A multi-disciplinary approach to minimally invasive functional aesthetic dentistry

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Simple tooth alignment is rapidly becoming accepted as the norm in cases that previously would have been treated with porcelain veneers. However, patients often present with a mix of problems such as previous metal ceramic work, the treatment of which should be integrated as part of the treatment plan. Timing becomes a vital part of the treatment when mixing restorative care, alignment, tooth whitening and occlusal planning. The following case illustrates an effective approach to treatment.

Case report
A patient presented complaining that “his two front teeth [old upper anterior crowns] felt as if they were too large and were always hitting the lower teeth”. In addition, his bite never felt “right” (Figure 1). He also wanted to try to improve the appearance of his teeth. He was aware of what could be done with porcelain veneers, but wanted to try to make the best of his own teeth.

Examination
On inspection, it was clear there were several issues:
1. Occlusion - The irregular alignment of the lowers and the thickness of the upper old crowns were adding to the problem of unbiased anterior contacts. The back of the crowns, especially the upper left central, were hitting the front of his lower teeth, in particular the lower left central.

Analysis
A heavy, not long centric contact was present in MIP, which was causing slight deflection of the central. This meant that the upper central crown had been placed quite labially and because it was metal ceramic, it made it feel particularly thick.

2. Thickness/aesthetics of crowns - The occlusion meant that the upper crowns had been placed quite labially and because they were metal ceramic, made them feel particularly thick. They also appeared rather opaque.

Treatment
On the initial appointment the two old crowns were removed (Figure 2). The prepss were merely cleaned and treated as conservatively as possible. Temp crowns, which could be adjusted, were placed (Figure 5). Upper and lower impressions were taken for upper clear aligners and for a lower Inman Aligner. A prescription of the tooth movement using Spacewiz software was given to the technician so they were aware of exactly where we wanted the teeth to be moved. Spacewiz also calculates a figure for the amount of crowding present giving us an idea of the total amount of space that would need correcting and whether the case is suitable for Inman Aligners or not.

Two weeks later, the patient returned. The Inman Aligner and clear aligner were fitted on the lower and upper anterior teeth respectively. Minimal interproximal reduction (IPR) was started. Despite calculating the amount of crowding present, the IPR is not carried out in one go. Only IPR strips or discs are used. This gives the opportunity to ensure the stripping is far more anatomically respectful than using burs or heavy discs. This massively reduces the risks of excess space formation, gouging or poor contact anatomy. No more than 0.15 mm per contact on the posterior teeth was adjusted on this single visit. The contacts are smoothed and fluoride gel is applied each time.

Alternative options
Alternative options were discussed. Fixed braces were discounted because of the cost, the difficulty in simultaneous whitening and added difficulty in having the crowns as temporary through treatment. The patient’s posterior occlusion was also good. Full anterior veneers were discussed, but after the patient understood how simply and quickly the alignment could be done, seemed a completely ridiculous and unethical solution.
The patient was then sent home. The Inman Aligner was worn for 16-20 hours per day with the patient removing it for eating and rest. 20 hours a day is the maximum needed wear and this in-termittent wear reduces the risk of root resorption. On return 2 weeks later, it was clear that the contacts had closed tightly and the teeth had moved a little.

More IPR was carried out on both the upper and lowers. The occlusal contacts of the upper temporary crowns were adjusted to allow clearance for the lower teeth to move and the lower left lateral to advance particularly and the patient was then set up on aligners for 2 weeks. The temporaries were also facially contoured to ensure they were flush with the natural teeth. On the subsequent return visit, it was clear that the teeth were aligning rapidly and espe-cially well (Figures 4 and 5). We then decided to start some simultaneous tooth whitening. Impressions were taken, even though the result was still 25% from completion. Sealed, rub-ber trays were made and careful instructions given to the patient. While the patient was concentrat-ing on using the Inman Aligner, they are always highly recep-tive to using bleaching trays. It adds greatly to motivation and often means they achieve a far better result. DayByDay from Oral Healthcare (formerly Dis-cus Dental) is used so that the patient only needs to wear the bleaching trays 55–45 minutes a day.

The patient returned after an-other 3 weeks and was happy with the result of whitening achieved. Upper and lower alignment was now complete. An impression was taken for a lower retainer wire to be fitted later. The temporary crowns were removed, the prep cleaned with CHX and new im-pressions were taken after some minor adjustments to the buccal margins.

A new lower impression was taken of the final lower occlu-sion to ensure the crowns could be made with a good long cen-tric contact. The temps were replaced and impressions sent to the laboratory. The patient booked in for a shade one week later and two weeks after cessation of bleaching where colour and tooth morphology was ex-plained and discussed with the patient. Two weeks later, the pa-tient returned. A retainer wire was bonded to the lower inci-sor teeth using a preformed wire on a jig made by the orthodont-