

Resolving crowding

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

People of all ages want a beautiful, natural smile as well as healthy teeth and gums. An increasing number of adult patients with anterior spacing or crowding adults are willing to undergo orthodontic treatment in order to achieve this. However, they usually want the appliance to be as inconspicuous and comfortable to wear as possible. In many cases, invisible splint/brace therapy can be applied successfully. In this case the anterior crowding was treated with In-Line splints, produced in Germany by Rasteder Orthodontic Laboratory (www.in-line.co.uk).

Initial situation

The patient wanted to resolve her severe maxillary and mandibular crowding in order to improve both the appearance of her smile and also her dental hygiene. She expressed a desire to have the mal-alignment corrected with a therapy which should be as invisible as possible. The severity of the crowding was immediately apparent from a frontal view (Figure 1). However, the mal-alignment is even more clearly seen when viewed from the side or from occlusion (Figures 2 and 3).

UR1 was noticeably labial to UL1 and UR2. UL2 was rotated and labial to UL1 but palatal to UL3. LL1 was also noticeably labial to LL2 and LR1.

As a part of the diagnostics, a study model and OPG were produced. Clinical examination showed that the patient's teeth and gums were otherwise healthy with no problems relevant to orthodontic treatment.

Treatment decision and planning

The patient was informed about all the available treatment options. In addition to treatment with In-Line splint therapy, the possibility of fixed brackets was also discussed. However, even braces made of tooth coloured ceramics were rejected by the patient on both aesthetic and comfort grounds. The patient was shown a sample of an In-Line splint (Figure 4) to get an impression of the material,

the robustness and the thickness of the splint. This solution met her need for comfort; the splints affect the patient's speech only initially and are visually barely noticeable. In-Line's laboratory charges are also significantly lower than some competitive brands, which brings the treatment within the reach of a wider range of patients.

A quotation with treatment recommendations and a 3D digital set-up / preview was requested from In-Line. The 3D preview includes seven images of the final situation, allowing the patient to see how her teeth will appear post treatment from all angles. An overlaid image showing the movements made by each tooth is also provided (Figures 5 and 6).

The treatment proposal prescribed nine splints for the upper arch and six splints for the lower to be worn for between four and six weeks each. Due to the advanced technology of the In-Line system, each splint can effect a movement of up to 0.6mm, which is much greater than other types of clear aligners, this results in much shorter treatment times.

The treatment recommendations proposed slight inter-proximal reduction between seven designated contact points in the upper arch and four in the lower arch. In-Line's state of the art software is able to accurately calculate the amount of IPR required in advance of treatment.

Treatment progress

The patient was given new splints successively at individual check-up appointments, at intervals of approximately four weeks.

Inter-proximal enamel reduction was carried out incrementally over the first four to five splint fittings, until the enamel had been reduced by the specified amount. The patient's compliance was excellent and made a significant contribution to the success of the treatment. She wore the splints for the recommended time of at least 18 hours a day and the treatment goal was reached in around nine months (Figure 7).

A comparison of the study models showing the anticipated final situation (sent by In-Line pre-treatment) and the post treatment study models shows that the treatment goal had been achieved almost perfectly (Figures 8 and 9).

Conclusion

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, but this 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 three to four nights per week and a 3-3 bonded wire retainer. The patient opted for a 3-3 bonded wire retainers as her chosen method of retention.

In-Line has been an ideal addition to the cosmetic side of our practice. Having researched all the many other systems on the market, I have found In-Line to be the easiest, quickest and most reliable for general dentistry. I have found that I have been able to treat cases of even quite severe crowding or gaps. It is also much more cost effective for patients.

In-Line is such a simple system to operate, it is the only system that does not require expensive and time consuming training courses. All the necessary training is provided in a half-day seminar. In-Line provides me with a specific IPR prescription sheet to follow, showing me exactly where and how much to strip teeth, which is easy with a dedicated IPR handpiece. The lab is great to deal with and has been totally reliable, providing consistent results for me with all my patients over the last five years. If you want to do ethical dentistry based on aligning, whitening and bonding, avoiding destructive tooth preparations, to providing your patients with the straight white teeth they want in an easy and cost effective way, then In-Line will be ideal for you.



Figure 1: Initial situation frontal view



Figure 2: Occlusal view of severe maxillary anterior crowding



Figure 3: Occlusal view of moderate to severe mandibular anterior crowding



Figure 4: An In-Line splint

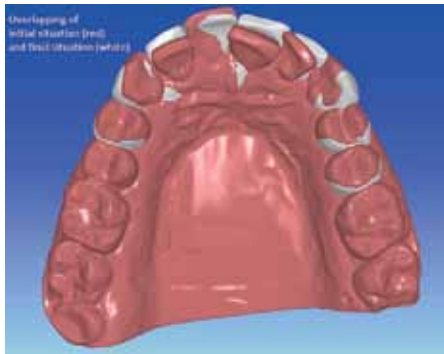


Figure 5: Predicted maxillary tooth movement



Figure 6: Predicted mandibular tooth movement



Figure 7: Frontal view after treatment (teeth in protrusion)



Figure 8: Post-treatment maxillary study model (white) compared with In-Line predicted model (blue)



Figure 9: Post-treatment mandibular study model (white) compared with In-Line predicted model (blue)



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