A cost-effective and custom solution for bruxism

By Akervall Technologies

In the U.S. alone, bruxism affects 10 per cent of people and as many as 15 per cent of children, according to the American Sleep Association. Once this oral habit has been identified, dentists usually prescribe a night guard or splint.

However, many types of night guards exist on the market that do not fit perfectly owing to the hard acrylic material from which they are manufactured. Furthermore, while custom-made occlusal guards are the best permanent solution, not every patient affected by bruxism can afford such an expensive mouth guard. Insurance may cover a night guard only once in the patient’s lifetime. Therefore, many cases of bruxism go untreated, causing continued permanent damage to patients’ teeth.

U.S.-based Akervall Technologies offers an effective custom-made and cheaper solution: the SOVA Night Guard, the thinnest over-the-counter night guard on the market made of thermoplastic material. While the SOVA Night Guard is only 1.6 mm thick, it has been designed to withstand 30 per cent more impact than a conventional mouth guard. Patients have reported that within the first week of wearing the night guard, the pain caused by bruxism or temporomandibular joint dysfunction (TMD) was significantly reduced or stopped. Moreover, they have remarked on SOVA’s stability and thinness, as well as the ease of drinking and talking while wearing it.

The technology behind the SOVA Night Guard is called Diffusix and it works with unique perforations and special crumple zones that prevent grinding forces from travelling to the teeth, relieving pain and reducing the risk of dental injury.

When a SOVA Night Guard is properly fitted, perforations oscillate on impact to diffuse grinding forces and guide those forces into the crumple zones. The perforations also allow for a true custom fit and natural flow of air and saliva. The SOVA Night Guard is made from a tough thermoplastic polymer material with a high tensile strength that is biocompatible, biodegradable and BPA-free.

The night guard starts as a flat horseshoe shape. After immersion in 130 °F (54 °C) water, the material becomes pliable. The night guard is then molded against the teeth until it hardens. Thus, rather than requiring taking an impression and sending it to the dental laboratory, the SOVA Night Guard can be molded in the office in under 5 minutes to provide the patient with an immediate solution. The appliance can be remolded up to 20 times. SOVA also works with orthodontics. As the teeth are moving, the night guard can be easily adjusted.

Akervall Technologies
1512 Woodland Drive
Saline, MI 48176
USA
www.sovanightguard.com

International Magazines
ortho international magazine of orthodontics

www.dental-tribune.com
A new era in digital orthodontics

By Jeffrey T. Kozlowski, USA

A true straight-wire appliance would necessitate patient-specific appliances based on an individual’s anatomy. Now, with advances in computer software and digital scanning and fabrication, that idea is a reality and a practical consideration for your practice. Customized Insignia™ is the first true straight-wire appliance. It involves two components: customized appliances—brackets, wires and placement gauges—and 3D real-time virtual treatment planning software. The 3D software enables clinicians to design the patient’s final occlusion on screen before initiating treatment, then prescribes the fabrication of patient-specific appliances to achieve the planned result. This concept is quite different from how clinicians customarily practice orthodontics. Traditionally, we choose to have certain effects, then repositioning brackets and making wire bends to guide the teeth into the desired positions. With Insignia, we begin with the end in sight and drive directly towards the desired end result.

Over 20 years in development, customized Insignia appliances offer the only comprehensive patient-specific solution available: The treatment planning process begins with accurate PVS impressions. New clinical methods and materials make this procedure quick and easy. From the impressions, the pretreatment malocclusion (T1) is digitized into a precise mathematical model of the patient’s skeletal and dental anatomy and the proposed setup (T2) designed (Fig. 1a-b).

See Dr Craig Andreollo’s discussion. The setup is loaded into the Insignia web portal where, used on clinical experience, functional and esthetic preferences and intimate knowledge of the patient’s specific orthodontic needs, the clinician can easily customize it using the Insignia Approver software (Fig. 2). The included software offers clinicians unprecedented control in determining accurate tooth position and in their ability to make changes directly to the 3D models without relying on an operator’s interpretation of instructions. Insignia does not determine treatment mechanics nor prescribe tooth movements and it allows clinicians to use the mechanics and adjuncts of their choice. As doctors modify the desired final outcome in the Approver software, they can view in “real-time” how the changes affect the opposing occlusion. Once the clinician finalizes the ideal setup, the Insignia software engineers the customized brackets, wires and precision bonding placement gauges to the exact prescription required to deliver the desired end result accurately and efficiently.

My experience with Insignia is with both the customized passive self-ligating appliance (Insignia custom SL) and Insignia using stock Damon® System appliances. The Insignia software can be used to fabricate patient-specific conventional twin brackets and aligners as well. You can also use Insignia software with stock appliances (Orthos®, Inspire ICE™ and, as I mentioned, Damon) for the supreme balance of the week, the bonding approach and control in designing case outcomes.

The difference between customized Insignia and Insignia using stock brackets is the third-order customization (torque) that is engineered into the customized brackets. This difference saves considerable treatment time and effort over using a “best fit torque” stock appliance. Having treated with both customized Insignia SL and Insignia using stock Damon brackets, I can attest to the superior value of the customized appliances.

The Clinical Evaluation
My initial experience with customized Insignia SL began in 2007 when I conducted an extensive clinical treatment trial treating 41 patients to completion. The only limitations on the selection criteria were that patients have no impacted teeth, no pending restorative needs, and must not exhibit poor oral hygiene. The criteria were limited in these ways simply because it wouldn’t have been feasible for me to coordinate the ancillary procedures from across the country. At the time, I was in the process of opening my new office in Connecticut and the clinical evaluation was to be conducted at Ormco in California—nearly 3000 miles away. For operator consistency, I played the role of doctor and assistant, performing the diagnoses, treatment planning, initial bondings and wire changes, providing all mechanics for 100% of treatment. Full records were taken of each patient, including PVS impressions and ICT™ scans (Bruxing Scans, International, Hatfield, PA) for diagnostics and treatment planning using the Insignia interactive Approver software. Based on my previous experience with Damon System appliances, I estimated that treatment time for the 41 patients would average 175 months.

While I wouldn’t recommend selecting this many patients to begin treating with customized Insignia SL for the first time, I am convinced that the best way to learn Insignia is to submit cases regularly. Regular case submission allows the clinician to relate what is designed in the digital environment to the clinical experience and final results. This positive feedback loop of learning will help the clinician design each successive Insignia case with a higher level of understanding and accuracy and hence be more successful with its application. My experience has been that clinicians who regularly submit Insignia cases are more successful with it than those who start only a few cases and wait to see how they work out. My skills improved substantially through the first 10 to 20 cases, and like using any new appliance, it takes a bit of time to learn the nuances. I also strongly recommend doctors initially select easier cases, and then add more challenging cases when they become familiar with the software and clinical protocols.

In late February, 2008, in a one-chair evaluation at Ormco’s Insignia manufacturing facility in Glendora, California, I bonded all 41 patients over a five-day period. This intensive week of bonding proved to be my first insight into the potential efficiencies of Insignia’s direct view/indirect bonding process. After just the first few patients my bonding technique using the placement gauges significantly improved and during the balance of the week, the bonding appliance averaged less than one hour, including preparing the teeth, bonding the brackets, placing the brackets, engaging the wires, attaching the elastics and reviewing the patient instructions. And all without the help of a clinical assistant!

We all know the importance of placing brackets correctly, but few of us can consistently and quickly place each bracket precisely where it needs to be. With Insignia, you design the final occlusion and the customized appliances will be fabricated with custom torques, custom braces (in-out) and custom wires. You specify your bracket positioning preference (e.g., center of the tooth, more gingival or more incisal) so that the custom appliances are designed to your specifications; thus, it is possible for your Insignia SL appliances to clinically match the placement of your direct bonded appliances.

To transfer the Approver-designed appliances to the mouth, Insignia provides customized placement gauges that place the brackets in the “right spot without need for adjustment” (Fig. 4). The precision built into the brackets is matched by the accuracy of the placement gauges that offer the benefit of a direct view with the precision of planned indirect bonding.

The major challenge in conducting this clinical evaluation was logistics. Managing treatment from so far away was a daunting experience at first; however, the process reinforced the importance of good clinical decision making and its impact on clinical efficiency. Gone was the luxury of shortening patients’ appointment intervals to accommodate case management alternatives when we need to make clinical decisions based on how a patient responds. It was thus incumbent upon me to re-create mechanical systems that would withstand the eight- to ten-week appointment cycle of my West Coast trips.

At six months, the first patient finished treatment and by December 2009, after just 21 months, the last patient had his appliances removed. To determine the value of customized Insignia SL for my own practice,
Easy bonding of orthodontic brackets

New abrasion technique

By Medivance Instruments Ltd.

Abrasions have long been discussed as treatment in all areas of dentistry. With AquaCare, UK-based Velopex International has introduced an innovative and contactless way to abrade and polish teeth and orthodontic appliances.

The unit combines four powder cartridge systems with an easy-to-use multipurpose handpiece—can even double via the foot control as a tool for incognito lingual brackets.

The enamel of the tooth to be treated can be ‘etched’ to the exact size of the orthodontic bracket.

The risk of saliva contamination is greatly reduced because the aluminum oxide dries the surrounding mucosa. This technique can be used to clean the orthodontic brackets.

Therefore, AquaCare is a superior tool for incognito lingual brackets as it is able to reach difficult internal surfaces in order to clean and attach the brackets.

Initially compared the results of this evaluation with my previous seven years of experience treating patients with direct-bonded Damon System appliances. This comparison helped me evaluate customized Insignia SL with what I used to do in my office—direct bonding. These 41 customized Insignia cases treated in an average time of 13.2 months—a full five months (28%) shorter than my estimate of 17.5 months (Fig. 3). I based the estimates on my previous seven years of experience with the Damon System appliance and before I had had any experience with Insignia. In my opinion, this difference alone suggests a dramatic increase in the efficiency of customized Insignia SL treatment. Another value indicator was the number of revisions bracketed needed to finish the customized Insignia SL cases, which was 50% less than my cases with direct-bonded stock Damon System appliances.

After completing the evaluation, I compared the results with comparable patients I later treated with Insignia using stock Damon appliances. This second comparison assisted me in placing a value on the patient-specific customized torque of the customized Insignia SL appliance. The 41 customized Insignia cases in the evaluation finished in 12.1 shorter treatment time (at 13.2 months) than the next consecutive 41 cases using Insignia with stock Damon brackets that I treated in my private practice (16.1 months). The average number of appointments for the 41 Insignia stock Damon cases was 10.2 versus 8 appointments for the 41 customized Insignia SL cases.

In terms of quality, a subjective evaluation I grant you, I felt that my customized Insignia SL cases finish with quality that equals or exceeds my direct-bonded Damon System cases or my Insignia cases using stock Damon brackets yet in less time with significantly less effort. I have felt confident enough with the customized Insignia case results to have shown them in presentations around the world and have been so pleased with the results that I now treat 70% of my cases with customized Insignia SL appliances.

This article highlights a few of the patients I treated in the clinical evaluation, demonstrating the quality of the results and efficiency of treatment.
Orthodontic supplies market: Report predicts highest growth rate in Asia Pacific

By DTI

PUNE, India: While North America and Europe are expected to have accounted for the largest share of the regional segments in the global orthodontic supplies market, the Asia-Pacific market is projected to register the highest growth rate over the next five years, a new report by market specialist MarketsandMarkets has found.

According to the research firm, the forces driving this development are growing efforts to increase awareness of advanced orthodontic treatments in the region and a very large patient population with malocclusion and jaw disorders. In addition, growth is being stimulated through increasing disposable income, coupled with a growing middle class and the stronger focus of global orthodontic and dental companies on emerging Asia-Pacific countries.

Overall, the global orthodontic supplies market is expected to grow further at a compound annual growth rate of 8 per cent over the forecast period of 2016–2021 and is expected to reach US$4.71 billion by 2021.

Among the three major product categories, fixed braces, removable braces and orthodontic adhesives, the fixed braces segment is expected to have gained the largest share in the global orthodontic supplies market in 2016. According to the analysts, this is primarily attributed to the greater affordability (compared with removable braces) and increasing adoption of fixed braces among adolescents.

The full report, titled Orthodontic Supplies Market by Removable & Fixed Braces (Brackets (Self Ligating, Lingual, Metal, Ceramic, Aesthetic), Archwire (Nickel Titanium, Stainless Steel), Ligature (Elastomeric, Wire), Anchorage Appliances, Adhesives), Patient—Forecast to 2021, can be purchased at the MarketsandMarkets website.

Perfect Orthodontic Performance

POP expansion screws

By Leone S.p.A.

The innovative and biomechanical orthodontic expansion screw POP is made of stainless steel and biomedi- cal techno polymer. The male screw is not in contact with the orthodon- tic acrylic resin; the function of the screw will not be influenced by the quality of the technical procedure and a non-compliant curing time.

Continuous expansion movement: the high pressure injection of the polymer allows the perfect copy of the male thread of the screw, thus ensuring a steady expansion trans- mission without the risk of unde- sired turning back in the mouth. The self-centring rectangular guides en- sure a biomechanical and absolutely controlled symmetrical expansion. The flat shape of the guides and their flexibility allow the gradual release of the expansion with a physiologi- cal orthodontic movement. The flex- ibility of the screw allows the adjust- ments of any dental regres due to inconsistent use of the appliance by the patient, thus being very effec- tive with holding devices following a rapid expansion treatment.

The high adaptability of the appli- ance enables a comfortable applica- tion in the mouth in the days fol- lowing reactivation. Two embossed arrows on the body indicate the direction of opening. When using a colour of acrylic resin similar to the polymer body, a white arrow pro- vided with the plastic placement tab may be easily applied to make the direction of activation visible.

The placement plastic tab, made of two pieces combined with a unique geometry, allows perfect protection of the holes from the acrylic resin during the packing procedure and facilitates the removal after the cur- ing cycle. The screw body is available in five colours.

According to the market review, the major competitors in the ortho- dentic supplies segment are 3M, Align Technology, Danaher Corpora- tion, Henry Schein, Dentsply Si- rona, American Orthodontics, Rocky Mountain Orthodontics, G&H Or- thodontics, Dentaurum and TP Or- thodontics.

Leone S.p.A.
Via P. a Quaracchi, 50
50019 Sesto Fiorentino, Florence
Italy
info@leone.it