



# Smile crafting with Invisalign & minimal preparation chameleon veneers

**Luis Filipe Amante** presents an aesthetic case study using orthodontic and cosmetic techniques

A male patient, 20 years of age attended a consultation at our practice in Cambridge where he confessed his general unhappiness with the appearance of his smile. He admitted that he often avoided smiling in public because he was conscious of his 'crooked yellow teeth' and felt that improving the appearance of his smile would give a boost of confidence.

It is said that 'beauty is in the eye of the beholder' and when dealing with an issue as important and personal as the smile, it is of utmost importance to grasp the expectations and aesthetic standards of the individual. Inspired by a character of a very popular TV show, the patient reported that his dream smile would be immaculately white and he would love to have his entire front teeth levelled at their incisal edge and was hoping to have 12 dental veneers fitted!

## EXAMINATION AND ASSESSMENT

Upon clinical and radiographical examination, it was evident that the patient presented with good oral hygiene, barely any restorations present and nearly immaculate BPE scores. He

presented moderate crowding on both his upper and lower anterior teeth with a cross-bite evident on his lower left canine (Figures 1-3).

The patient was discouraged to have all of his front teeth fitted with ceramic veneers as he initially requested, as the degree of preparation required to deliver an optimal aesthetic and functional result was substantial and was alternatively presented with the option of having orthodontic treatment followed by a comprehensive whitening treatment. The patient was extremely thankful for the suggested treatment plan and acknowledged and appreciated the importance of being preservative of his dentition. After discussing the available options it was decided to use the Invisalign system as the patient was unwilling to use a fixed, wire-based orthodontic approach.

## INVISALIGN TREATMENT

Invisalign is an exciting and multi-potential approach to orthodontics and has proved to deliver excellently in numerous orthodontic cases. Nevertheless, being a removable approach (the patient is required to



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use the aligners for 22 hours/day) it is essential to assure that the patient is motivated enough to guarantee that the treatment plan stays on track until the final alignment and retention phase finally arrives.

After the completion of the consent process, the PVS impressions (double mixture technique), bite registration, OPG and intra and extra-oral photos were obtained and forwarded to Invisalign in California, USA. A treatment plan was developed after the submission of the clinical prescription and a Clincheck video was made available. The Clincheck video is an interactive 3D model that allows both patient and clinician to visualize the current positioning and inter-relations of the teeth and, more importantly, how they are estimated to progress sequentially until the final completion of the alignment (Figures 4 and 5). Despite being a mere computed simulation - with its obvious limitations - this tool proves to be extremely helpful as it explains the predicted movements of each individual tooth throughout the full treatment plan.

### **TREATMENT PLAN**

This treatment plan entailed the usage of 24 Invisalign aligners, each for a period of two weeks, during the alignment stage, including stages to fit and remove eight maxillary and six mandibular resin attachments, and different anterior inter proximal reduction (IPR) steps in a process that lasted approximately one year. The patient was followed up regularly through the process and showed himself to be extremely motivated.

The results after the completion of aligner 24 were remarkably pleasing and clinically the mesial rotation of the lower left canine correcting the cross-bite was particularly relevant.

The retention phase followed with the patient being advised to use the

3mm thick removable acrylic retainers intermittently during the day time and constantly nocturnally in the first year post-treatment. The retainers were also used as whitening trays to perform a two week-long Polanite whitening treatment (SDI) with the usage of carbamide peroxide gel 16%, completed non-eventfully and with a visible shade enhancement. The achieved results were extremely satisfactory and were achieved using non-invasive methods, resulting in the obvious aesthetic benefits, but also easier oral hygiene and dental maintenance (Picture 6).

### **FURTHER IMPROVEMENTS**

Again, 'beauty is in the eye of the beholder' and despite the remarkable improvement achieved on the patient's smile and confidence, three months later he booked another appointment to discuss some further improvements. He was over-the-moon with the results already achieved but was looking to polish some last details to complete his ideal dream smile.

He enquired about the prospect of having dental veneers fitted on his upper front teeth so they could look level on their incisal edges exactly like his favourite TV star's smile. The underlying subliminal social pressure widely present in today's media, often whispered by the tendencies from the other side of the Atlantic, often pushes patients into idealising an artificial looking appearance for their smile.

At the moment, the modern cosmetic dentist has a wide range of tools, materials and methods at hand to allow him to attend to most of the patient's aesthetical requests. Nevertheless when the requested outcomes involve the usage of invasive approaches it is of utmost importance to scrupulously debate the risks and benefits of these treatment options. After discussing all of the factors in play, the patient was advised





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to reflect further before going ahead with the treatment. After some weeks, and after having weighed the benefits and risks discussed, he returned stating his willingness of having the veneer treatment. It was decided to order a study model, requesting the veneer wax-up of his upper lateral incisors and canines (Derek Priestley, MGill Lab, Yorkshire).

Study models are powerful and are helpful tools that allow patients to closely visualise the predicted treatment outcomes and provide clinicians with guidance for an ideal dental preparation. It was advised at the time that, the least invasive way of attending to the patient's requests, would be the fitting of four minimal-preparation Chameleon veneers on the mentioned teeth thus levelling them with the upper central incisors.

The preparation was performed just-gingivally with a discrete knife-edge incisal reduction to a very superficial thickness - still within the enamel layer (Figure 7). The ceramic veneer is highly well tolerated by the soft

tissues especially when compared to the alternative composite options, and the prep within the enamel allows ideal bonding parameters for a stronger, more lasting restoration. To ensure ideal results with dental veneers it is essential to follow a strict protocol (Figures 8-10), all of it extremely operator-sensitive.

After the fitting of the minimal preparation ceramic chameleon veneers on the upper lateral incisors and canines the patient was given the chance of contemplating his new smile, and he struggled to find words to describe how pleased he was. A year later, and after having had another course of whitening, and being regularly followed up in regards to his post-orthodontic retention and dental veneers, the patient attended a review appointment where he had the chance of sharing the importance and impact that this treatment had on his life and how much he thinks he has achieved since getting the 'smile of his dreams' (Figures 11-15).■





Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8





Figure 9



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15