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

By Kinga Mollor, DTM&DA

During the Ormco Forum Dubai, Dental Tribune MEA had a pleasure to speak to Dr Sonia Palleck and ask questions about the Insignia System. Please 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 MFI SmartClip at the time, and wanted something that applied lighter forces. I worked with an indirect 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 patients’ occurrences 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 and what is set up on the virtual is as important as knowing how to communicate what is required. The patient’s treatment conclusion, 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 would you say to your colleagues who are hesitant about using technology? 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 brace 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.

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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$162 billion just five years into a global industry valued at an US$162 billion in 2019.

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This article, we show how orthopaedic/orthodontic appliance therapy, in conjunction with the placement of dermal fillers for the reduction of lines/wrinkles and depressions in the face, can produce desirable facial soft-tissue enhancement. Furthermore, we show that the volumetric changes achieved by this combined treatment approach can produce a desirable result, namely a more youthful appearance.

Case study

A healthy woman in her mid-sixties presented for treat-ment 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 exami-nations showed a disc displacement with reduction on her right side, with a maximum jaw opening of 38 mm. Her centre line was placed 2 mm to the right and lined up when she opened > 10 mm, indicating that she had a mandibular displacement to the same side. A Homeoblock appliance, with a 5 mm bite block on the right side (to decompress her temporomandibular joint), was fabri-cated and delivered (Fig. 2). When she closed on the bite block, her exclu-sion fixed 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 photo-graphs were taken to monitor treat-ment, and 3-D stereophotogramme-try was performed. Extra-oral 3-D digital photographs were taken with a facial capture system (3dMD). A fa-cial capture system (3dMD/Kodak) and stereophotogrammetry were used to generate a clinically accurate digital model of the patient’s facial form. This software is a useful technique for orthognathic surgery, 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 the relationship to the changes are obvious. 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 zygomatico-maxillary sutures; and the craniofacial complex, in association with biological processes. 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.

Discussion

Facial changes related to palatal ex-pansion are clearly outlined in studies. The maxillary complex shows a change in size (and/ or mass) allied with an increase in structural com-plexity, 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 the relationship to the changes are obvious. 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 zygomatico-maxillary sutures; and the craniofacial complex, in association with biological processes. These changes have been documented in children, where palatal expansion is an everyday occurrence. 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Indirect bonding: Digital technique vs conventional method

By Drs Arturo Fortini, Alvise Caburlotto, 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 both to the dental professional’s experience and to difficulty with visualization. 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 remaining composite around the base of the bracket in both procedures.

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 later change the positioning of the brackets, the height of the clinical crowns, in or- der to virtually arrange the brackets in the correct position. 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 remaining composite around the base of the bracket in both procedures.

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 brackets, optimising the removal of excess composite (Fig. 3). 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 allowed 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.

What is the ClearSmile Aligner?

ClearSmile Aligner employs a series of plastic appliances, called aligners, to gently reposition and align the teeth creating a beautiful new smile.

Made in Dubai supervised by orthodontists in UK

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Happy patient with durable, natural outcome

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

By Dr Andy Wallace, UK

A 49-year-old female attended Baches 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. I 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 the final outcome to be as successful and efficient as possible, so opted for fixed braces using clear brackets (Figures 3a and 3b). The patient was made aware that interproximal reduction (IPR) was needed to avoid excessive proclination of the incisors.

Permanent fixed and removable retainers were also required after treatment, as her teeth would continue to move throughout her lifetime.

**Effective alignment**

It was clear that the wear on the teeth would result in an irregular 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 Spacescan, 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 Archwave digital spray.

Monocrystalline sapphire brackets were pre-positioned and transferred into indirect bonding trays, ready to be bonded introrally. 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 BL4 shade was recorded (Figure 5). In order to enhance the chairside result, the patient was provided with home-whitening trays and Philips Zoom DayWhite 6% hydrogen peroxide, take-home whitening treatment to use for one week.

At the three-week review, the final shade was recorded as BL3/BL4, and the fixed retainer wires were bonded. To ensure correct positioning during cementation, the retainer wires were fabricated by the laboratory on an acrylic placement jig. Before bonding, I checked the passive fit of the retainer and jig. I assessed where the wire was going to sit, then removed both the wire and jig.

The back of the teeth were ‘ticked’ with a bur to roughen and remove some of the outer layer of enamel, which cannot be etched well. At this stage, I sometimes sandblast with aluminium oxide to remove any biofilm and the highly-fluoridated surface layer of enamel. This reduces surface tension, allowing a better etch pattern. The teeth were etched with 37% phosphoric acid gel and bonded using Kulzer Bond Universal. Bond was used because of its simple bonding protocol.

The wires and jig were put back in the mouth and a thin layer of Kulzer Venus Diamond Flow was placed, just deep enough to cover the wire. The composite was light-cured, as per the manufacturer’s instructions. The jig was cut off and more Diamond Flow was applied to the rough edges of the wire, wired by further curing. Venus Diamond Flow offers ideal viscosity, making it perfect for the placement of indirect fixed-wire retainers (Figures 6a and 6b).

**Composite aesthetics and strength**

The edge-bonding was completed using Kulzer Venus Pearl (Figures 7a and 7b) during the same appointment. The shade was selected from the Venus Pearl shade guide and judged to be between Bleach Light (BL) and Bleach Extra Light (BXL).

Tooth preparation using a diamond bur included the removal of unsupported enamel and minimal roughening beyond the enamel composite interface. Venus Pearl Opalite Light Chromatic (OLC) shade was placed in a triangular section, following the ‘reverse 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 opalescent 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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Fig 8: At the three-year recall appointment, only the very slightest loss of shine can be seen (Figure 8). At the next appointment, I plan to spend a few minutes re-polishing.

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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Andrew is a general dentist with special interest in Prosthodontics and Orthodontics and accepts referrals for full mouth rehabilitation, treatment of tooth wear, cosmetic dentistry and endodontics.

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**Final Programme**

**Round Table Trainings**

- Ihssan Hamadeh, Syria
  - Round Table Presentation: Gradia Plus: Aesthetics and Functionality

- Axel Dittrich, Germany
  - Round Table Presentation: How many types of zirconia do I need?

- Vincent Fehmer, Switzerland
  - Round Table Presentation: Advances in Digital Dentistry – for your daily practice

- Frederick Romer, Germany
  - Round Table Presentation: How many types of zirconia do I need?

- Elle El Khoueiry, Lebanon
  - Round Table Presentation: Perspectives of CAD/CAM Technology

- Stanislav Shishkov, Bulgaria
  - Round Table Presentation: How to Prepare Printed Metal for Porcelain

- Germin Versteeg, The Netherlands
  - Round Table Presentation: Digital Denture Design with 3Shape in Combination with 3D Printing on the Nextdent 5100

**Round Table Trainings**

- Table 1: 3Shape
  - Sinterex

- Table 2: Digital Dentures
  - Petermann Dental

- Table 3: Digital Dentures
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- Table 4: Digital Dentures
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