A multi-disciplinary approach to minimally invasive functional aesthetic dentistry

Dr Tif Qureshi shows how pre-alignment and careful treatment planning can simplify anterior functional and aesthetic problems.

Simple tooth alignment is rapidly becoming accepted as the norm in cases that previously would have been treated with ceramic veneers. However, commonly patients present with a mixture 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.

Case

This patient presented complaining 'that his two old upper anterior crowns felt as if they were too large and were always hitting the lower teeth.' His bite never felt correct. 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 that there were several key issues:

Tif Qureshi qualified from Kings College London in 1992. He is Vice President of the British Academy of Cosmetic Dentistry, an organisation that is promoting cosmetic dentistry in the UK and which has embraced orthodontic techniques to help minimise tooth preparations in cosmetic cases. He is a partner at Dental Elegance in Sidcup, Kent where he practices cosmetic and restorative dentistry. He an active and sustaining member of the American Academy of Cosmetic Dentistry. Tif has a special interest in simple orthodontics using removable appliances and was the first dentist in the UK to pioneer the Inman Aligner and has been lecturing on the Inman Aligner in the UK. He has completed over 300 cases using Inman Aligners as a standalone treatment and to align teeth before

1) Occlusion.

The irregular alignment of the lowers and the thickness of the upper old crowns were adding to the problem of unbalanced 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. 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, made it feel particularly thick.

2) Thickness /Aesthetics of crowns

The occlusion meant that the upper crown shad been placed quite labially and because they were metal ceramic, made them feel particularly thick. They also appeared rather opaque.

3) Lower crowding

The patient was also keen to improve the lower aesthetics as the incisors had an irreguar outline. The incisal edges appeared to be of different heights. This was down to the varying anterior-posterior position.

4) Colour

The old crowns had been made at A3/A35 shade and the natural teeth had darkened a little with age.

Treatment plan

A combination of techniques and good timing can make sure we optimize the opportunity for treatment-

1) To remove the upper two crowns and replace them with temporary composite crowns

2) Simultaneously to fit a lower Inman Aligner to align the lower incisors into a better functional position , while using bespoke clear aligners to slightly tilt the uppers into better alignment. The rationale for using upper clears and lower inman was that only 1mm of movement was needed for the uppers and about 2.5mm of movement was required for the lowers. Inman Aligners are much faster than clear aligners with these kinds of movements. Two to three clear aligners can be just as quick with very small movements of 1mm and be a little more cost effective if made bespoke. It would also allow us to treat both arches more or less simultaneously

3) To then whiten the teeth (during last phase of alignment)

4) To change to all ceramic crowns to match

5) To retain the lower arch.

Our aim was to try to combine treatments so the patient could be complete over several months.

Alternatives

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 temporaries 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 un-ethical solution.

Treatment

On the initial appointment the two old crowns were removed. The preps were merely cleaned and treated as conservatively as possible. Temporary crowns, which could be adjusted were placed. Upper and lower impressions were taken for upper clear aligners and for a lower Inman aligner. A prescription of the tooth movement using SpazewizeTM software was given to the technician so they were aware of exactly where we wanted the teeth to be moved with model surgery. Spacewize 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 (Hancher 2005).

Two weeks later the patient returned. The Inman Aligner and clear aligner were fitted on the lower and upper teeth respectively. Minimal IPR was started. Despite knowing how much we are likely to need, with Inman Aligner treatment, we never complete all the IPR in one go.

Despite calculating the amount of crowding present, the IPR is never carried out in one go. IPRs strips or discs are only used. This gives the opportunity to ensure the stripping is far more anatomically respectful than using

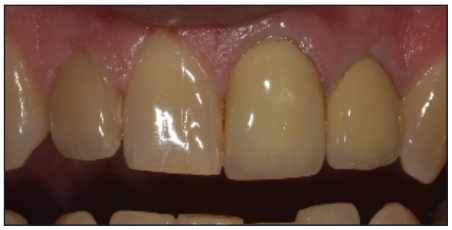
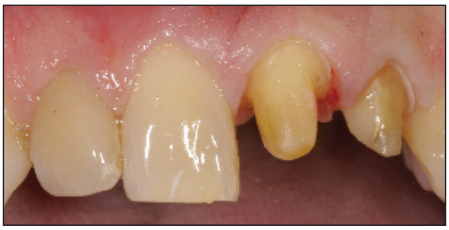


Figure 1



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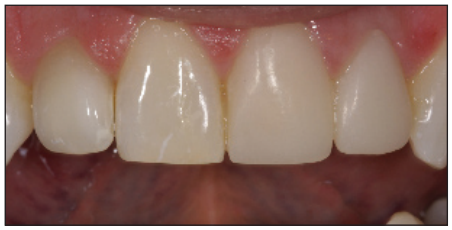

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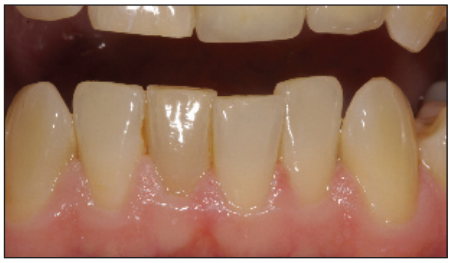

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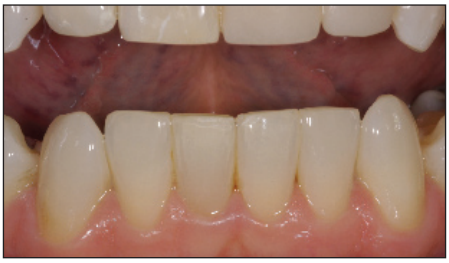

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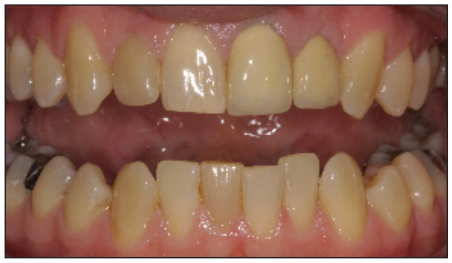

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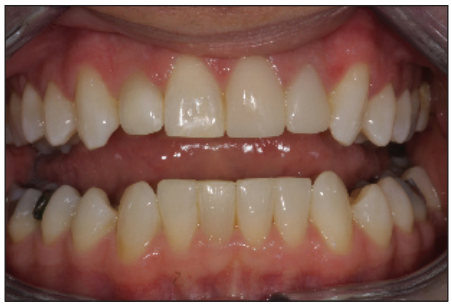

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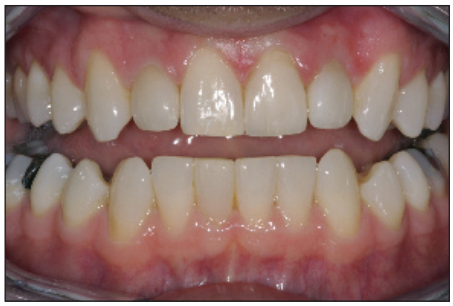

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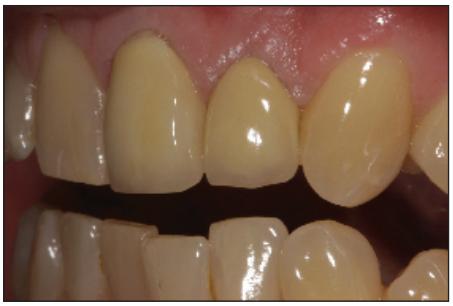


Figure 9

burs or heavy discs. This massively reduces the risks of excess space formation, gouging or poor contact anatomy. No more than 0.13 mm per contact on the anterior teeth were adjusted on this single visit.

The contacts are smoothed and the fluoride gel is applied each time (Sheridan 1987, 1989, Crain and Sheridan 1990, Sheridan and Hastings 1992, El-Mangoury et al 1991. Radlanski 1991, Heins 1988, Tal 1984)

The patient was then sent away. On return two weeks later it was clear that the contacts had closed tight and the teeth had moved a little. More IPR was carried out, upper and lower. 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 sent away again for two to three weeks. The temporaries were also facially contoured to ensure they were flush with the natural teeth.

On return it was clear that the teeth were aligning rapidly and especially well. We then decided to start some simultaneous tooth whitening. Impressions were taken even though the result was 25% from finished.

Sealed, rubber trays are made and careful instructions are given to the patient.

While the patient is highly concentrated on using the Inman Aligner, they are always highly receptive to using bleaching trays. It adds greatly to motivation and often means they achieve a far better result. Discus Dental Day White is used so that the patient only needs to wear the bleaching trays for 35-45 minutes a day.

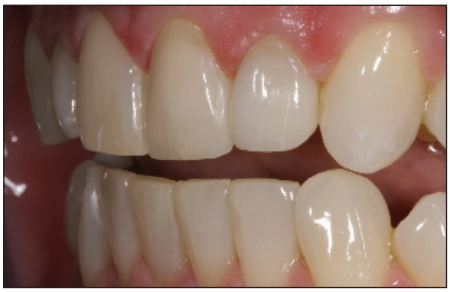
The patient returned after another three weeks and was happy with the degree of whitening achieved. Alignment upper and lower were completed. An impression was taken for a lower retainer wire to be fitted later.

The temporary crowns were removed, the preps cleaned with corsodyl and new impressions were taken after some minor adjustments to the buccal margins. A new lower impression was taken of the final lower occlusion to ensure the crowns could be made with a good long centric contact.

The temps were replaced and impressions sent to Knight Dental Design Ceramics.

The patient booked in for a shade one week later and two weeks after cessation of bleaching, with Tony Knight. He discussed and explained colour and tooth morphology with the patient.

Two weeks later the patient returned. A retainer wire (Case 2003) was bonded to the lower incisor teeth using a preformed wire on jig made by the orthodontic technician. The temporary crowns were removed and the new Emax HT Crowns were bonded using Variolink 2 and optibond FL. The occlusion against the aligned lower teeth was checked. The patient was extremely happy with the end result and felt his teeth looked natural.



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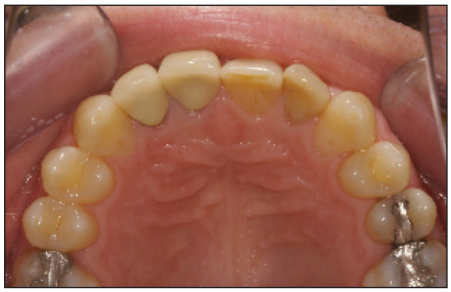

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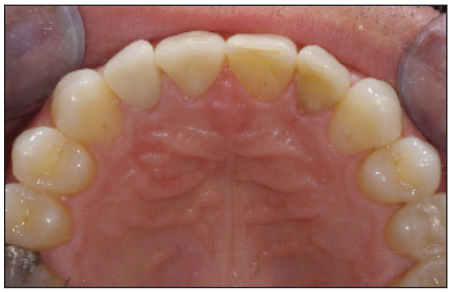
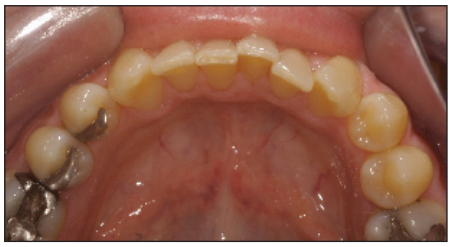


Figure 12

Discussion

The case is another example of why a progressive form of smile design can be so essential in any case where a patient is looking to improve their smile.

At every point the patient sees their smile improving with Alignment, then whitening. If they are still keen to have full ceramics, then at least the teeth are straight and light, so less invasive and more translucent veneers can be used. More often than not patients prefer a more natural result, where we make 'their own teeth look as good as they can'. In a case like this with previous metal ceramics, one can see how integrating alignment, and whitening can enhance aesthetics, and simplify restoration dramatically. This makes a stable and aesthetically pleasing outcome far easier to achieve.



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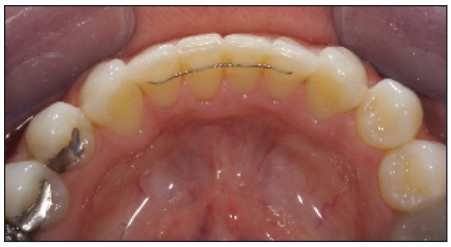
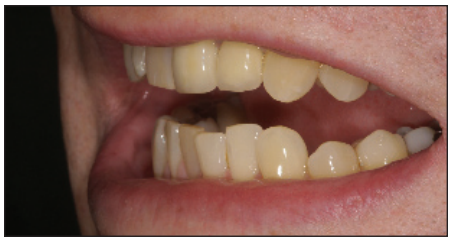


Figure 14

Conclusion

In each of our practices, there must literally be hundreds of patients who have issues similar to this gentleman's complaint.

Previously conventional solutions often placed a barrier to treatment adding time and cost into what was already an expensive treatment. Most patients just could not be bothered and would live with it. Now simple anterior alignment can be so much quicker and more cost effective, I am amazed at the sheer volume of patients who will have treatment like this done if they are suitable. Being able to combine whitening because the aligners are removable is just another bonus so we can capitalize on the patient's current compliance and get a better result. Of course, case selection is absolutely vital. Understanding what is treatable and what should be referred to a specialist orthodontist is essential. This means that patients must be fully consented and understand the risks and disadvantages of not treating any posterior issues if just concentrating on anterior alignment.



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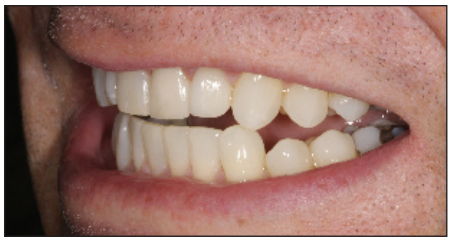

Figure 16

Disclosure

Dr Qureshi runs hands on courses with Dr James Russell and Dr Tim Bradstock- Smith and lectures on the Inman Aligner worldwide.

Acknowledgements

The author thanks Donal Inman C.D.T. Inman Orthodontic Laboratory, Coral Springs Florida. Nimrodental Ortho Lab. Paddington London (The only STS Certified Inman Aligner Laboratories.)

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