A combined digital orthodontic and restorative approach

Case Study:

By Dr Andrew Culbard, UAE

Traditionally cosmetic dentistry was a term associated with the placement of crowns and veneers in the aesthetic zone, with many dentists adopting an aggressive preparation approach in order to facilitate the placement.

Advances in cosmetic orthodontics and digital dentistry, coupled with a change in mindset towards prioritising the preservation of tooth structure has lead to many patients presenting for a cosmetic solution for their smile to undergo a multi-disciplinary approach.

The Patient, a 21 year old female presented for cosmetic improvement of her teeth. In her own words, she wanted a wider and brighter smile with bigger teeth.

Clinically the following issues presented:
1. Peg laterals and canines in the upper arch, with a generally anaesthetic tooth morphology throughout
2. Spaced upper arch with a lack of symmetry and some minor rotations on the canines
3. Lower arch had mild crowding
4. Starting shade was A3
5. The gingival zeniths were uneven, with some recession and a lack of keratinized tissue.

A treatment plan was constructed based on a facially driven smile design, with calibrated images measured against the invisalign clincheck software. The benefit to using a digital system here was to allow for accurate positioning of the anterior teeth for minimal preparation and the ideal restorative outcome. (Figs. 1a-f)

A 7 week invisalign programme allowed for enough movement in the upper arch, while resolving the mild crowding in the lower arch. The final tooth position can be seen in figure 1f.

Post-ortho provisional retention was implemented with removal essix retainers which were used for home whitening of the upper and lower teeth. A final shade of BL3 was achieved, after 10 days of rehydration in this time the lab created a diagnostic wax up guided by the smile design. A putty matrix was used to transfer the wax up to a trial smile (Fig. 2).

Once the trial smile was approved by both patient and dentist, the acrylic was used as a guide for crown lengthening on the UR2, and then as a preparation guide for the APT technique (Fig. 3a-d).

The final restoration from UR4- UL4 were created from pressed Emax and cemented using Variolink LC neutral. Finally, definitive essix retainers were constructed for retention.

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Andrew graduated from the University of Glasgow Dental School in Scotland. He further pursued post-graduate training in a number of other dental specialities to ensure a diverse and well-rounded complement of skills and knowledge. After 2 years of graduating, Andrew was awarded membership to the Royal College of Surgeons of England. His interest in cosmetic and aesthetic dentistry has been his passion throughout his career.