

A quick, durable smile makeover

Tif Qureshi¹

A 27-year-old female patient presented at the practice as she was unhappy with her crooked front teeth (Figure 1). She was interested in porcelain veneers to align them. She was not overly concerned about the colour of her teeth, but wished to have them whitened a little during the treatment process.

Initial assessment

It was explained to the patient that there were alternatives to porcelain veneers available to her, including traditional comprehensive orthodontic treatment or a range of techniques for anterior alignment only.

A full orthodontic and functional assessment diagnosis was undertaken (Figures 2-5). The patient had a skeletal classification of II with a decreased Frankfort mandibular plane angle.

Other orthodontic findings were a class II, division II, incisor relationship and molar class I relationship on the right and class II on the left. The canines were class I on the right and half class II on the left.

The patient had an increased overbite of 40% and an overjet of 3mm. Her upper lateral incisors were crowded and mild crowding was also evident in the lower arch. The centre line was coincident. No abnormalities were detected with the soft tissues, and her lips were symmetrical and competent. Lower face height was slightly reduced.

A crossbite affected her UL₆ and LL₆. There was no canine guidance and posterior interference on the anterior slide. The patient did not have any temporomandibular joint disorder complaints or symptoms.

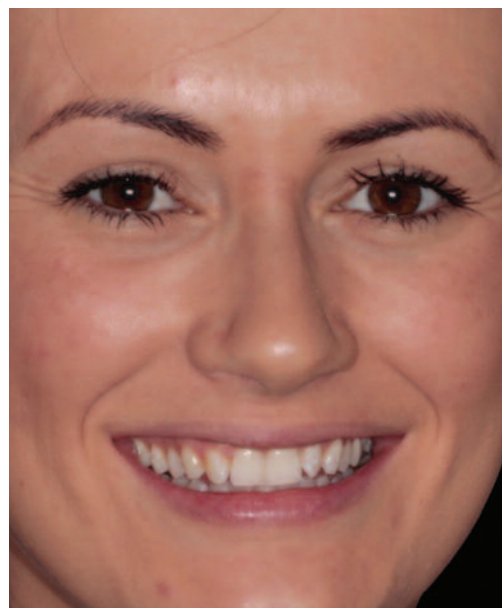


Figure 1: The patient was unhappy with her crooked front teeth

¹ Dr Tif Qureshi
Partner at Dental Elegance,
Sidcup, UK
Director of the IAS Academy.

For more information:
Dr Tif Qureshi,
email: tif@iasortho.com
www.iasortho.com



Figures 2-5: Some views from the full orthodontic and functional assessment diagnosis that was undertaken.

Treatment options

After consultation and presentation of the findings, all orthodontic options were discussed.

The patient declined the comprehensive route because she had undergone orthodontic treatment in the past, which had relapsed, and she wanted quicker results. She was interested in just having anterior orthodontic alignment, as this approach required a shorter treatment time, and she was not concerned about her back teeth.

A digital 3D image of her outcome was created. The patient opted for anterior alignment orthodontics with the Inman Aligner and edge bonding with composite. The image helped the patient to visualise the result and how it could

dramatically improve her appearance. This choice of treatment meant that she would not have to undergo tooth preparation in order to have veneers.

The patient understood that the Inman Aligner could only treat the anterior region. She was also made aware of the need for permanent retention and the potential for relapse if this was not maintained.

Treatment planning

An occlusal photograph was taken at the chairside and uploaded into the dental diagnostic crowding calculator, Spacewize, and the calibration tooth details entered. An ideal curve was then digitally plotted. The space calculation



Figure 6: An impression was taken using a putty and wash two-stage technique.



Figure 7: Minimal interproximal reduction and predictive proximal reduction of 2.4mm was carried out over seven contacts.



Figure 8: After about 10 weeks, the patient's anterior teeth had aligned.



Figure 9: Old composite was lightly removed from the incisal edges.



Figures 10 and 11: Each tooth was restored using Heraeus Kulzer Venus Diamond in layers of the Opaque Light and B1 shades, with a hint of Bleach Light.

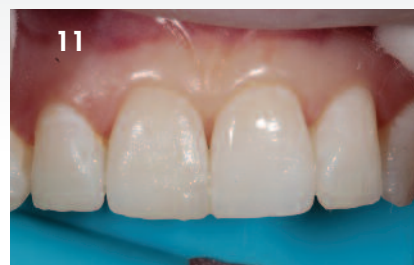


Figure 12: The composite was light-cured through Deox gel.

confirmed that this case was treatable with an Inman Aligner. The difference between available space and required space was 2.8mm, which could be created with interproximal reduction (IPR) incrementally as the treatment progressed.

An impression was taken using a putty and wash two-stage technique (Figure 6). The putty was hand mixed and the basic impression was taken with a cling film wafer using Kulzer impression materials. The cling film was removed and a flowable silicone material was injected into the tray and around the teeth. The impression was then inserted back into the mouth to produce a very high definition result.

The final impression was sent to the UK-certified Inman Aligner laboratory with the Spacewize trace (Noar et al, 2015) to produce an Archwize digital set-up. A 3D-printed model was returned and shown to the patient for her consent. The printed model helps significantly with the consent process.

The advantage of a 3D print over a 3D image is that a patient can hold the models and really appreciate the potential outcome with a clearer idea of scale, position and shape. A model helps to improve patient understanding of treatment goals and results in improved consent. If they are not satisfied, they can decline treatment before it begins.

In this case, the patient was happy to proceed and an Inman Aligner based on the 3D print was built and then fitted.

Orthodontics

Minimal IPR (El-Mangoury et al, 1991; Radlanski, 1991) and predictive proximal reduction (PPR) of 2.4mm was carried out over seven contacts in a progressive and measured manner (Figure 7). After about 10 weeks, the patient's anterior teeth had aligned (Figure 8) and simultaneous bleaching was carried out.

Super-sealed home trays were used with Philips Zoom Daywhite. This whitening system contains 6% hydrogen peroxide and the patient bleaches for only 35 minutes a day. An impression was taken for the wire retainer using Heraeus Kulzer Xantasil. It is a single-mix, medium body alternative to alginate and produces impressions with excellent detail, which set within 90 seconds.

An indirect stainless steel wire was then made by the laboratory for improved accuracy and a passive fit (Becker and Goultschin, 1984).

Composite restoration and finishing

The patient returned for edge bonding of the front six teeth. Old composite was lightly removed from the incisal edges (Figure 9).

Each tooth was restored using Kulzer Venus Diamond in layers of the Opaque Light and B1 shades, with a hint of Bleach Light (Figures 10 and 11).

The composite is laid freehand in a reverse triangle technique, which blocks out the light transmission on the join, so no preparation is needed.

Opaque Light dentine was placed first on the palatal up to the incisal edge, then B1 enamel and a little Bleach Light over the facial surface, extending about 2mm beyond the margin.

The composite was light-cured through Deox gel in accordance with the manufacturer's instructions (Figure 12).

Venus Diamond is the perfect material to use for edge bonding because of its high strength in thin sections. It also has a terrific colour match, is simple to layer and has great polishing qualities (Figures 13-15).



Figures 13-15: Venus Diamond is the perfect material to use for edge bonding because of its high strength in thin sections.

During the same appointment, a fixed stainless steel wire retainer was bonded to the lingual surfaces using Kulzer Venus Diamond Flow, to prevent tooth relapse (Figure 16).

Venus Flow has been used in many cases to bond retainers because of its high strength and predictability. An impression was also taken using Xantasil to create a clear Essix retainer for the patient to wear at night.

The patient's teeth were given a light polish immediately after the edge bonding restoration. She returned two weeks later to have her teeth polished with the Kulzer Venus Supra high gloss polisher.

Venus Supra was selected as it does not cut or damage the composite. It is also simple to use and the rubberised



Figure 16: A fixed stainless steel wire retainer was bonded to the lingual surfaces using Kulzer Venus Diamond Flow, to prevent tooth relapse.



Figure 17: The red disc was used for basic polishing and to create and enhance the tooth contour.



Figure 18: The grey disc produced a high gloss finish.



Figure 19: A flexible felt and mylar disc with polishing paste was used for the final shine



Figure 20: The patient was thrilled with her teeth.

polishers are the correct shapes to achieve a high lustre.

In this case, the red disc was used for basic polishing and to create and enhance the tooth contour (Figure 17), then the grey disc produced a high gloss finish (Figure 18). A flexible felt and mylar disc with polishing paste was used for the final shine (Figure 19).

Long-lasting, aesthetic result

A successful result was achieved using a non-invasive, progressive approach. This outcome is only possible if alignment and whitening techniques are carried out before any tooth preparation is even considered. Patients' own perceptions of what they think suits them can change, if they are allowed to see their teeth transform gradually.

Edge bonding means that preparation to the teeth is

avoided and the restorations are very simple to repair and replace if required. With nanohybrid composite materials like Venus Diamond, edge bonding has become simpler and more predictable to place for a natural aesthetic result.

The patient was thrilled with her teeth (Figure 20). The result was just how she imagined veneers could look.

Instead of complex ceramic treatment, alignment, bleaching and bonding involved no invasive tooth surface preparation, the treatment cost a quarter of the price of veneers and presented no biological risk.

At the 12- and 18-month reviews (Figures 21 and 22), the patient was still happy with her new smile and no adjustments were needed.

Reprinted with permission by Aesthetic Dentistry Today April 2017



Figures 21 and 22: At the 12- and 18-month reviews, the patient was still happy with her new smile and no adjustments were needed.