

Resolving Moderate – Severe Anterior Crowding with In-line Orthodontic Splints

Dr Gary Dorman leads us through the treatment of his own mandibular and maxillary crowding using In-Line orthodontic splints

In 2007 I read in FMC Dentistry Magazine about a German invisible orthodontic system called “In-Line.” The system’s manufacturers, claimed that the system was simpler and more competitively priced than many similar systems available on the UK market today.

In my own case I had for a long time been unhappy with the anterior alignment of my teeth, which were crowded in both upper and lower arches. So I decided to take upper and lower impressions and a wax bite and send them to the laboratory to see what could be done.

Initial Situation

The severity of the crowding was not immediately apparent from a frontal view (Fig. 1). However, the mal-alignment is more clearly seen when viewed from occlusion (Fig. 2, 3). UR 2 was severely mal-aligned behind UR1. UR3 was labial to UR2 and UR4. UL2 was labial to UL1. LR2 was quite severely lingually mal-aligned, whilst LR1,LL1 and LL2 were also moderately mal-aligned. In addition my pre-molars were slightly in-standing.



Figure 1 Initial situation frontal view

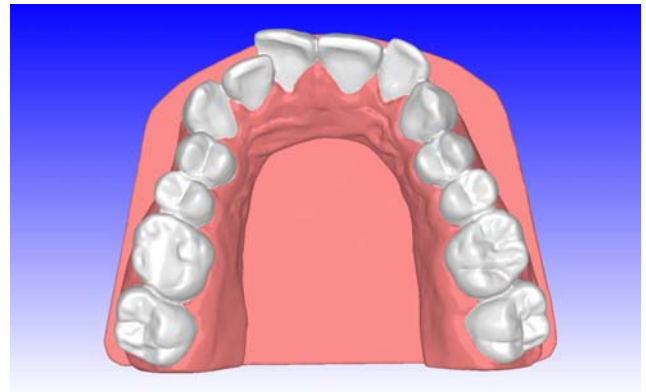


Figure 2 Occlusal view of maxillary anterior crowding

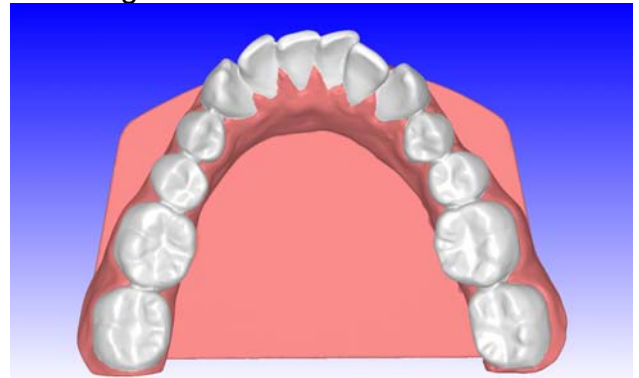


Figure 3 Occlusal view of mandibular anterior crowding

I took an OPG just to check that my teeth and gums were otherwise healthy with no problems relevant to orthodontic treatment.

Treatment Planning

A quotation and treatment plan with a 3D digital preview was requested from In-Line Orthodontic UK Ltd, allowing me to see how my teeth would appear post treatment from all angles. (Fig 4, 5, 6, 7, 8). The initial treatment plan proposal just allowed for alignment of the anterior segment from 3 -3. However I asked the laboratory if my in-standing pre-molars could also be brought into alignment.

They were happy to oblige, and produced another 3D set-up with the premolars brought into alignment in balanced occlusion.

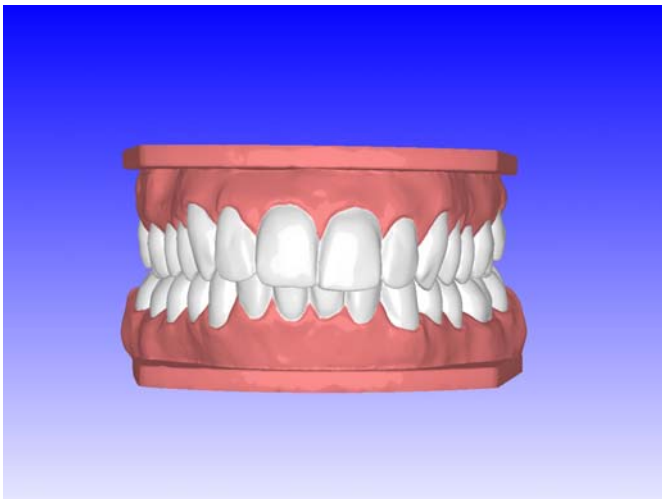


Figure 4

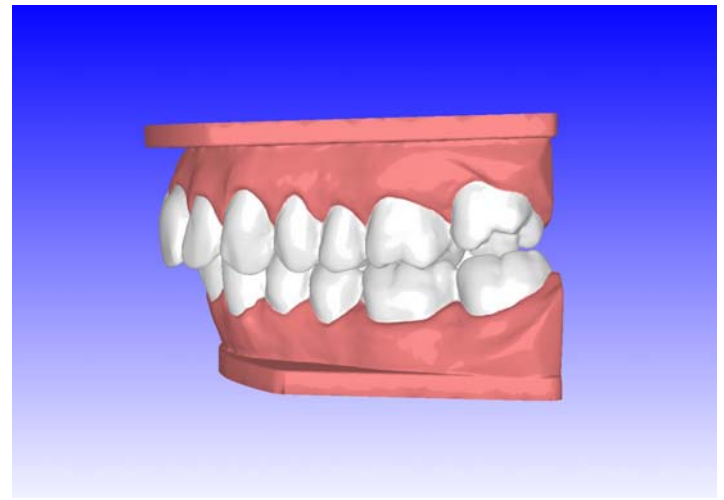


Figure 7

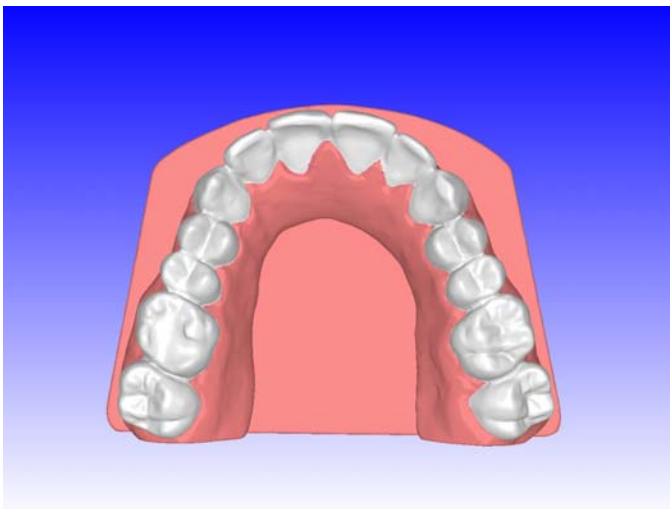


Figure 5

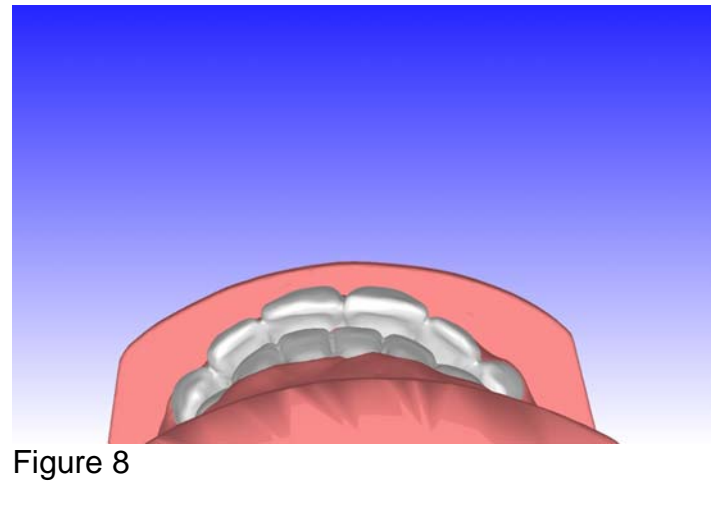


Figure 8

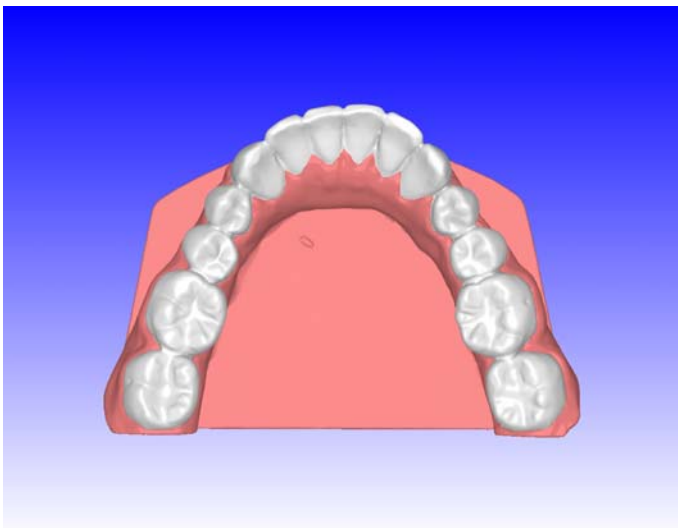


Figure 6

The treatment plan prescribed 7 splints for the upper arch and 7 splints for the lower. In-Line splints must be worn for 4 - 6 weeks, each splint can effect a movement of up to 0.6mm.

Treatment Progress

The treatment proposal prescribed inter-proximal enamel reduction on the upper and lower arches. As recommended, I carried this out incrementally over the first 3 to 4 splint changes, until the enamel had been reduced by the specified amount in the specified interdental spaces. (see figure 9)



Figure 9 Inter-dental Striping Equipment

The splints are made from a comfortable twin layer clear plastic. Because the splints have a rubbery feel on the inside, they cling to the teeth very well and are able to make tipping, rotational and small bodily movements without the need for composite attachments. (Fig 10)



Figure 10 An In-Line splint

Treatment Outcome

I wore the splints for the recommended time of at least 20 hours a day and the treatment goal was reached within the scheduled time of 7 – 10 months. (Fig 11, 12)



Fig 11 Frontal view after treatment



Figure 12 Before and after comparison

A comparison of before and after situations viewed from occlusion shows the impressive results achieved with around 10 months of splint therapy (Fig 13, 14).

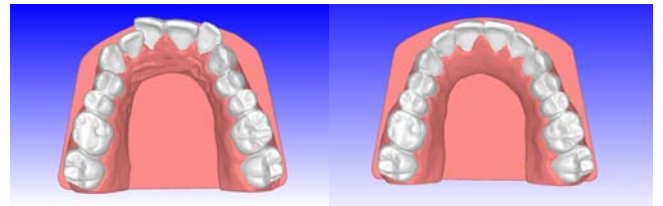


Fig 13 Upper study models before and after treatment

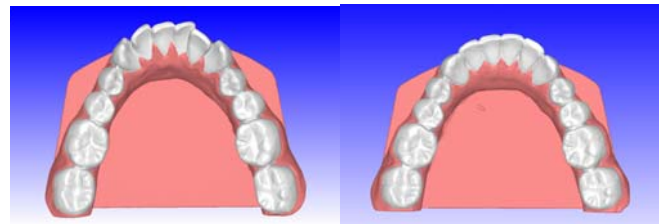


Fig 14 Lower study models before and after treatment

Retention

Long term retention is crucial following adult orthodontic treatment in order to avoid the risk of potential relapse. In-Line initially supplies a retention splint with each splint set, however this splint is only intended to be a short term solution. The Laboratory also supplies two products for long term retention; an unbreakable retention splint to be worn for 3-4 nights per week and a 3-3 bonded wire retainer. I have opted to use the 3-3 bonded wire retainer, but also use an Essix type retainer approximately one night per week, just to make sure that relapse is completely avoided. (Fig 15, 16)



Figure 15 in protrusion 4 years after treatment



Gary Dorman BDentSc,

Gary Dorman trained in Dublin and qualified in 1990. He joined the Hartley Dental Practice in Kent as an associate in 1991 and became Principal in 1998. If you would like more information please email Gary at gary@hartleydentalpractice.co.uk, call the Hartley Dental Practice on 01474 703484, or visit the website www.hartleydentalpractice.co.uk



Figure 16 centric occlusion 4 years after treatment.

Offering In-Line Treatment to my Patients

Following my own successful experience with In-Line treatment, I decided to enrol on one of In-Line's half day seminars. After completing the seminar, I felt confident to introduce In-Line treatment to my patients. Since treating myself, I have successfully treated 30 – 40 patients using the In-Line system, including several cases with very severe anterior crowding or gaps. I have always been very impressed with the simplicity and the value for money offered by the system. The treatment outcomes have been excellent in every case and the patients have always been thrilled with the results. In addition to improving the patient's smile, I have found that the improved alignment generally leads to a marked improvement in the patient's ability to maintain a good standard of dental hygiene and therefore an improvement in general dental health.