

# Stability and Relapse of Class II Correction Using the Forsus™ Fatigue Resistant Device

by Robert Miller, DMD



Upon completing his Orthodontic residency at the Medical College of Virginia, Dr. Miller entered the Air Force where he was the Chief of Orthodontics at Clark Air Base in the Philippines. After 3 years he moved to Charlottesville, Virginia where he practiced in a group private practice for 12 years. He currently has a private office located in Culpeper, Virginia. Dr. Miller is a diplomate, American Board of Orthodontics, and has published numerous articles in the JCO on adhesives and Class II Correctors.

Over-correction is the best collection of two words used to describe a clinical tip when treating all Class II non-extraction cases using any bite corrector. Most long-term data showing relapse will verify that.

Presented in this article are a collection of cases that show variations of relapse. All are one to two years in retention and were treated non-extraction during latent growth.

There are many ways the Forsus™ Fatigue Resistant Device can be applied at various phases of treatment. Dr. Duncan Higgins primarily uses this appliance as the engine that propels his Xbow™ Appliance, which, in my opinion, is an excellent replacement for the Herbst™ Appliance, and I have implemented this in my practice for that use.

If the Forsus appliance is used with conventional fixed appliances, the average treatment time I experienced is 26 months<sup>1</sup>. If we use SmartClip™ Self-Ligating Brackets preceded by the Xbow Appliance, we feel our treatment times will be reduced by 6 months or more, but we are still collecting data to confirm that. For this article, I would like to show a direct application of Forsus springs to the archwires, which from time to time may be needed after initial leveling and alignment of both dental arches.

## Patient 1 (EM)

This patient transferred to us wearing a trans-palatal arch and wearing headgear at night. Limited compliance resulted in a persistent overjet. In April 2002 progress records were obtained and at age 11.5 we decided to treat her with full fixed appliances and use Forsus springs to treat the malocclusion. Fixed appliances were placed in the summer of 2002. We kept the palatal bar although, in hindsight more expansion would have been beneficial.

Over ¾ of all Class II corrector cases in our practice require expansion, which is best accomplished early in treatment. Her Forsus appliance was applied directly to the archwire in

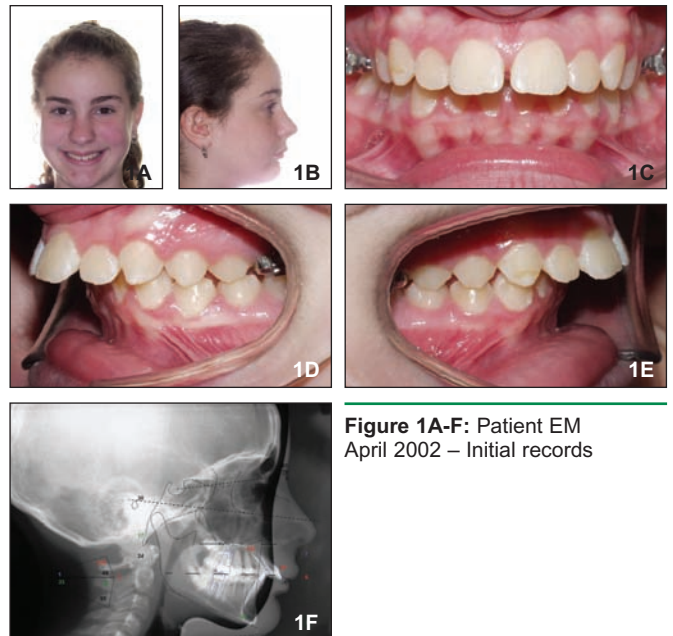


Figure 1A-F: Patient EM  
April 2002 – Initial records

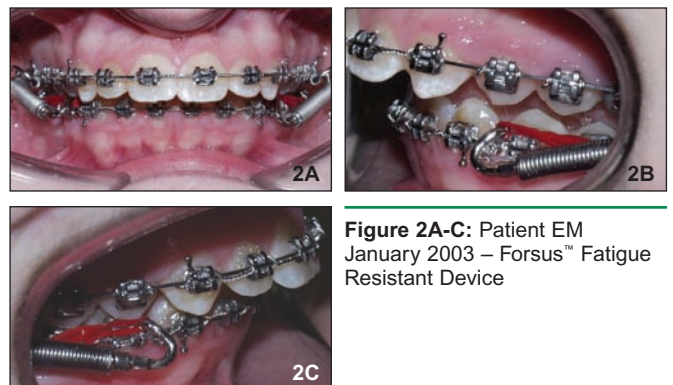


Figure 2A-C: Patient EM  
January 2003 – Forsus™ Fatigue Resistant Device

January of 2003 using a loop chain as a tie back which acts as a force limiter and reduces breakage. We now use a KX-3 module that works better because it does not need to be replaced. By July 2003 she was edge to edge and slightly open. This is a good sign, because she will relapse into an ideal Class I posterior occlusion. From August 2003, until the completion of her treatment (June 2004) finishing stages included repositioning brackets, finishing bends and vertical, then Class II elastics. In summary, we began treatment at age 11.5, her total treatment time was 23 months, and her 2 year post treatment records show a stable occlusion and near ideal incline plane relationships.



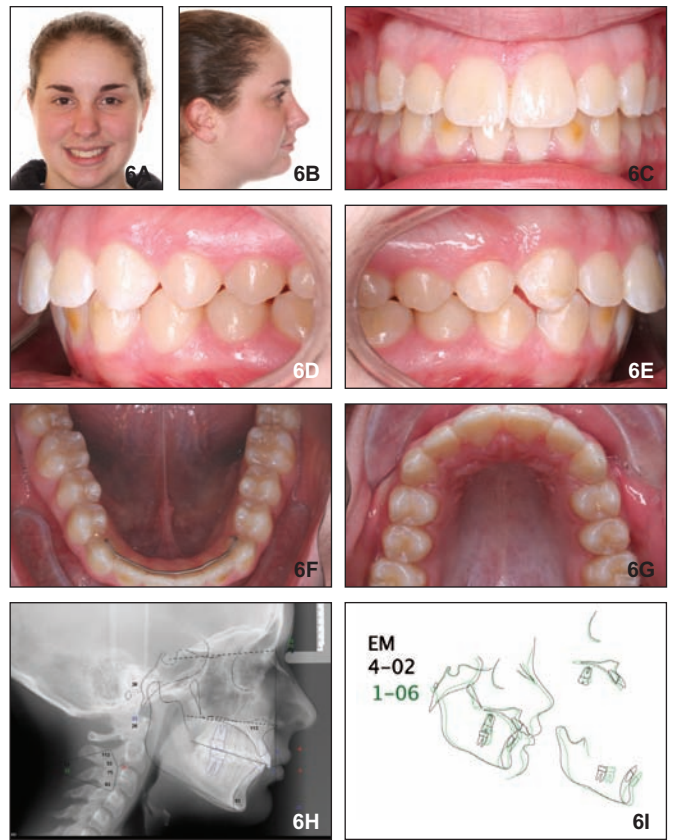
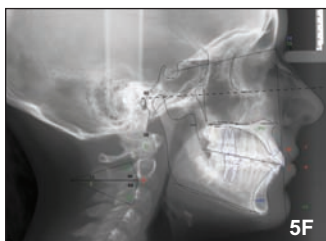
**Figure 3A-C:** Patient EM July 2003 – Forsus™ Fatigue Resistant Device over correction, ready to remove



**Figure 4A-C:** Patient EM August 2003 – Finishing elastics



**Figure 5A-F:** Patient EM June 2004 – Final records



**Figure 6A-H:** Patient EM January 2006 – 2 years post treatment

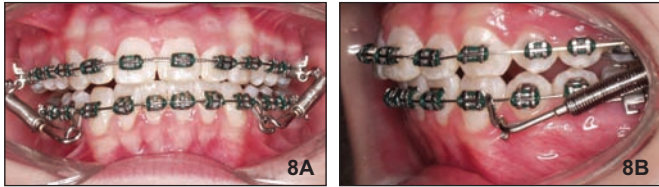
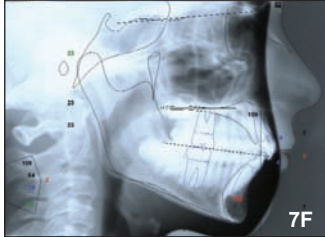
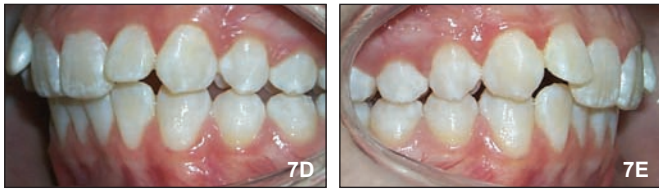
### Patient 2 (GW)

Initial records were obtained on 2-10-2000, which show a Class II malocclusion with procumbent lower incisors and a deficient mandible. Although he is moderately crowded, I decided to treat him non-extraction and use a fixed retainer to hold the full mandibular incisors. Appliances were placed March 2000 and initial leveling took 10 months. Torque was added to a 16x25 SS archwire (.018 slot Unitek™ Miniture Twin MBT™ Brackets with offset bases used) (see photos dated 2-5-2001). Forsus appliances were added on 2-27-2001.

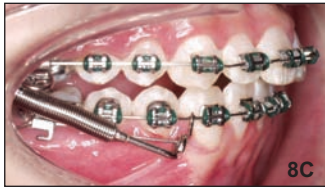
By August 2001 we overcorrected the malocclusion, and the bite opened. The August 2001 photographs show the removal of the Forsus springs (and the resultant over-correction). The following 4 months were used for vertical elastics for finishing. The final records on March 2002 show marked occlusal wear, especially on the canines. This is of particular concern because this patient now lacks what Herbst<sup>2</sup> referred to in 1932, later confirmed by Pancherz<sup>3</sup> as the “bite catching effect”. If the teeth are worn flat, relapse is more likely to occur. We decided to follow this case longer, and as you can see, it did remain unchanged from the final records, largely due to the over-correction as evident on the 3-yr. post treatment records. In summary, we initiated treatment at age 12.8 and he was in fixed appliances for 22 months.



**Figure 7A-F:** Patient GW  
February 2000 – Initial photos



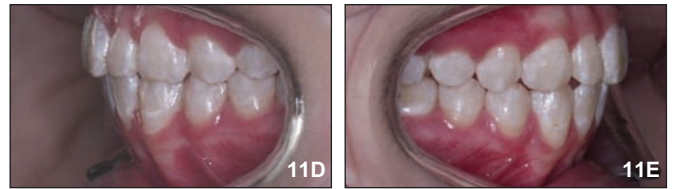
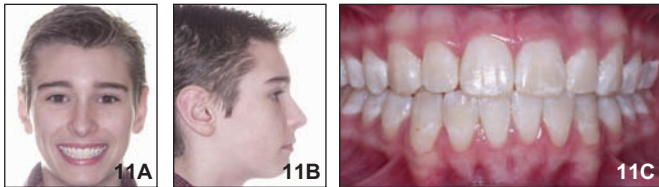
**Figure 8A-C:** Patient GW  
February 2001 – Forsus™ Fatigue Resistant Device progress photos



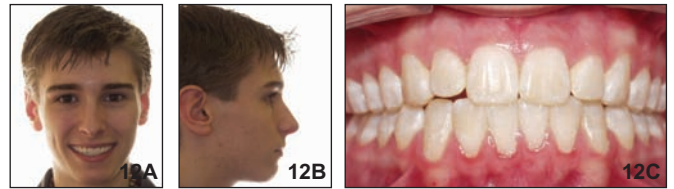
**Figure 9:** Patient GW  
August 2001 – Removal of push rod with ligature cutter



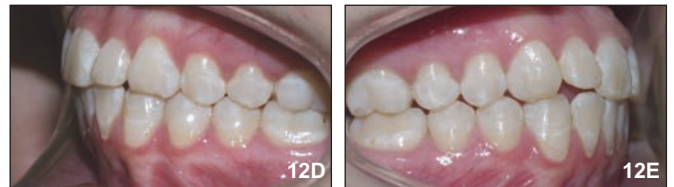
**Figure 10A-C:** Patient GW  
August 2001 – Forsus™ Fatigue Resistant Device removal (over corrected)



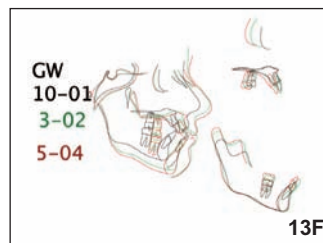
**Figure 11A-F:** Patient GW  
March 2002 – Final photos



**Figure 12A-F:** Patient GW  
May 2004 – 2 years post treatment



**Figure 13A-F:** Patient GW  
March 2005 – 3 years post treatment



## Patient 3 (NY)

Treatment was initiated in September, 1998 and one year of initial leveling was required to open the bite. Forsus springs were placed February 2001 and removed September 2001 (August 2001 photos show Class I). In the final photos taken 2 months after appliance removal she was not completely classified, but had steep incline planes. This settles in time in most cases, and in some cases, like this one, actually improves in time, again, due to the “bite catching effect”<sup>2,3</sup>. In summary, we initiated treatment at age 13.2, her treatment time was 39 months, due to multiple missed appointments. We did not complete our finishing objectives, but we are pleased with the outcome for reasons stated above.

The three cases shown represent a cross-section of a variety of results achieved with the Forsus Fatigue Resistant Device, the Class II malocclusion with minimal crowding and a normal mandibular plane angle can be corrected with long-term stability through dento-alveolar means.

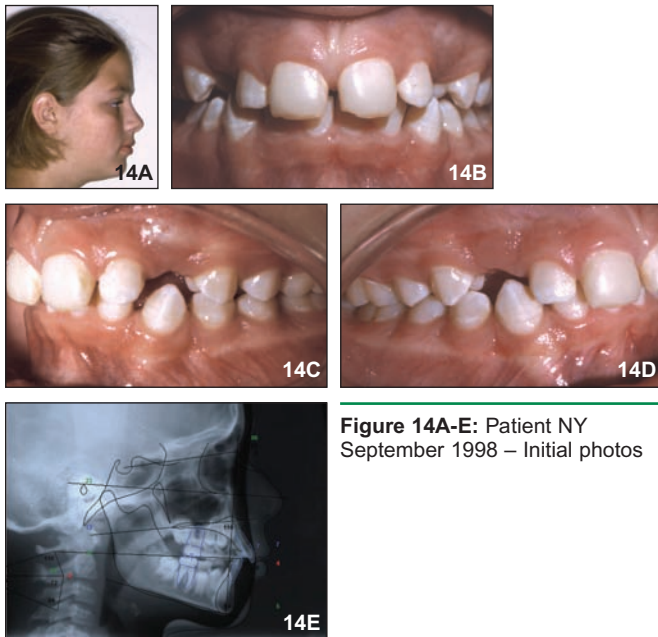


Figure 14A-E: Patient NY  
September 1998 – Initial photos

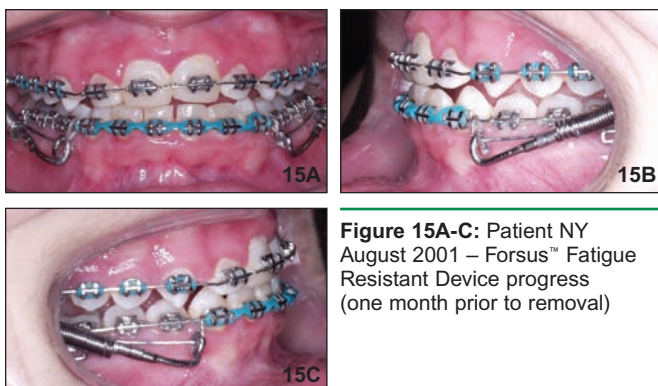


Figure 15A-C: Patient NY  
August 2001 – Forsus™ Fatigue Resistant Device progress (one month prior to removal)

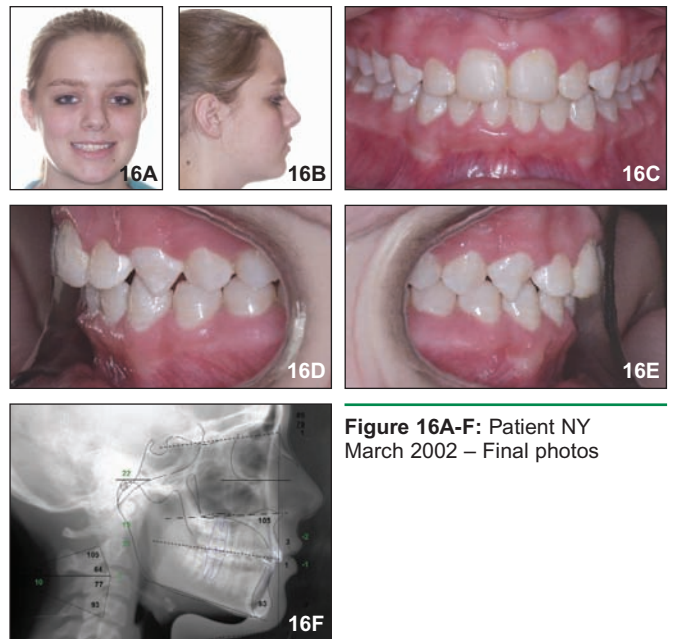


Figure 16A-F: Patient NY  
March 2002 – Final photos

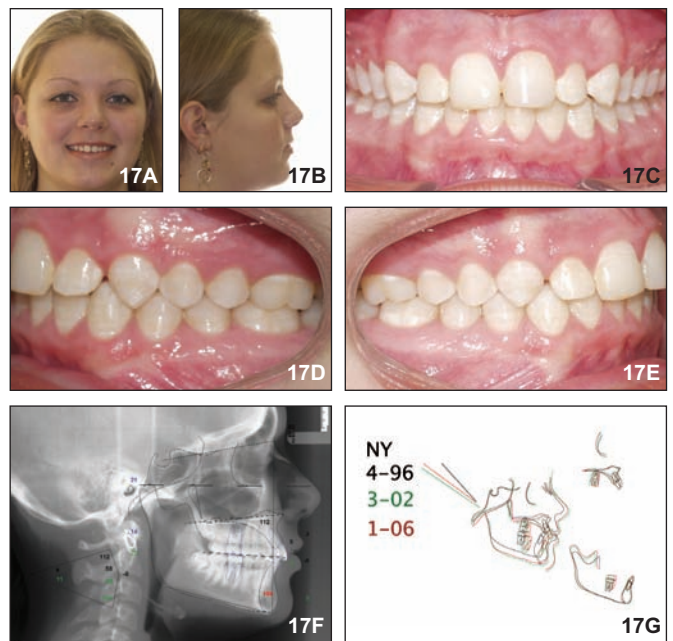


Figure 17A-G: Patient NY January 2006 – 4 years post treatment

1. In office data based on 34 consecutively treated cases (Non-extraction, Class II latent growth subgroup). July 31; 1EX61.
2. Herbst E. Der de und de atlas Grundriss Zahnärztlichen Orthopädie. Munich, la Alemania, J. F. Lehmann Verlag, 1910.
3. Pancherz H. Semin. Orthod. The Effects, Limitations and Long Term Adaptations to Treatment with the Herbst Appliance. 1997 Dec; 3(4) 232-43.