Incorporating the Forsus™ Fatigue Resistant Device with the Incognito™ Appliance System

by Dr. Neal D. Kravitz

Dr. Neal D. Kravitz is a Diplomate of the American Board of Orthodontics, as well as clinical faculty and research advisor at the University of Maryland and Washington Hospital Center. Dr. Kravitz received his undergraduate degree from Columbia University and received a DMD at the University of Pennsylvania.

Dr. Kravitz has been published in multiple orthodontic journals, books, and educational materials. He lectures throughout the country and internationally on modern advancement in orthodontics and treatment planning. Dr. Kravitz currently maintains two orthodontic practices in South Riding, Virginia and White Plains, Maryland, and is a leading provider of the Incognito™ Appliance System.

Efficient non-extraction correction of Class II malocclusion is integral to the success of a busy orthodontic practice. While various methods exist to reduce overjet in patients with traditional labial appliances, treatment options were thought to be limited in patients receiving invisible orthodontic care, notably removable aligner therapy.

This article will review non-extraction correction of Class II malocclusion using the Forsus™ Fatigue Resistant Device in conjunction with the lingual Incognito™ Appliance System. Various set-up techniques will be provided, including: hybrid-lingual treatment (maxillary lingual and mandibular labial appliances) with laboratory-fabricated saddle bands and dual-arch lingual treatment with traditional maxillary bands.

The Incognito Appliance System features fully individualized, computer-designed and computer-manufactured lingual brackets and wires to deliver efficient and highly predictable invisible orthodontic treatment (Figure 1A-C).

The Forsus Fatigue Resistant Device is a spring-loaded, fixed Class II corrector, connected chairside from the maxillary first molar headgear tube to the mandibular labial archwire, resulting in rapid dentoalveolar compensation (Figure 2).

Figure 1A-C: Fabrication of Incognito™ Appliance System. Set-up models are scanned to create digitally designed, custom lingual brackets manufactured from cast gold.

Figure 2: Forsus™ Fatigue Resistant Device. Operates similar to a spring-loaded Herbst™ Appliance resulting in rapid maxillary molar distalization and mandibular incisor advancement. (Photo courtesy of Dolphin Aquarium, pink color added to highlight location of spring).
Hybrid-Lingual Treatment with Laboratory Fabricated Saddle Bands

A 31 year-old Caucasian female presented with a Class II division 1 malocclusion, moderate maxillary crowding with winged incisors, and agenesis of the mandibular left second premolar. The treatment plan included compliance-free Class II correction with a Forsus™ Fatigue Resistant Device. Even in compliant patients, correction of a >50% canine-Class II malocclusion may be inefficient with interarch elastics alone.

On the Incognito™ Appliance System prescription form, the laboratory technician was instructed to fabricate saddle bands on the maxillary first and second molars. The maxillary first molar bands were designed with a buccal occlusal headgear tube to receive a Forsus™ Correctors L-Pin (a preference of the author). The technician was instructed to provide good retention on the first molar band, extending its length to the gingival margin (Figure 3A-C). The author recommends the use of maxillary second molar saddle bands to ease wire insertion, open the occlusion, and reduce the risk of debonding.

After initial leveling and aligning, maxillary 0.016×0.024 and mandibular 0.016×0.022 stainless steel wires were placed and both arches were ligature-tied. Twisting steel-ligature can be cumbersome with lingual appliances; therefore, the clinician may consider placing a single or double power chain instead. The length of time needed to correct the majority of Class II malocclusion with a Forsus Fatigue Resistant Device is approximately 6 months (Figure 4A-I, 5A-J, 6).
Dual-Arch Lingual Treatment with Traditional Maxillary Bands

A 35 year-old African American woman presented with maxillary hyperplasia, Class II division 1, subdivision right malocclusion, mild bimaxillary dentoalveolar protrusion, and unilateral left-side posterior dental crossbite with corresponding functional shift. The patient was treatment planned for dual-arch Incognito™ Appliances with elastics for correction of the subdivision and crossbite. After six months of noncompliance with elastics, treatment with the Forsus™ Fatigue Resistant Device was discussed.

To prepare the arch for Forsus Correctors insertion, the maxillary first molar lingual brackets were removed and spacers placed. Two weeks later, traditional maxillary molar bands with occlusal headgear tubes were seated. Alternatively, the clinician may consider mailing the maxillary pre-treatment plaster-cast to Incognito System laboratories and order laboratory-fabricated saddle bands with buccal occlusal headgear tubes. (Traditional bands were opted for in this patient to expedite insertion of the Forsus Appliances.)

A segmental 0.018 stainless steel wire was cinched behind the first molar and bonded to the second premolar to prevent unwanted space opening. Ceramic brackets were placed on the mandibular canines and first premolars. Connecting the brackets was a segmental 0.016×0.022 stainless steel wire that was cinched and ligature-tied to receive the lower push rod.

Lingually, the patient received maxillary 0.018×0.025 and mandibular 0.016×0.022 stainless steel wires extending to the second molar. Prior to insertion, the maxillary archwire was expanded to aid crossbite correction. The archwire bypassed the lingual surface of the first molar band and was cinched behind the second molar tube. The maxillary arch was ligature-tied second molar to second molar and the mandibular arch was power chained for ease. Due to the skeletal dysplasia, bilateral Forsus springs were inserted (Figure 7A-I).

Conclusion

Incorporation of the Forsus Fatigue Resistant Device with custom lingual braces has enabled orthodontists to provide efficient, invisible, compliance-free correction of moderate to severe Class II malocclusions. It is another option available to providers of the Incognito Appliance System to both develop the smile aesthetically and correct the bite effectively.

Case photos provided by Dr. Neal D. Kravitz.