Interview: “Our practice has doubled since implementing the Insignia system...”

By Kira Molloy, DTMDA

During the Ormco Forum Dubai, Dental Tribune MEA had a pleasure to speak to Dr Sonia Palleck and ask questions about the Insignia System.

If you could introduce yourself to our readers? My name is Dr Sonia Palleck. I have been in solo private practice for 30 years, but teaching is one of my passions. I am a part-time clinical instructor at the University of Western Ontario where I obtained both my dental and orthodontic degrees. I have a 14-year-old daughter whom I love spending time with.

When did you first hear about the Insignia system? I first heard about the Insignia system at an American Association of Orthodontists meeting I was looking into passive self-ligation using the Damon System, as I was using the MIT SmartClip at the time, and I thought of a product that applied lighter forces. I worked with an independent software company and in the end, I changed to Insignia as my standard set-up and with its computer-simulated treatment. Insignia made sense to me. So, I purchased 40 cases and have never looked back.

What prompted you to provide it as a solution in your practice? Once I implemented the Insignia system, I could immediately tell that something different was happening to what I was used to. The patient's occlusions seemed to come together almost effortlessly, and this was happening simultaneously with alignment. This saved time in the chair and time in braces, which was a win-win for both myself and my patients. I changed to Insignia as my standard of care and have been using it for all my full-fixed cases for the past seven years.

Could you explain how the Insignia System works? Insignia uses the Approver software to move the teeth to an ideal situation. The torque values are calculated from the initial position to the final desired outcome using algorithms developed by the inventor, Dr Craig Andreiko. This is revolutionary—and I do not profess to understand how these calculations are made—only that they are effective, in a clinical setting, in finding a solution for our patients.

Customised brackets are manufactured in clear jigs that are applied indirectly to the teeth for accuracy and co-ordinated archwires are produced to further promote a solid occlusal foundation for the patient. By studying the Approver in over 2,600 cases, I firmly believe that there is a great deal of false knowledge in orthodontics that is based on high friction, high force appliances and that conclusions about what a patient's biology will tolerate have been erroneous and misleading. Insignia is showing us what is possible and also that simple intra-arch alignment has a much greater effect on the entire dentition and occlusion than has been taught in the past.

What are the main advantages of the system? Understanding how the Approver software works and what constitutes a good set-up versus an excellent set-up is what delineates the system's advantages. With the Insignia technique, knowing what to ask for is as important as knowing how to evaluate what is set up on the virtual teeth. Assessing what is delivered from using Damon or Insignia. They are gained in a shorter time. Our practice has doubled since implementing the Insignia system and I firmly believe it is because we have a reputation for clinical excellence using technology. By solving so many of the shortcomings of traditional braces systems, Insignia has allowed me to work on finishing and detailing cases to a level that was never an option before without excessive treatment time or increasing the number of appointments. Patients love the beautiful results that are gained in a shorter time.

What would you say to your colleagues who are hesitant about using the system? The cost factor stops a lot of doctors from using Damon or Insignia. They argue that Insignia costs more and that it is not justified. I could never put a price on happiness, but the simple fact is that efficient treatment saves money. Insignia has a fixed overhead cost for me and controls the practice's cashflow—we only have costs when there is production required. The patient's treatment that is not being solved is no longer being subsidised by others, which is a common theme with traditional orthodontics. So, in short, every Insignia case is profitable—this is how a business should run.

My impression of most doctors I speak to is that they harbour a fear of change. Changing any system in an orthodontic office is messy at the start. I think a lot of people look for reasons not to change rather than embrace the practice. Practitioners need to understand that once the kinks are worked out and they start practicing on the computer and not on patients, the end result is a gorgeous, streamlined practice that is a joy to work in.
Improving the facial balance in an adult using slow arch development techniques

By Dr Derek Mahony, Australia, & Dr Theodore R. Belfor, USA

Introduction

Anti-ageing is a branch of medicine focused on how to prevent, slow or reverse the effects of ageing, thus helping people to live longer and healthier lives. Recently, however, more evidence-based medicine has led to anti-ageing becoming a multi-billion-dollar industry. In the past few decades, the market for anti-ageing products and services has grown into a global industry valued at an estimated US$619 billion in 2013, up from US$362 billion just five years before. According to RCI Research, a publisher of technology market research reports based in Wellesley in the US.3

The recent medical literature and evidence-based medicine show that, as we age, there seems to be a loss of fat volume in some areas of the face, as well as a change in the morphology of the facial skeleton. Facial soft-tissue augmentation by injection has become increasingly popular as a minimally invasive option for patients seeking cosmetic facial enhancement. Replacing lost soft-tissue volume allowed for a more comprehensive approach to total facial rejuvenation. It has been demonstrated that orthodontic treatment with an intra-oral orthopedic dental appliance (Homeoblock, Ortho-Smile) increases soft-tissue volume and enhances facial symmetry, producing soft-tissue changes consistent with improved facial esthetics.

Case study

A healthy woman in her mid-sixties presented for treatment with a strong desire to improve her facial appearance (Fig. 1). Her oral hygiene was good and there was no active periodontal disease. She had headache symptoms and clinical examination showed a disc displacement with reduction on her right side, with a maximum jaw opening of 38 mm. Her centre line was displaced 2 mm to the right and lined up when she closed on the bite block, her occlusion freed up and the muscles realigned the mandible so that her centre line lined up correctly. Her headache symptoms were relieved in three weeks and her maximum opening was improved to 42 mm. The patient continued Homeoblock treatment for nine months.

Intra-oral and extra-oral photographs were taken to monitor treatment, and a 3-D stereophotogrammetry was performed. Extra-oral 3-D digital photographs were taken with a facial capture system (3dMD/Kodak). A facial capture system (3dMD) is ready to be used. It incorporates the projection of a unique, random light pattern that is used as the foundation for triangulating the geometry in 3D. The capture takes 2 ms per frame. The data is processed and a highly precise < 0.5 mm root mean square of the distance measured is calculated, creating a digital model of the patient that is ready for immediate clinical use. Stereophotogrammetry for quantifying facial morphology was introduced in a study published in the Journal of Dentistry in 1995. It was concluded that “stereophotogrammetry is a suitable 3-D registration method for quantifying and detecting development changes in facial morphology.”

Evaluating the patient’s face over the nine months of Homeoblock treatment for her temporomandibular dysfunction showed a change in the morphology of the face (Fig. 3). Morphometric analysis was performed by superimposing before and after X-D images and using finite element modelling. Thousands of triangular reference points were used to establish the change. The blue area indicated no change and the red to orange areas showed an increased dimension of up to 2 mm. We saw an increased volume above and under the eyes, the zygomatic region, the upper lip, and the marionette and pre-jowl areas. From the facial photographs, we could see a reduction in the lines, wrinkles and depressions (Figs 4 & 5).

After nine months, the patient’s facial changes prompted her to go forward with injections of dermal fillers. She was given 1 ml of Restylane (Galderma) for lip enhancement and two 1.3 cc corrections with Radiesse (Merz Aesthetics) in the pre-jowl and marionette areas and along the inferior border of the mandible, and the inferior and lateral borders of the zygoma (Fig. 6).

Results

Post-treatment, the patient’s face appeared more youthful with better defined cheekbones and a firmer jaw line. The skin appeared smoother with fewer lines, wrinkles and depressions (Figs 7a & b).

Discussion

Facial changes related to palatal expansion are clearly outlined in Flinn: “The maxillary complex shows a change in size (and/or mass) allied with an increase in structural complexity, in association with biological processes.” Palatal expansion, presumably, switches on osteoblastic genes associated with active bone deposition and concomitant remodeling of the spatial matrix ensures in relation to the changes around the eye, we must recall that the maxilla forms the floor of the orbit and skeletal changes may become apparent after expansion, specifically, changes in orbital morphology may be reflected on the skin of the face: as the lower eyelids become tighter, the lateral canthus becomes more horizontal, facial width increases, particularly at the zygomatic-maxillary sutures, and the transcranial form, putatively, not only functions better, but looks more attractive. These changes have been documented in children, where palatal expansion is an everyday occurrence. The current article documents similar changes in a non-growing adult. Combining the results of palatal expansion and the placement of dermal fillers, we obtained a very satisfactory improvement in facial aesthetics.

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Fig. 2: The Homeoblock appliance.

Fig. 3: The pretreatment face, the post-treatment face at six months and nine months, and finally, a morphometric evaluation of the change.

Fig. 4: Morphometric evaluation of the final results: finite element analysis showed increased facial volume with a directional change of almost 4 mm, indicated by the red to orange colour.

Fig. 5: Superimposing the red post-treatment face over the blue pretreatment face, we can graphically illustrate the volumetric changes that occurred during our treatment. There was an increase in volume in the frontal, superorbital, inferior orbit, zygomatic, nasal base, upper lip, nasolabial depression, and marionette and pre-jowl areas.

Fig. 6: Morphological facial changes in the lips, zygoma and jaw area after the placement of 1 ml Restylane and 1.3 cc Radiesse. Note the deeper red to orange colour in the areas where the injections were placed.

Fig. 7a & b: Before and after facial photographs.
Indirect bonding: Digital technique vs conventional method

By Drs Arturo Fortini, Alvise Caburletto, Elisabetta Carli, Giulia Fortini & Francesca Scilla Smith, Italy

One of the peculiar features of straight-wire techniques is the in-built tip, torque and in-out adjustments in the brackets, which reduces the need for making first-, second- and third-order bends on the arch. It follows that the precision in the positioning of the brackets is of fundamental importance for making the correct adjustments and for the consequent predictability of the result, thus making bonding one of the most important steps of the whole treatment.

With direct bonding, there is a high margin of error in bracket positioning, due to both the dental professional’s experience and to difficulty with visualisation. The positioning errors that can be made are on the horizontal, vertical and mesiodistal axes, and can create the need to reposition the brackets during orthodontic treatment, resulting in a waste of time. Over the years, indirect positioning techniques have been developed to make positioning more precise and to make the procedure as fast as possible. The aim of this study was to compare a new, digitally assisted method of indirect bonding (Transfer Bite Leone) with the conventional clear two-tray technique, using the split-mouth method to evaluate the amount of positioning errors that can be made in the horizontal, vertical and mesiodistal axes, and to compare precision and accuracy.

In order to avoid differences due to placement, we used the same dedicated programme for both methods. STL files, obtained from intra-oral arch scanning or stone model scanning, were loaded and processed with the Leone Maestro 3D Ortho Studio software (AGE Solutions). This digital tool permits the segmentation and width and height measurement of the teeth, and the subsequent determination of the long axis and the average height of the clinical crowns, in order to virtually arrange the brackets in the correct position. The dentist can then change the positioning, torque, the tip and the rotation to obtain an absolutely individualised and strategic positioning of the brackets for the case.

Once the ideal position of the brackets had been obtained, we used the Maestro 3D software to obtain a file that allowed the 3-D printing of the model in which, in the left hemi-arch, the brackets were integrated to be able to use it to produce the conventional thermofomed clear trays that would contain the brackets to be placed in the mouth. In the right hemi-arch, using the software, we designed a Transfer Bite that permitted precise positioning of the brackets. The Transfer Bite is made of biocompatible material and is produced using a high-precision 3-D printer according to specific parameters.

Our split-mouth clinical investigation protocol was accepted by the American Association of Orthodontists committee for the table clinics that we presented at the 2017 annual congress in San Diego in the US (Fig. 2). This procedure clearly demonstrated the limitations of the conventional two-tray technique: inconsistent accuracy, an excess of composite around the base of the bracket that cannot be removed during the bonding step, and difficulty in removing the thermo-printed support (Figs 3 & 4).

The Transfer Bite system with positioning devices was found to be better because it allows the clinician to have a complete view of the base of the brackets, optimising the removal of excess composite (Fig. 5). In addition, the Transfer Bite, compared with the thermoformed trays, has greater stability on the dental arches, with an even better precision result, and aids the dentist in repositioning the brackets in a detachment case.

Our experience of using the Transfer Bite system on 12 patients allows us to confirm that this new indirect bonding method is simpler, easier and more accurate than the conventional method. Furthermore, it proved to be a less operator-dependent technique, allowing even less-experienced clinicians to achieve optimal results.

Editorial note
This article was originally published in ortho international magazine of orthodontics, issue 2/2018.

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Andy Wallace describes a case that successfully combines fixed orthodontics and bleaching with the strength of composite edge-bonding restorations.

Happy patient with durable, natural outcome

By Dr Andy Wallace, UK

A 49-year-old female attended Bachelors Walk Dental because she was unhappy with the appearance of her upper and lower front teeth (Figures 1a and 1b). She wanted them straightened to create a more attractive smile and was hoping to have removable orthodontic appliances. She explained to the patient that without treatment, the malalignment might worsen but there were a range of options she could consider.

‘Instant orthodontics’ could be accomplished with veneers but this method would require heavy preparation, which could result in significant damage to the tooth structure and possible loss of vitality. Veneers placed after invasive preparation would probably have a lifespan of less than ten years. She was also advised that her teeth could continue to crowd, even after veneers were fitted. Therefore, retainers might still be required.

Orthodontic choices

The Inman Aligner, clear aligners or fixed appliances were the options offered to the patient. The Inman Aligner would be a quick and inexpensive way to correct the incisors, but would have limited success with the canines and gum levels. Clear aligners could potentially result in a similar outcome to fixed braces. They are discrete, but have a longer treatment time and are more expensive.

Fixed appliances offered the most potential for improving the aesthetics, and could be used to achieve the most controllable and predictable outcome.

A full orthodontic and diagnostic assessment was undertaken. The patient had a skeletal I classification, with moderate upper and lower incisor crowding (Figures 2a and 2b). She wanted them straightened to create a more attractive incisal edge, once the teeth had aligned.

The patient was informed that after alignment, additional composite bonding would be required (Figure 4), using the align, bleach and bond (ABB) protocol, pioneered by Tif Qureshi (Qureshi, 2011).

The relative positions of the teeth, lips and face were recorded using Spaceware, the diagnostic dental crowding software developed by Intelligent Alignment Systems (IAS). This calculates the space requirements and serves as a prescription to the laboratory for the Adobe Illustrator digital preview.

Monocrystalline sapphire brackets were pre-positioned and transferred into indirect bonding trays, ready to be bonded intraorally. The brackets were placed in the ideal position outside the mouth to save time and reduce the possibility of any errors during the bonding process. The teeth were isolated and the brackets attached, following standard resin cementation protocols.

A series of nickel titanium wires were used, ranging from .012 to .016 to .020, as the arches aligned. The patient was seen for review at monthly intervals. The teeth were shaped progressively with IPR strips to create the necessary space. IPR of 1.4 mm was carried out on the upper arch and 1.6 mm on the lower arch.

Alignment was completed after seven months and the patient approved the end result.

Whitening and retention

Following bracket removal, impressions were taken to allow temporary vacuum-formed retainers and bleaching trays to be manufactured. Chairside whitening was completed with Philips Zoom 6% hydrogen peroxide gel and the Philips Whitespeed lamp. A colour change from A1 to A2 shade was recorded (Figure 5).

Tooth preparation using a diamond bur included the removal of unsupported enamel and minimal roughening beyond the enamel composite interface. Venus Pearl Opaque Light Chromatic (OLC) shade was placed in a triangular section, following the ‘reveres triangle technique’, as described by Tif Qureshi (Qureshi, 2016).

The BL enamel shade, with small BXL highlights, was placed in a single layer. This technique offers an aesthetically pleasing outcome by helping to address irregularities and incisal edge wear, as well as minimising chair time and increasing the strength of the restoration. Both applying a single layer of the opaque dentine shades and the chosen shade of the enamel composite reduces the risk of introducing errors or bubbles.

I have been using Kulzer Venus composites for a number of years. Venus Pearl lends itself very well to the reverse triangle technique. The enamel shades are sufficiently opaque to
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mask the joins when edge bonding and lengthening teeth. They blend well to the natural enamel and adapt perfectly to the colour of the surrounding dentition.

**Durable result**
Polishing was completed using the Kulzer Venus Supra Polishing kit. Its extensive silicone range is filled with microfine diamond powder. The pink pre-polishers are effective for removing scratches and creating secondary anatomy, while the grey ones give a great, long-lasting finish. A final matt was achieved using aluminium oxide paste on a felt wheel. New vacuum formed retainers and bleaching trays were fabricated for the new shape of the teeth. They would help to retain the treatment outcome and maintain teeth whitening. I recommended three to four days of top-up bleaching, using Philips Zoom Daywhite, three times per year.

At the three-month follow-up appointment, I found that the upper retainer wire had debonded. The patient was instructed to wear the removable retainer full-time while the laboratory made a new wire.

The patient attended the surgery the following week and the new retainer wire was bonded in place. New vacuum-formed retainers were fabricated after approximately two years. The patient continues to be seen every six months for her examination and review.

We were both delighted with the ABB treatment outcome. The composite provided a long-lasting, natural restoration. At the three-year recall appointment, the edge-bonding had no chips or appreciable wear. No further polishing had been undertaken since the original treatment and only the very slightest loss of shine can be seen (Figure 8). At the next appointment, I plan to spend a few minutes repolishing.

The patient has maintained the whitening beautifully, using the three by three protocol - three days whitening, three times per year.

The patient was so pleased with the final result, she has since recommended several new patients to the practice (Figure 9). Most have proceeded with similar minimally-invasive treatment. Offering alignment, bleaching and bonding is a very effective way of attracting new clients.

**References**

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**Round Table Trainings**

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