Patient delighted with award-winning natural smile

Salman Siddiqi describes a case that combines alignment and bleaching with the aesthetics and strength of composite edge-bonding restorations

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The aligning, bleaching and bonding process combines orthodontics and restorative dentistry.

Anterior alignment is completed without the need for traditional fixed braces, followed by tooth whitening to brighten and enhance the smile before bonding. The last step is to build up the edges of the teeth to improve their shape.

With the latest nano-hybrid composite materials, edge-bonding has become simpler and more predictable to place for a natural, aesthetic result.

A 30-year-old female came to see me as she was unhappy with her crowded upper anterior teeth and prominent upper canines (Figures 1 to 3).

She was also conscious of the worn edges of her upper incisors and wanted to achieve a more even smile (Figure 4).

Clinical examination

A thorough intraoral and extraoral examination was carried out. The patient's oral health was good, and she was dentally stable with minimal restorations. Her teeth were recorded as A2 on the Vita shade guide.

The orthodontic assessment revealed a class II division I on a class II skeletal base, with an average Frankfort mandibular plane angle (FMPA) (Figure 5). The canines were half unit class III on the right and class I on the left.

A molar class I on both the right and left sides was also identified. The patient had mild upper and lower crowding and the centre line was coincident. Lower face height was normal.

Treatment planning

After consultation and presentation of the findings, all orthodontic options were considered, including the risks of not treating the lower teeth.

Several treatment options were discussed, including:

1. Doing nothing and accepting the presenting condition
2. Retention only to prevent further crowding
3. Tooth whitening only
4. Anterior alignment orthodontics to resolve upper crowding
5. Referral to a specialist colleague for comprehensive fixed orthodontics
6. Restorative treatment using veneers.

It was explained to the patient that no improvements would be achieved with retention alone, but further movement of the teeth could be prevented. The high biological cost of restorative treatment using veneers was explained, due to the need for potentially heavy tooth preparation to improve alignment.

Cost-effective, efficient alignment

The patient declined comprehensive fixed orthodontics and opted for anterior alignment of the upper arch with the Inman Aligner followed by whitening and edge-bonding with composite (Figure 6). She was willing to wear a removable Essix retainer to prevent further movement to her lower teeth.

The patient chose this plan as she wanted to focus on her upper anterior teeth and the Inman Aligner best suited her alignment goals. She had a busy professional life, and the cost and timescale were more favourable. She also wanted to be able to remove the appliance.

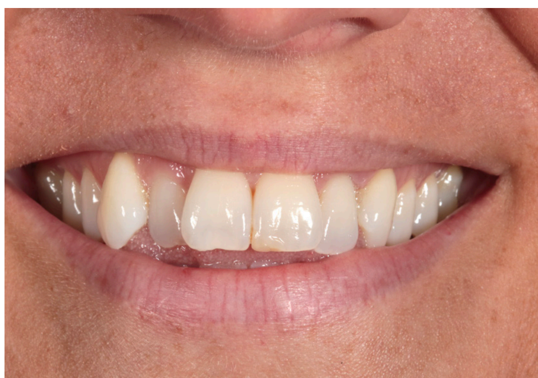
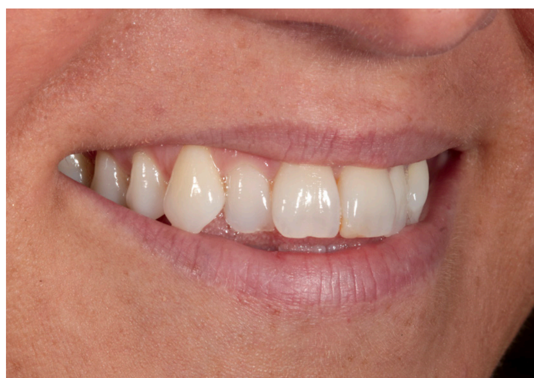
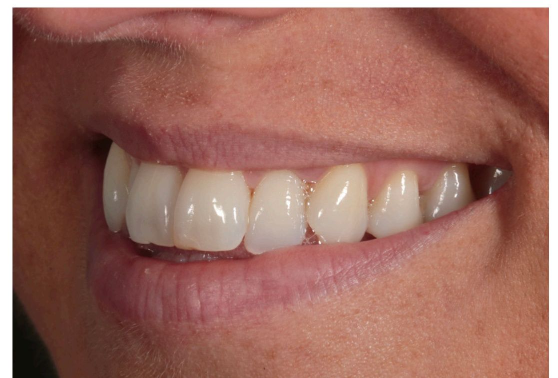
The aim of this treatment was to relieve crowding from the UR3 to UL3 using interproximal reduction (IPR) and expansion. The patient had an open bite, no occlusal issues or temporomandibular disorders (TMD) complaints or symptoms. Therefore, single arch treatment could be provided in this case.

Occlusal photographs were taken at the chairside and Spacewize analysis undertaken to assess arch form and crowding. An ideal curve was then digitally plotted. The space calculation confirmed that this case was in the 'green category' and treatable with an Inman Aligner.

The photographs were submitted via the IAS support forum for mentor feedback. The case was approved to proceed with Inman Aligner treatment.

Detailed impressions

Polyvinyl siloxane (PVS) impressions were taken using Kulzer Flexitime. I find that the material provides highly detailed impressions with a low risk of distortion. The combination of putty and wash results in a good contrast of colours, ▶

Figures 1–3: The patient was unhappy with her crowded upper anterior teeth

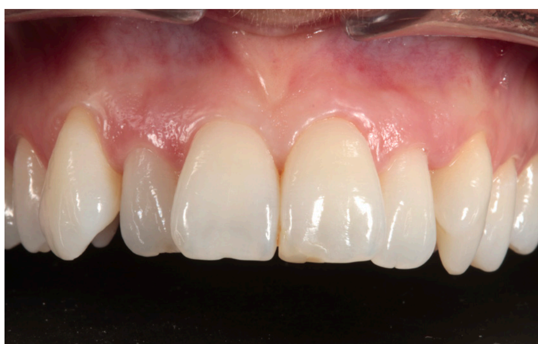


Figure 4: She was conscious of the worn edges of her upper incisors

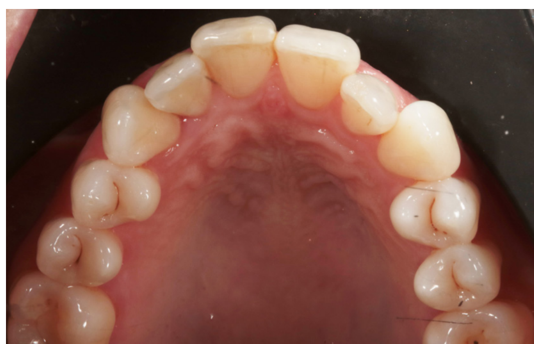


Figure 5: A class II division I on a class II skeletal base was identified

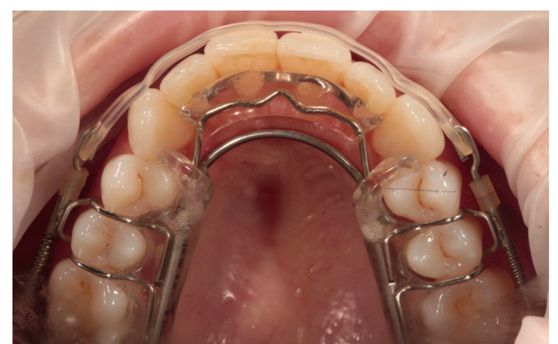


Figure 6: The patient opted for anterior alignment of the upper arch with the Inman Aligner

allowing the impression to be easily evaluated for any voids, air blows or drags.

The impressions were sent to the laboratory for fabrication of the upper Inman Aligner appliance. At the fit appointment, composite anchors were placed, and the initial interproximal reduction (IPR) and predictive proximal reduction (PPR) performed.

Alignment took place over a 20-week period and strategic IPR and PPR were carried out incrementally as the treatment progressed.

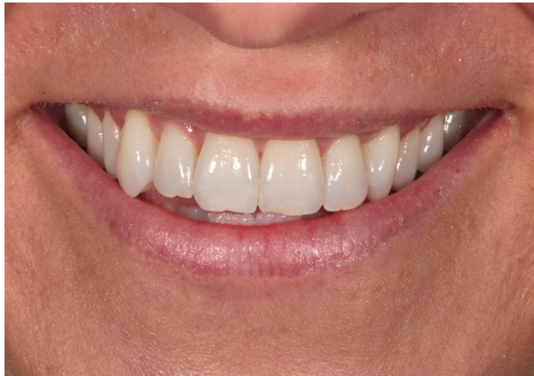
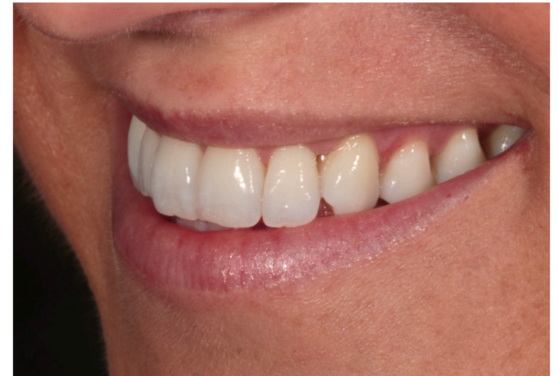
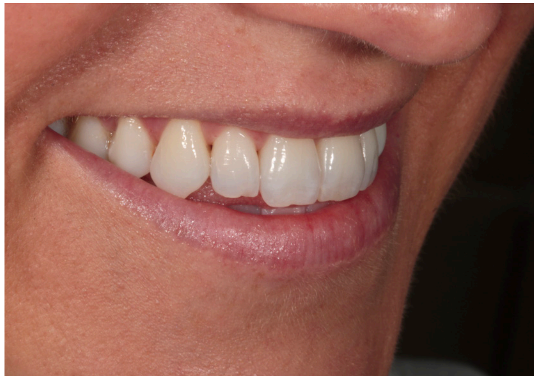
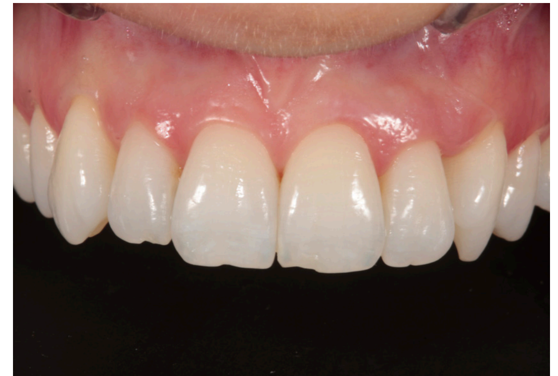
The patient was instructed on aligner wear time and recommended oral hygiene. She was then reviewed monthly to ensure compliance and movement tracking. After 20 weeks, alignment was completed in accordance with the Archwize planning simulations (Figures 7–10).

Bleaching and composite edge-bonding

Impressions taken using Kulzer Xantasil were recorded for production of the whitening trays and the upper bonded retainer.

The patient was given a four-week course of home whitening. She was instructed to carry out the treatment using well-fitted trays and 10% carbamide peroxide gel worn overnight.

Following the home bleaching course, B1 was recorded on the Vita shade guide (Figure 11).

Figures 7–10: After 20 weeks, alignment was completed

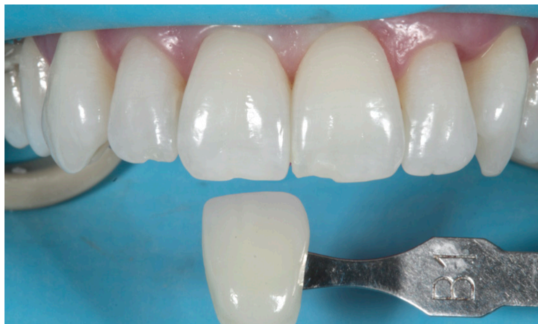


Figure 11: B1 was recorded on the Vita shade guide following the home bleaching course

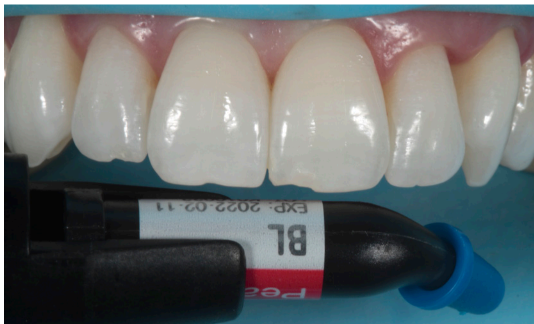


Figure 12: Kulzer Venus Pearl composite was chosen for edge-bonding

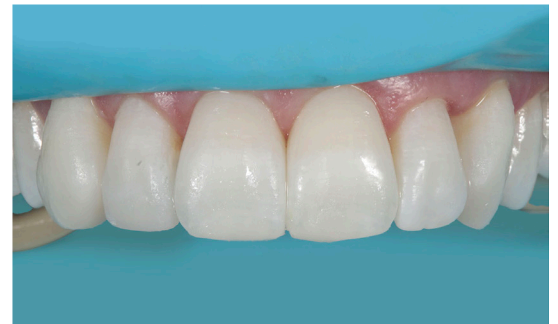
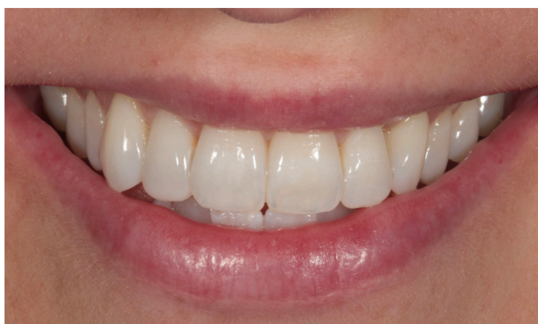
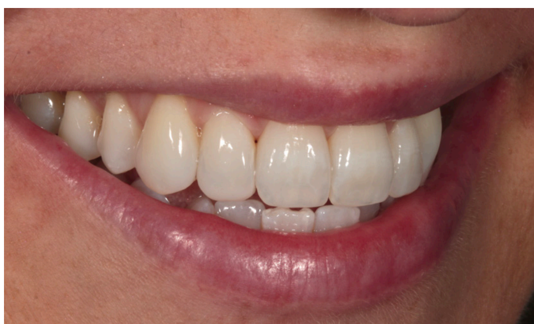
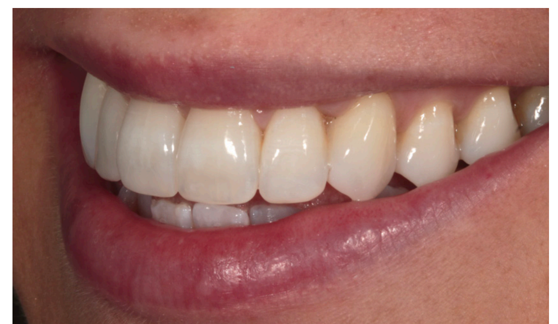


Figure 13: The teeth were built up using a layered approach

Figures 14–16: Venus Pearl Clear (CL) was placed to replicate the enamel palatal shell, followed by Opaque Light Chromatic (OLC) and Bleach Light (BL) shade for the final layer

Composite edge-bonding from the UR3 to UL3 was carried out to repair the worn edges and improve the proportions and symmetry of the teeth. The procedure took place two weeks after the bleaching treatment to allow rehydration of the teeth and to achieve optimal enamel-to-resin bond strength.

Excellent long-term stability and strength

The composite chosen for the edge-bonding was Kulzer Venus Pearl (Figure 12). The material is predictable and capable of delivering highly aesthetic results, with ease of handling and polishing.

Venus Pearl offers a wide range of shades and can be applied in single- and multi-shade layering techniques. The matching with a simplified Vita shade system makes it easy to work with.

The composite is durable with excellent long-term stability and strength, making it ideal for restoring incisal edges. I also find that patients really appreciate how the bleach shades blend seamlessly with adjacent natural teeth after whitening treatment.

The teeth were isolated using rubber dam and sandblasted prior to etching. Kulzer Ibond Universal was applied and light-cured in accordance with the manufacturer's instructions. Ibond provides a reliable bond strength because it contains the active ingredient 10-methacryloyloxydecyl dihydrogen phosphate (10-MDP).

The teeth were built up using a layered approach (Figure 13). Venus Pearl Clear (CL) shade was placed to replicate the enamel palatal shell, followed by Opaque Light Chromatic (OLC) and Bleach Light (BL) shade for the final layer (Figures 14–16).

The permanent wire retainer was bonded during the same visit using a flowable composite to prevent tooth relapse (Figure 17).

Initial finishing was performed with a fine red band diamond flame bur followed by Sof-Lex discs in sequence, from coarse to fine. The Kulzer Venus Supra polishing kit was used to give a final natural sheen. The kit has just two grades of polishing points, so is time saving and simple to use.

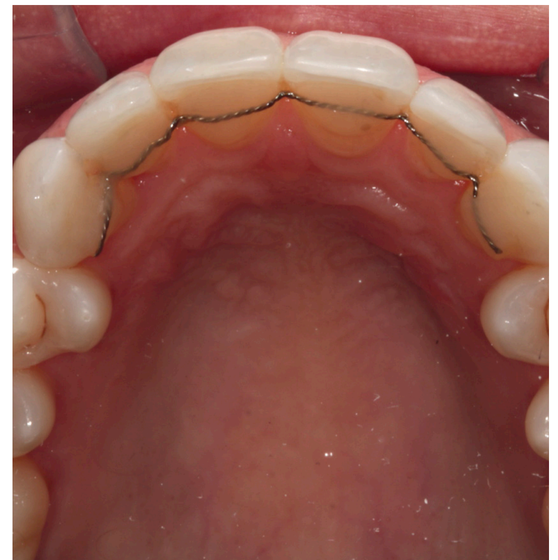
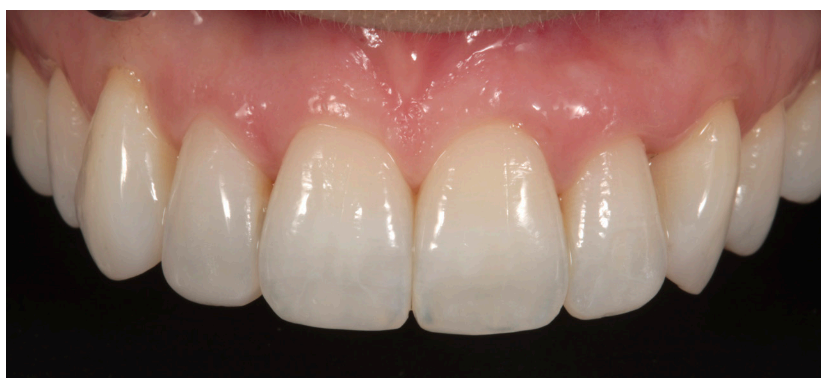


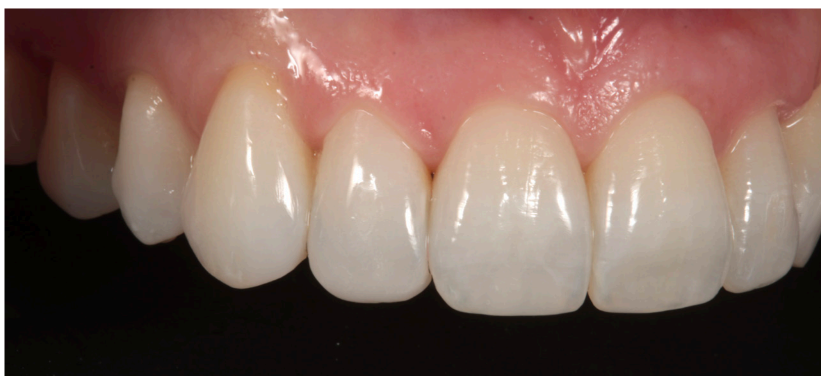
Figure 17: The permanent wire retainer was bonded during the same visit

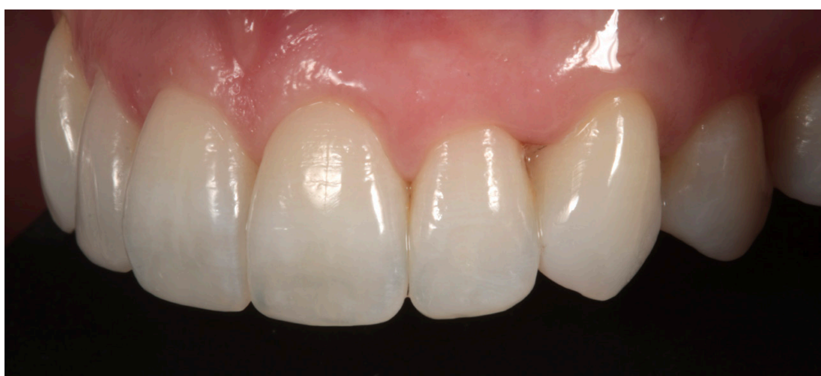
Non-invasive, natural outcome

A successful outcome was achieved using a non-invasive, progressive approach. The patient's crowding had been treated and her upper canines appeared less prominent. The aligned anterior teeth were further enhanced by composite edge-bonding, which had restored the worn edges of the upper incisors to create a more even smile (Figures 18–20). Regular review appointments will be maintained to ensure compliance with wearing of the lower retainer.

The patient was very happy with the result and commented on the natural finish. We had exceeded her expectations and she informed me that she had received compliments from her clients and family. We were both delighted when this case won 'Best Align, Bleach and Bond' case at the 2018 IAS Awards (Figure 21). D







Figures 18–20: The patient's crowding had been treated and edge-bonding had restored the worn edges of the upper incisors

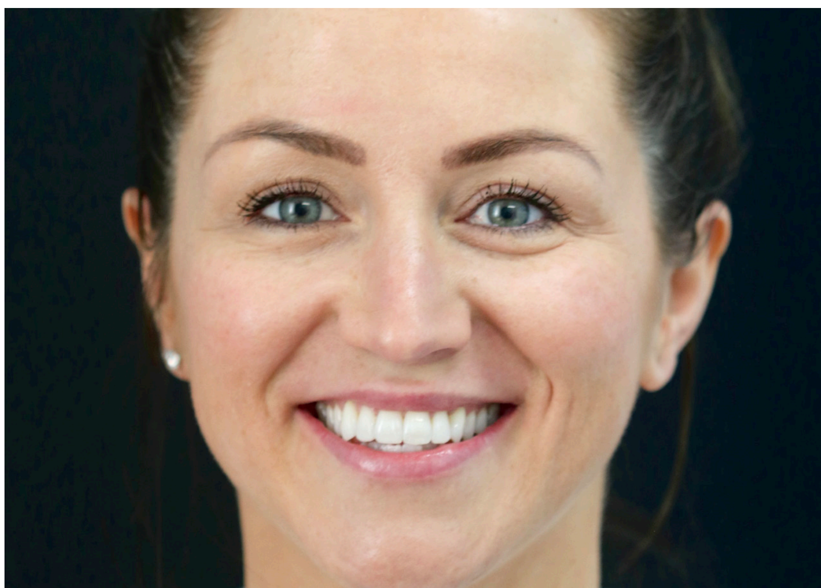


Figure 21: The patient was delighted with her natural, award-winning smile

Talking Money

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