental implants either should be loaded the earliest possible (never exceed ten days after primary stability) or alternatively two months after placement. This is because the so-called initial primary stability (mechanical stability) that an implant has, starts to drop gradually and the implant can become more prone to failure if forces are applied. Fortunately, simultaneously a “secondary stability” (Ossosintegration) starts to build up. The sum of the two “stabilities” which is demonstrated on the stability graph (Fig. 16), gives us the “total stability”. As a golden rule implants ideally should never be disturbed during the “stability dip” period.

Preoperative Preparation
In order to achieve this protocol, preoperative screening and detailed surgical and prostho-
the zirconia core and eventually bakes the porcelain on to it. Four to six hours later the permanent tooth is placed into the mouth of the patient. The prosthetic screw is torqued down to 45Ncm. A periapical x-ray helps to verify the perfect fit (Fig. 20) on to the implant (Fig. 20). Occlusion is checked and verified with the help of 0.1 mm “shimstock” articulating paper. The prosthetic access hole is obliterated with a sprayed filling (telfon tape + opaque composite resin) to allow easy access for retrievability in the future but simultaneously excellent esthetics.

Two months later upon matur- ation of the soft tissues and osseointegration, an additional x-ray is taken and if needed modifications are made to the prostheses.

Multiple Implants Reconstruct- ion

1) Temporary Teeth

For multiple implant cases (three unit bridges to full mouth reconstructions), the temporary screw retained prosthesis is fabricated by the in house dental lab within five to six hours and is checked and seated by the patient on the same day. Providing the temporary teeth are not uncomfortable, then only a great service to the patient but is also the best “diagnostic tool” for the restorative dentist to record all necessary information for the fabrication of the permanent teeth. If needed modifications are easily made to the acrylic teeth either directly in the mouth or in the dental lab.

The patient should be eval- uated for esthetics, phonetics and occlusion. Midline, plane of occlusion and buccal corridors are established. The “S” and “F” sounds are checked. The occlusal scheme is adjusted. For extensive cases the “mutually protected occlusion” (Fig. 21) is established which means that in centric occlusion, all teeth are touching but the posterior teeth have slightly heavier contacts compared to the anterior and on lateral and protrusive movements the anterior teeth are touching/guiding and there are no posterior “working” or “non-working” interferences (anterior guidance). X-rays are taken in order to verify the pas- sive fit of the prosthesis.

Once all necessary modifications are made and the patient is satisfied, we need to convey all newly established parameters to the technical technician. This is achieved by:

1) taking photos and videos to record the esthetic result, in the mouth and
2) using the so called “Concept trial mounting Procedure”, in the laboratory.

Alginates impressions and bite registration are taken from the temporary teeth, which are re- moved from the mouth and re- mounted again on the articula- tor. From the newly remounted temporary teeth the dental tech-nician fabricates:

1) a) a series of silicon keys which will guide him to fabricate the permanent teeth and b) an “An- terior Custom Made Guiding Table” (Fig. 22) which will allow him to reproduce the occlusal scheme of the temporary teeth to the permanent teeth.

2) Two minutes later the tem- porary teeth are placed again in the mouth of the patient and the occlusal scheme is adjusted. The patient is instructed not to bite hard onto the acrylic teeth and the occlusal scheme is adjusted. The instructions are provided to him.

2) Permanent Teeth Fabrication

a) The temporary teeth are unscrewed from the zirconia core and eventually bakes the porcelain on to the implant (Fig. 25). The patient is followed up by using the so called “Temporary Screw Retained” prosthesis (Fig. 23).

b) The zirconia core and eventually bakes the porcelain on to it. Four to six hours later the permanent tooth is placed into the mouth of the patient. The prosthetic screw is torqued down to 45Ncm. A periapical x-ray helps to verify the perfect fit (Fig. 20) on to the implant (Fig. 20). Occlusion is checked and verified with the help of 0.1 mm “shimstock” articulating paper. The prosthetic access hole is obliterated with a sprayed filling (telfon tape + opaque composite resin) to allow easy access for retrievability in the future but simultaneously excellent esthetics.

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CADCAM Advancements

Recently in order to eliminate this problem, at SameDay Dental Implant® Clinic, CADCAM full contour zirconia screw re- tained implants prostheses are used in selected patients (Fig. 26). Only the front 6 teeth are layered ( bucally) with porcelain to optimize esthetics and pas- sive abutments (titanium) are utilized to eliminate zirconia to titanium wear problems.

Even though zirconia is a techni- que sensitive material, the first results (one year) are very promising. However, only time will tell, if zirconia will be the material of choice. The advance- ments in digital impressions and CAD/CAM technology will fur- ther reduce the manufacturing time but most importantly will increase the accuracy and qual- ity of the dental prostheses.

Conclusion

By using tapered angled im- plants as well as wide immediate molar replacement implants in a prosthetically driven fashion it is possible in most cases to avoid bone grafts, achieve high pri- mary stability and treat patients with implants and passively fit- ting, screw retained teeth all in the same day (Fig 27).

This reduction in treatment time, immediate function and cost saving leads to high patient satisfaction and an increase in patient acceptance by patients.

Follow up

Two months later the osseointe- gration of the implants is radiographically and mechanically evaluated. In case of soft tissue recession, a pick up impression of the prosthesis is done. A new soft tissue model is fabricated and the dental technician can add porcelain accordingly (Fig. 25). The patient is followed up every six months for the first two years and thereafter according to his/her oral hygiene level.

Complications

The complications of the prosthodon- tic complications are porcelain fractures/chipping. These are easily repaired by reworking the teeth and relinking the porce- lain.
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used to etch the fitting surface of each veneer for 60 seconds as recommended by the manufacturers to obtain a clean ceramic surface for durable bonding. Empress ceramic primer Monobond-S was used as a silane-coupling agent for one minute and then air dried for five seconds according to the manufacturers instructions. One layer of Excite bonding agent was applied on the fitting surface of each veneer for 60 seconds then air thinned for 5 seconds Fig 10.

Tooth structure surface treatment:
Transparent strips were used on the proximal surface of adjacent teeth to avoid etching effect. Phosphoric acid 35 % was used to etch the enamel margins of the tooth preparations for 30 seconds and 15 seconds for the dentin areas. Copious air water spray was used to remove the acid for 30 seconds. One layer of Excite bonding agent was applied on the tooth structure and air thinned for five seconds. LED light curing unit was used for curing.

Vario-link Veneer light activated resin cement was used for cementation of the two laminate veneers. Optra Sticks were used for holding the labial surface of the veneer for better handling processes during cementation. Initial polymerization was made and excess cement was removed with a sharp tip of a probe. Dental floss was used to ensure that there is no trapped cement in between the embrasures. Final polymerization was completed. Intra oral proximal strips were used for better smooth proximal margins Fig.11.

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**By Dental Tribune MEA**

Under the high patronage of his Excellency the President of the Parliament of Lebanon Mr. Nabih Berry, Lebanese Dental Association known by its yearly BIDM (Beirut International Dental Meeting) has organized the 24th BIDM 2014 in collaboration with the Saudi Dental Society at BIEL in Beirut on 11-15 September 2014.

Pre-congress courses and workshops took place on September 10 at “USJ” - University St. Joseph - Faculty of Dentistry which was managed by Professor Ghassan Yared and Professor Carina Meharana, under the supervision of Prof. Nada Naaman, Dean of Faculty of Dentistry. On the first day of the event the attendees witnessed the ribbon-cutting ceremony followed by a tour of the exhibition exploring the latest dental technologies, equipment and services displayed by numerous key industry leaders and dental manufacturers.

The BIDM 2014 not only opened the doors to open-discussions and learning for the region but allowed the participants to build their skills and use the opportunity for networking by up-to-date knowledge and sharing experiences in the application of technology throughout the event.

President of Lebanese Dental Association, Prof. Elie Maalouf discussed during the opening ceremony: “With the theme “Planning for the Future” we encourage all Lebanese living in Lebanon and abroad, as well as all Arab and foreign dentists to attend this highly regarded meeting, in an effort to plan for a better future, not just scientifically, but culturally and politically.”

Prof. Maalouf further announced, “We should all denounce terrorism and extremist behavior. Attending this meeting and especially in this dire time will tell the world that we are strong together and will show them that no matter how hard they try to separate us we will always find a platform to meet. Lebanon is a small country but it has always reflected to the world a sense of modern civilization and openness to all cultures and religions. Lebanon does not tolerate extremist behavior and will not allow negative media to taint its reputation. Holding ambitious annual dental meetings with world renowned international and local speakers will show the world that we are competing with first world countries regarding scientific achievements”. 

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**Beirut International Dental Meeting 2014**

**BIDM 2014 Opening Ceremony**

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**Dentekris Precision Implants made in Germany**

**Hard and Soft Tissue Regeneratives**

**Wide Portfolio for Implantology, Periodontology and Oral Surgery**

**Thousand Times Proven Implant System**

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